

**Armed Forces, States and Threats:
Civil-Military Institutions and Military Power in Modern Democracies**

by

Marc Ronald DeVore
BA International Relations/Economics
Claremont McKenna College, 1999

Submitted to the Department of
Political Science in Partial Fulfillment of
the Requirements for the Degree of

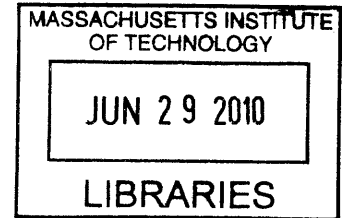
DOCTOR OF PHILOSOPHY

in Political Science
at the
Massachusetts Institute of Technology

September 2009

Copyright 2009 Marc Ronald DeVore
All Rights Reserved

ARCHIVES



vol. 1

The author hereby grants to MIT permission to reproduce and to distribute publicly paper and electronic copies of this thesis document in whole or in part.

Signature of Author _____

Department of Political Science
August 19, 2009

Certified by _____

Professor Harvey Sapolsky
Thesis Supervisor

Accepted by _____

Professor Roger Petersen
Chair, Graduate Program Committee

Armed Forces, States and Threats: Civil-Military Institutions and Military Power in Modern Democracies

by

Marc Ronald DeVore

Submitted to the Department of Political Science
in September 2009 in Partial Fulfillment of the
Requirements for the Degree of Doctor of Philosophy
in Political Science

Abstract

Two longstanding questions preoccupying political scientists, military officers and policymakers alike are how should and how do political leaders interact with military professionals? This thesis argues that historic patterns of civil-military relations underlay distinct national defense policymaking institutions, which, in turn, shape how states produce and employ force. Thus, long after states are no longer prey to military interventions in politics, the institutions originally created to protect government *from* the armed forces will continue to shape how governments *use* military force. In states where civil-military conflict prompted sustained periods of institutional development, present day governments will possess institutional resources to exert maximal civilian control over defense policymaking. States with harmonious civil-military legacies will lack these institutional structures and will exercise a lesser degree of civilian control. Each form of political control embodies distinct comparative advantages, one privileging the integration of military activities with the state's foreign policy, while the other provides for greater military effectiveness.

Termed "civil-military legacy theory," the analytical framework of the dissertation is rooted in historic institutionalism. The theory is tested by examining the elaboration of military doctrine, the acquisition of new weapons and the conduct of military interventions in France and the United Kingdom. The United Kingdom and France have, since the Second World War, possessed and expended comparable resources on defense. The United Kingdom and France have, however, diametrically opposite experiences of civil-military relations. The United Kingdom has never experienced a significant civil-military crisis; France has six times seen a general become head of state without being elected, and nine times seen military factions attempt to supplant the government. As predicted, France's history of fractious civil-military relations led it to develop civil-military control institutions that permit civilian leaders to micromanage military doctrine, procurement and operations. Conversely, the United Kingdom's record of civil-military concord has resulted in the armed forces retaining authority over an autonomous sphere of military competence. The principle of civilian control of the armed forces is acknowledged in both cases, but its practice varies widely, with a functional division of labor in the British case and more intrusive civilian control in the French.

Biographical Sketch

Marc Ronald DeVore received the B.A. degree in International Relations/Economics from Claremont McKenna College (Magna Cum Laude and Phi Beta Kappa) in 1999, the M.A. degree in Political Science (mention bien) from the Institut d'Etudes Politiques, France in 2001, and the Ph.D. in Political Science from the Massachusetts Institute of Technology in September 2009. He has benefited from Fulbright, Truman, Chateaubriand, Harvard Center for European Studies and Florence Gould fellowships. He has also been a visiting research fellow at Institut d'Etudes Politiques, Paris, and King's College London's Department of War Studies. He is currently a Post-Doctoral Fellow at the University of St. Gallen's (Switzerland) Center for Security, Economics and Technology (CSET).

Acknowledgements

As the culminating point of formal education, any dissertation is the product of the many intellectual influences that shaped its author. In my case, these intellectual debts are compounded by the material debts to the institutions and individuals that made lengthy periods of field research financially possible and academically beneficial. From high school onwards, I have benefitted from exceptional teachers, advisors and mentors, including Randy McCord, Richard Voelkel and Professors Harold Rood, Ward Elliot, C.J. Lee, Jack Pitney, Arista Cirtautas, Yves Jeanclos, Steve Meyer, Melissa Nobles, Serenella Sferza, Stephen Rosen, Steven van Evra and James Davis. I am also indebted to MIT's Department of Political Science, the Truman and Fulbright foundations, the French government (the Chateaubriand Fellowship), and the Harvard and Columbia (the Florence Gould Fellowship) Centers for European Studies.

I am deeply grateful to the three members of my dissertation committee. My chairman, Harvey Sapolsky, shaped my way of viewing military organizations and innovation. He also supported me with endless patience and insights through my years of field research and writing. Barry Posen challenged me on many occasions to refine my arguments and asked the sort of pointed questions that oblige scholars to re-examine their evidence and preconceptions. I also had my first (rewarding) experience at teaching under his expert guidance while serving as the teaching assistant for his course on American Military Power. Finally, Suzanne Berger contributed vitally to this dissertation and my own intellectual development. Despite my previous study of and time in Europe, I did not truly understand British or French politics or institutions until studying under her.

Because of the lengthy period of field research involved with this dissertation, it is only natural to render homage to the individuals who made these years productive. In France, Professor Maurice Vaisse, of Paris' Institut d'Etudes Politiques, provided invaluable mentoring by teaching me how to properly use French archives, providing insights on French diplomatic and military history, and giving me opportunities to present my research to European audiences. Professors Pascal Vennesson and Pierre Melandri also taught me much during this period. Many military officers, listed at the end of this dissertation, contributed their time and knowledge. Admiral Jacques Lanxade deserves special thanks for allowing me to interview him on more than a half dozen occasions and facilitating my entry into France's Institut des Hautes Etudes de Défense Nationale (IHEDN). General Yves le Chatelier likewise saw me on many occasions and did more than any single individual to help me establish contact with former leaders of the French armed forces. Finally, General Michel Roquejoffre gave me the unparalleled honor of inviting me to spend several days at his home in Southern France to interview him and consult the journal he kept throughout his career.

In the United Kingdom, I owe a debt of gratitude to Professor Lawrence Freedman for enabling me to spend a year and a half as a visiting research fellow at King's College London's Department of War Studies. While at King's Professors Saki Dockrill, Andrew Lambert, Christopher Dandeker, John Mackinlay and John Stone provided valuable advice and enlarged my academic horizons. Amongst the many British military officers who contributed to my research, and are listed at the end of the dissertation, I am particularly indebted to General Julian Thompson, who facilitated contacts with his former colleagues from the Falklands War, and Commodore Michael Clapp, who hosted me for several days of interviews at his home in the West Country. I also had the rare pleasure of having Generals Kenneth Perkins and John Akehurst present when I presented the results of my research on the United Kingdom's counterinsurgency in Oman at the 2005 Cold War History Conference, held at the London School of Economics.

My research benefitted greatly from the expertise and dedication of archivists and librarians from: the British Public Record Office, Kew; the Imperial War Museum's Oral Histo-

ry Archives; the B.H. Liddell-Hart Collection of Private Military Papers; the British Library; France's Service Historique de l'Armée de Terre (both for the regular and, especially, oral history collections); the military library at the Chateau de Vincennes; and the library of France's Musée de l'Armée (Hôtel des Invalides). I was also exceptionally fortunate that three of the Cold War's preeminent military actors assisted me with my dissertation and sat for interviews despite their own declining health. General Jeremy Moore, Admiral Bernard Klotz and Colonel Bob Denard have, unfortunately, passed away since they were interviewed and before this dissertation could be completed.

Finally, I would like to cite those who supported me throughout this endeavor. Good friends, and excellent scholars, John Payne, Scott Radnitz, Andrew Orr, Ilya Platov and Ashley Rossiter provided encouragement and a sounding board for discussing my dissertation. Anna Clarke housed me and provided an ideal flat-mate during my research in London. Jacques Duchemin made it possible to spend time in war zones in the Balkans and Africa. My father-in-law, Alain Jacob, helped identify articles, providing expert advice and editing drafts of my chapter on French procurement. My grandfather Marvin DeVore provided me with understanding and encouragement until he passed away in 2006. My parents, Ronald and Audrey, provided unwavering encouragement, filed interlibrary loan requests, visited me during my years in Europe and helped me with the enormous effort editing successive drafts of the dissertation. Finally, my wife, Adeline, has been a constant source of love and support, and assisted me by transcribing my interviews that were conducted in French. She endured my many late nights and the long periods of separation during my field research.

Table of Contents

Chapter	Page
Chapter I: Introduction	11
Chapter II: The Origins of Civil-Military Institutions	69
Chapter III: French Military Doctrine (1958-1991)	141
Chapter IV: British Military Doctrine in the Cold War	243
Chapter V: Weapons Procurement in France	343
Chapter VI: Weapons Procurement in the United Kingdom	417
Chapter VII: French Military Interventions	519
Chapter VIII: British Military Interventions	613
Chapter IX: Conclusion	709
Bibliography	739

Chapter I:

Introduction

I. Introduction

The civil-military disputes of the Clinton-era and the failure of the United States' military occupation of Iraq have resuscitated the age-old questions of who does and who should forge a state's defense policies. As expectations of a peaceful and democratic Iraq dissolved into anti-American and sectarian violence, military leaders proved swift to blame the debacle on the misguided meddling of political leaders and their appointees. Meanwhile, civilian leaders have been no less rapid in denouncing the military high command as parochial and obstructionist. Coming after the lesser civil-military controversies of the 1990s, where elements within the armed forces contested presidential policy on Bosnia, Kosovo and Haiti, the debate over failure in Iraq has placed the matter of civil-military institutions and relations at the center of the policy agenda.

At the center of the current controversy are two diametrically opposed concepts of civil-military relations. On the one hand, there is the assertion that training and experience equip only military professionals to make certain judgments about military operations, doctrines and plans. On the other hand, there are those who echo French President Georges Clemenceau's statement that "war is too important to be left to the generals" and that political leaders must implicate themselves in every aspect of its preparation if they are to obtain their desired results. Unfortunately, within the American context it is difficult to ascertain either which pattern prevails and which is most advantageous. Failures, such as Vietnam and Iraq, are paradoxically attributed to both too much political micro-management and not enough political control of the armed forces, while the successes of World War II and the 1991 Gulf War are alternatively credited to the preeminence of politics or military autonomy.

To gain insight on the questions of who does and who should control defense policymaking, this study examines two states that differ in terms of how political leaders control their armed forces. In the United Kingdom, the armed forces enjoy control over an autonomous sphere of military competence. By way of contrast, French political leaders intervene in almost every aspect of defense policymaking, including minute details of air strikes and war plans. The principle of civilian control of the armed forces is acknowledged in both cases, but its practice varies widely, with a functional division of labor in the British case and more intrusive civilian control in the French.

To develop my explanation of defense policymaking, I draw on both the civil-military relations literature and scholarship on bureaucratic politics. The analytical framework I developed, which I term "Civil-Military Legacy Theory," links past civil-military relations with systemically different patterns of defense policymaking, which in turn, give rise to distinct comparative advantages in how states generate military power. Institutions are the binding element, linking legacies of civil-military relations with how contemporary political leaders exert control over their armed forces.

In states that experienced a high degree of civil-military strife, political leaders develop institutional mechanisms for protecting the state from the military. When civil-military tensions gradually disappear as a result of political, economic and social modernization, these civil-military control mechanisms persist and enable political leaders to exert a high degree of control over military activities. In states that have enjoyed harmonious civil-military relations, political leaders have no incentive to develop intrusive control mechanisms. Instead, civil-military relations evolve on more functional lines, with the armed forces exercising freedom within a sphere of delegated authority.

Because of the political and administrative costs of changing from one system to another, and the ambiguity of the outcome, advanced industrialized states show continuity in how they formulate defense policies. Thus, in a certain sense, present day defense politics are an after effect of past civil-military relations.

Civil-military legacy theory yields three new insights for the fields of security studies and comparative politics. First of all, there is no single prevalent or optimal model for how civilian leaders should control their armed forces. Instead, there are at least two models, each embodying comparative strengths and weaknesses. Second, civil-military events in the sometimes-distant past shape the elaboration of defense policymaking in even those advanced industrial states that are today immune from military interventions in politics. Recognizing that patterns of defense policymaking are path-dependent should lead future scholars to spend more time distinguishing formative moments, when institutional structures emerge, from periods that merely confirm their trajectories. Third and finally, with a recognition that states exhibit distinct patterns of defense policymaking and possess comparative institutional advantages, one of the main tasks for security studies scholars becomes identifying and understanding the characteristics marking each state.

II. What Roles for Soldiers and Statesmen?

Two longstanding questions haunting political scientists, military officers and policymakers alike are how should and how do political leaders interact with military professionals? The principle of civilian control over the armed forces is accepted in advanced industrialized democracies, even if it remains problematic in the developing world. However, the mere term "civilian control" is open to ambiguity and many variations are possible.

A minimalist interpretation of civilian control could entail no more than armed forces not supplanting political authorities and accomplishing the broad missions set for them. The ability

of armed forces to manage their own budgets, exercise judicial authority over their members and plan and fight wars as they please are all consistent with this minimal version of civilian control. At the opposite extreme, a maximal vision of civilian control consists of political leaders selecting targets for bombardment, deciding on tactics and telling military commanders how to plan for the next war.¹ The Prussian / German Armies of the late-19th and early 20th centuries and the American military during the McNamara-era both obeyed "civilian control." However, the nature of that control differed, with the Prussians approximating a minimal definition of civilian control and the Americans approaching the maximum.

Scholars and practitioners have long debated what form of civilian control provides greater advantages to the state. The classic works on military strategy are either silent or contradictory on the subject. The ancient Chinese strategist, Sun Tzu, argued that political authority should not extend beyond the choice of a military commander and the right to replace that commander should he prove incompetent. Once selected by his sovereign, the military commander should be free to mobilize resources, dispense justice and elaborate strategy.²

Sun Tzu's principal modern rival, the 19th Century Prussian General Carl von Clausewitz, argued that the scope for civilian intervention in military decisions was potentially vast. According to Clausewitz, "If war is part of policy, policy will determine its character.... Political considerations do not determine the posting of guards or the employment of patrols. But they are the more influential in the planning of war, of the campaign, and often even of the battle." Clausewitz continued by arguing against the existence of an independent sphere where "military expertise" could operate independently of political considerations.³ While Sun Tzu and Clausewitz held opposite opinions, other classic strategists, such as Frederick the Great, Napoleon Bonaparte and Marshal de Saxe, remain silent on civil-military relations.

In many respects, Samuel Huntington's *The Soldier and the State* represents the first systematic attempt to explore how political leaders should exercise control over the armed forces. Built around the notion that military officers are a profession equivalent to doctors or lawyers, but whose expertise resides in the management of violence, Huntington argues for an expansive military role in defense policymaking. For Huntington, professionalism justifies military organizations possessing an "autonomous sphere" of military competence wherein political leaders should not interfere.

Huntington believes that the elaboration of military doctrine, the formulation of war plans and the conduct of military operations are the exclusive preserve of military professionals.⁴ Although Huntington never specifies all activities falling within the sphere of military competence, he feels that military officers should play a broad role in shaping national security policy because their pessimism, conservatism, collectivism and emphasis on power render them more apt to resolve security problems than civilian elites.⁵ For Huntington, military professionals are more cautious about using force, but more likely to know how to apply it successfully when the need arises.⁶ Thus, an autonomous and influential military will eschew unnecessary conflicts, fight better, generate superior military doctrine and eschew politics to a greater extent than military organizations that suffer from a more intrusive form of political control.

Huntington's formulation echoed the preferences expressed by military theorists since the late-19th century. The Prussian General Helmuth von Moltke argued that political leaders dictate when a state goes to war and negotiate the peace terms after its conclusion, but military professionals should have a free hand in obtaining the best possible results given the resources at their disposition.⁷ French General Jean Colin likewise stated, "Once war is decided upon, it is absolutely necessary for the [commanding] general to remain free to conduct [strategy] as he sees fit, prepared to be replaced if he demonstrates little energy or competence. War plans must be the

personal product of the general. Government intervention in the conduct of operations has almost never produced happy results."⁸

In fact, Huntington's work reflected the consensus view of military professionals as to what their proper role should be. However, by formulating his argument in theoretical and historic terms, Huntington imparted a new élan to the notion that states are best served when they grant their military professionals an autonomous and expansive role in defense policymaking. Given its congenial message and artful articulation, *The Soldier and the State* became a classic amongst military officers and today constitutes the model by which they judge civil-military relations.⁹

Influenced by Huntington, military intellectuals have expanded on the concept of an autonomous sphere and the role of "professional" military advice in the decades since Huntington's original formulation. With the Weinberger-Powell Doctrine of 1984, the future Chairman of the American Joint Chiefs of Staff argued that the armed forces should only be used when political leaders set specific objectives, intend to achieve a military victory, provide the overwhelming force needed to secure that victory and guarantee a high degree of popular support.¹⁰ In books immensely popular within armed forces themselves, veteran officers argue that military leaders should resist civilian interference with strategy and have a "duty" to thwart civilian decisions that they disagree with.¹¹

Meanwhile, scholars have leant credence to other elements of Huntington's thesis. Studies by Richard Betts, Peter Feaver and Christopher Gelpi proved that military elites are less inclined to favor military intervention than their civilian counterparts.¹² Likewise, Stephen Rosen demonstrated that military organizations, left to themselves, regularly transform how they use force, develop new doctrines and foster promising technologies. Driven by their professional ethic, senior officers scrutinize technical and geo-strategic changes, promoting junior officers with innovative ideas for adapting to new realities.¹³

Articulated by Huntington, but preceded by likeminded military writers and embellished by later scholars, the theory that military professionals are best suited to managing an autonomous sphere of defense policymaking has gained a broad following. At its base is the notion that a professional education and ethic equips military leaders with the ability formulate doctrine, lay war plans and conduct operations. Unsited to such exercises, political leaders will only do harm by trespassing in these domains. Instead, they should concentrate themselves on deciding when to use force, occupying themselves with the diplomacy surrounding its use and negotiating the end to hostilities. I define this vision of civil-military relations as "minimal civilian control," because it grants the armed forces the greatest degree of autonomy consistent with their still being subservient to political leaders.

In contrast to Huntington's idyllic vision of professional officers competently and disinterestedly guiding defense policy, subsequent generations of political scientists detected pernicious military biases and have argued for a more maximal concept of political control. Originating in the 1960s, research into "bureaucratic politics" and "organization theory" have prompted scholars to study military officers as the representatives of bureaucracies striving for wealth and autonomy, rather than exemplars of a profession uniquely concerned with discharging their chosen *métier*. The two visions of the military high command, as a self-centered interest group and a professional corporation dedicated to the well being of its client, are fundamentally opposed and lead to different prescriptions for how to structure civil-military relations. If the behavior of military organizations are motivated by their struggle to enhance values such as wealth, autonomy and prestige, then invasive political control will be necessary to ensure that their activities correspond with the state's overall aims.

Because of their organizational imperative to extract resources from the state, military organizations are likely to exaggerate threats and the resources needed to counter them. Having to

justify large force structures and imbued by the pessimism of Huntington's military mind, military officers are likely to view threats in purely military terms and demand inordinate resources to meet them.¹⁴ They are temperamentally less accustomed to evaluating the economic and social costs of acquiring the resources they covet.¹⁵ Thus, if not controlled, armed forces can pursue their quest for resources to the point of parasitically draining societies of the wherewithal to pursue non-military goals.¹⁶

Military organizations prefer offensive doctrines to defensive or deterrent postures. Because they require complex and expert planning, offensive doctrines are less accessible to civilian control and, thereby, reinforce military autonomy. They also permit military organizations to control uncertainty. An armed force executing its offensive plan will possess the initiative, whereas one standing on the defensive has to await and adapt to its adversary's actions. Finally, offensive operations normally require more resources than defensive or deterrent doctrines. Thus, by adopting offensive doctrines, military organizations enhance their claims to the state's resources.¹⁷ Because they serve armed forces' organizational needs, militaries are biased in favor of offensive operations, whether or not they best serve a state's foreign policy objectives or are even militarily optimal.

Concomitant with their offensive bias, military organizations favor escalating conflicts by introducing more resources and loosening restraints about what forms of military activities are permitted. Although conservative about decisions of when the state should use force, military officers believe that military force should be used in overwhelming quantities.¹⁸ In general, military professionals also see few compelling reasons not to wage total war, provided that they cannot quickly obtain a military victory with lesser results.¹⁹ Sanctuaries in "neutral" territory, bans on using particular weapons and restrictions on using force near civilian habitations are anathema to them. When they perceive a future threat, military leaders prefer preemption, destroying a poten-

tial enemy before it can act.²⁰ Taken as an ensemble, military organizations' preferences for overwhelming force, few restraints and preemption tend to escalate the violence and stakes of a conflict.

Beyond pursuing the specific objectives of resources and autonomy, organizations also work to advance the less concrete objectives frequently referred to as "organizational essence." According to Morton Halperin, organizational essence is "the view held by the dominant group in the organization about what the missions and capabilities should be."²¹ Socialized into armed services at a young age and spending much of their lives within a single structure, military officers have a strong attachment to the lifestyle and self-image of their organization. This can lead itself to a romantic attachment to outmoded forms of warfare, as the long survival of the horse cavalry attests.²² It also translates into armed forces focusing only on the missions compatible with their self-image, neglecting those that would require greater psychological adaptation. Thus, certain armies neglect counter-insurgency operations, even when they are frequent, to concentrate on the more valorizing task of preparing for conventional war.²³ Equally, it can lead military organizations to focus their resources on the most prestigious combat arms, at the expense of vital support functions.²⁴

Because of the many organizational imperatives shaping their activities, military organizations frequently enact policies poorly suited to the broader foreign and security policies pursued by political leaders. When this occurs, the integration of defense policy with the state's overall policy can break down.²⁵ There are many historic examples of poorly integrated military activities causing irreparable harm to the state. The Schlieffen Plan left Imperial German leaders without any war plans, save one, whereby a Russian mobilization provoked a German invasion of France via neutral Belgium. Even if war was inevitable or in the national interest, the Schlieffen Plan ensured that Germany would fight the otherwise neutral British Empire and Belgium. Later,

the disjuncture between France's defensive military doctrine and its alliance network in Eastern Europe, which required offensive capabilities, proved equally fatal in the face of Adolph Hitler's calculated acts of aggression. Under very different circumstances, American military actions during the Cuban Missile Crisis threatened the measured and un-provocative strategy pursued by civilian leaders.

The risk of military activities becoming divorced from a state's overall strategy has led many scholars to argue for political leaders to take an invasive and proactive role. Only the direct intervention of political leaders in the conduct of military operations, drawing-up of war plans and formulation of doctrine guarantees that armed forces will contribute to accomplishing political goals. Elliot Cohen argues that political leaders must interrogate, probe and bully armed forces to obtain success in war.²⁶ Graham Allison demonstrates that intrusive monitoring is likewise necessary for crisis management, where standard military behavior is overly provocative. Finally, Barry Posen contends that civilian intervention is necessary to ensure that military doctrines correspond with broader national security needs.²⁷

Taken as an ensemble, these scholars present a model of civil-military interactions fundamentally at odds with the notion of minimal civilian control. Only by monitoring and intervening in every facet of defense policymaking can states ensure that military force will be a reliable servant of foreign policy. No autonomous sphere of military expertise ought to be respected and each military action should be examined lest it reflect pernicious organizational biases. I define this vision of civil-military relations as "maximal civilian control" because it accepts political involvement in all domains of military activity.

Thus, two broad forms of civilian control of the armed forces are possible in advanced industrialized democracies. Minimal political control involves political leaders deciding on foreign policy objectives, when force will be employed and the resources they will consecrate to the

armed forces. Beyond setting the framework within which military activities will occur, political leaders recognize an expansive "independent military sphere." The alternative to minimal control of the armed forces acknowledges political leaders' right to interfere with any aspect of defense policymaking. Maximal civilian control of the armed forces rejects claims to autonomous military authority. Rather, all military activities have potential diplomatic and political consequences, and should be subject to civilian direction.

Scholars and practitioners differ as to what form of civilian control they prefer. However, the preferences they express frequently correspond to the values they seek to maximize. Authors that favor "minimal control" tend to argue on the bases of military efficiency and the need to avoid ill-conceived foreign policy entanglements. On the contrary, scholars championing "maximal control" advance the superior integration of military activities with overall national aims. By synthesizing the arguments advanced by each group with the counterarguments about each system's weaknesses, it is possible to advance hypotheses on the pros and cons of minimal and maximal civilian control of the armed forces.

The comparative advantages of minimal control lay in the superior ability of military professionals to effectively employ force and understand technical factors affecting the conduct of war. The disadvantages of minimal control reside in the offensive and escalatory tendencies of armed forces, and the likelihood of their military actions being poorly integrated with the state's overall foreign and economic policies. Table I, below, illustrates hypotheses about the strengths and weaknesses of minimal civilian control.

**Table I:
Minimal Civilian Control**

<u>Strengths</u>	<u>Weaknesses</u>
Operational and tactical military excellence	Escalatory behavior on part of armed forces
Doctrines that reflect professional consensus on military "best practices"	Offensive bias in war plans
Force unlikely to be used unless in quantities that guarantee military success	Military activities lack close integration with diplomacy and domestic politics
Military forces innovate in response to technical and geo-strategic change	Missions incompatible with "organizational essence" likely to be neglected

In sharp contrast to minimal control, the comparative advantage of maximal civilian control resides in the close association of military activities and overall foreign policy aims. However, too much meddling by inexperienced politicians can produce militarily ineffective doctrines and operations. Table II, below, illustrates the comparative advantages of maximal civilian control of the armed forces.

**Table II:
Maximal Civilian Control**

<u>Strengths</u>	<u>Weaknesses</u>
Close integration of military, diplomatic and political activities	Military effectiveness compromised by civilian meddling
Force likely to be used in a restricted and flexible manner to accomplish political objectives	Insufficient resources likely to be allocated for demanding missions
Changes in military doctrine prompted by overall foreign policy environment and political priorities	Military-technical changes and imperatives likely to remain unaddressed

In sum, there are two theoretical models for how political leaders should control the armed forces in advanced industrial democracies. Either they recognize the existence of an independent sphere of military competence or they intervene in every domain of military activities that has an inci-

dence on politics. Each form of control has been praised for its strengths and damned for its shortcomings. However, a close examination of the arguments advanced by partisans of both forms of control reveals that each possesses comparative advantages.

III. Who Controls Defense Policy?

While there are two broad alternatives for exercising civilian control in an advanced industrial democracy, it requires more than the will of political leaders to implement one mode or another. Defense politics are characterized by asymmetries of information and authority that complicate the assertion of political control. In order for elected leaders to impose maximal political control over the armed forces, they must dispose of multiple independent sources of advice on military affairs, the ability to intrusively monitor military activities, and the capacity to communicate their orders directly to the echelons of the hierarchy tasked with executing them. Governments that lack these three capacities will be reduced to implementing a more minimal variety of political control.

As the state's recognized experts on the management of violence, military professionals possess a superior understanding of the operational, technical and logistic aspects of war-making than the elected leaders whom they serve. Thus, in formulating their own opinions on what policies to pursue, civilian leaders are normally beholden to military advice. Political leaders' theoretically superior position in the state's hierarchy is therefore hamstrung by the armed forces' monopoly on military expertise.

When military preferences clash with those of their political superiors, soldiers have frequently abused their monopoly on military expertise to evade civilian control. For example, when German political leaders urged the armed forces to revise their war plans in July 1914, aborting the Schlieffen Plan in favor of an offensive in the east, the military high command claimed

that it was technically impossible. From the information now available, it appears that the German generals dissembled, cloaking their desire to launch the Schlieffen Plan under specious technical claims that alternatives were impossible.²⁸ More recently, the Soviet armed forces argued, on technical grounds, that only an armored blitzkrieg into Western Europe would render the Soviet Union secure in the event of war. In fact, a defensive doctrine would have accomplished political leaders' objectives at less cost and danger of escalation. However, Soviet military professionals sustained their preferred policy for decades until a broadening of the defense policy community and economic decline precipitated change.²⁹ These two examples suggest how easy it is for military professionals to use their claim to superior expertise to advance policies that civilian leaders would oppose, if they fully understood.

Classification and secrecy practices exacerbate the information asymmetries between military professionals and political leaders. Because defense policy touches the survival of the state, much of the information touching it is restricted to individuals that have been vetted by a screening process and possess a "need to know." However, procedures originally designed to protect national security permit military organizations to conceal much of their behavior from civilian scrutiny.³⁰ An extreme example of this occurred in the Soviet Union, where the armed forces refused to give the Foreign Ministry information on the Soviet Union's nuclear arsenal during the Strategic Arms Limitation Talks (SALT). The military high command hoped it could thereby sabotage the arms control process, but the United States supplied information to the Soviet negotiators on their proper nuclear forces.³¹ Even when political leaders have the right to know, secret information is rarely available to the think tanks, academics, parliamentarians and journalists that would otherwise scrutinize military activities.

Absent countervailing information, political leaders have difficulty assessing whether the military's advice is objective or has been manipulated to advance preferred policies. It is even

more difficult for them to formulate their own alternatives to the plans, procurement projects and doctrines proposed by the armed forces. Faced with a monopoly on relevant expertise, civilians elected to high offices cannot challenge military claims about weapons effectiveness, logistics constraints and tactical principles. Thus, a high degree of civilian control of the armed forces is only possible if civilians have access to multiple or independent sources of military advice.

Even if political leaders know how they want the armed forces to act, it is difficult for them to ensure the enactment of their directives. When civilian orders clash with military preferences, military professionals often interpret civilian injunctions in ways that serve their own interests. Without careful civilian monitoring, armed forces avoid executing the spirit, if not the letter, of direct political orders. For example, the United States Army responded to President John Kennedy's order that it teach counter-insurgency at the Command and General Staff College by renaming its existing courses on jungle and mountain warfare as counter-insurgency, without changing the content of either. More broadly, the Army thwarted the spirit of Kennedy's demand that it explore counter-insurgency warfare of the type the British had applied in Malaya and Lieutenant-Colonel Edward Lansdale in the Philippines.³² Later, Secretary of State Henry Kissinger and Secretary of Defense James Schlesinger faced significant difficulties in cajoling the armed forces to develop options for limited nuclear war.³³ Because military organizations conceal their resistance to political directives behind a façade of obedience, only intrusive monitoring will permit political leaders to know whether their orders are being fulfilled in the spirit that they were issued.

The hierarchic nature of military organizations aggravates the problem of ensuring military compliance with political directives. More than other formal organizations, armed forces thrive on hierarchies. Each individual has his place in a chain-of-command stretching from the state's highest political authority to the lowliest private. Because political leaders occupy the

apex of this hierarchy, their orders must transit several levels of military command before they reach military officers responsible for conducting field operations, elaborating war plans and establishing procurement requirements. Unfortunately, each of these intermediate levels of command has the potential to reinterpret political directives in a manner congenial to the organization's own preferences. During the Cuban Missile Crisis, President Kennedy directed the Navy to show utmost caution in its blockade of Cuba. However, Kennedy's injunctions lost force as they were transmitted down the chain-of-command, such that field commanders conducted the blockade according to the Navy's more confrontational standard procedures, rather than Kennedy's strictures to avoid confrontation.³⁴

Faithful compliance with political instructions demands the ability of political leaders to communicate their wishes directly to the officers responsible for executing their orders. When the question at hand is a military operation, maximal political control requires political leaders to directly oversee field commanders. When political leaders seek more broadly to influence military doctrine, they must publicize their order widely to the many individuals with a part in its execution.³⁵

In short, the degree of control political leaders can exert on military organizations depends on the administrative powers they possess. Exerting maximal control of the armed forces is more demanding than its alternative. Civilian leaders must possess multiple independent sources of advice on military affairs, the ability to intrusively monitor the military activities, and the capacity to communicate their orders directly to the echelons of the hierarchy tasked with executing them. Absent these capabilities, even vigorous efforts by political leaders to interfere in areas military officers consider within their "independent sphere" are likely to falter against the military's monopoly on professional expertise and ability to interpret orders selectively.

Because minimal political control does not require that civilian leaders possess the same degree of administrative capabilities, it can be enacted even when political leaders lack independent advice and means of invasive monitoring. Residing on political leaders confining themselves to shaping the diplomatic and domestic-political aspects of policy, minimal political control assumes that military actors will competently discharge all functions lying within the expansive independent military sphere. Political leaders will make political decisions and the armed forces' hierarchy will control military activity. There is, thus, no need for independent advice, invasive monitoring or direct communication with low echelons of command. Because it requires fewer specific administrative resources for its implementation, minimal control of the armed forces is likely to be the default solution whenever the underlying prerequisites for maximal civilian control are absent in a state.

IV. Institutions and Civilian Control

If the presence or absence of certain administrative capabilities determines whether political leaders will exert maximal or minimal control over the armed forces, then the next logical question is what concrete arrangements correspond with each form of control? A long tradition of social science research suggests that specific forms of institutions are necessary if political leaders are to draw on multiple sources of military advice and effectively monitor military activities. The following pages examine the institutional strategies that maximize political control over the armed forces.

The challenge of obtaining multiple independent sources of military advice is, at base, a question of breaking the monopoly on professional expertise possessed by a cohesive high command. Political leaders have the fewest options available to them when they are themselves uneducated about security affairs and must interact with a single general staff that speaks for the

armed forces as a whole.³⁶ However, four institutional strategies exist for redressing this asymmetric balance of expertise. First, political leaders can exploit the struggle between military services for resources and prestige to obtain competing analyses and recommendations. Second, by creating think tanks and research institutes, political leaders introduce new actors and opinions into the defense policymaking debate. Third, political leaders can create parallel inter-service military staffs capable of giving independent advice. Fourth and finally, specialized educational programs enhance civilian policymakers' knowledge of defense matters and ability to evaluate military claims. Each of these institutional strategies contributes to political leaders' ability to tap into discordant sources of military expertise and, taken as an ensemble, they radically increase the options available to political leaders.

Because armed services compete with one another for the wealth and autonomy that political leaders apportion, inter-service rivalry prompts armed services to satisfy political leaders' needs. When services compete with one another for limited resources, they provide political leaders with alternative intelligence analyses, doctrines, strategies and procurement projects. By choosing amongst these alternatives, political leaders can enhance their ability to shape defense policy and undermine the military establishment's capability to exercise its monopoly on professional expertise. Huntington himself recognized that inter-service rivalry increased political control.³⁷ Subsequent research has highlighted the role of inter-service rivalry in prompting military organizations to change procurement priorities and adopt new doctrines.³⁸ For example, only competition between the Air Force and Navy permitted American political leaders to enact superior technical solutions such as ballistic missile submarines and solid fuelled intercontinental ballistic missiles (ICBMs) rather than continuing to depend on costly suboptimal solutions such as manned bombers and liquid fuelled missiles.

While inter-service competition yielded uncontested results in the United States' case, few states are capable of profiting from the efforts of rival services to secure roles and missions. One reason why inter-service rivalry is so productive in the United States is that the state has typically faced a multiplicity of threats that can be addressed in several ways. By way of contrast, most states face a dominant threat, which can only be met by confiding preponderant responsibility to a single service. In their respective works, Kimberly Zisk and Pascal Vennesson demonstrated how the overwhelming threat of terrestrial invasion led to armies becoming the predominant armed service in the Soviet Union and France.³⁹ In these cases, inter-service competition was circumscribed by the leadership role that ground forces came to assume in matters of national defense.

Another reason why inter-service rivalry is only productive in a small number of states is the scale of overall defense effort needed to present political leaders with viable alternatives. In order for armed services to compete for civilian favors, they must be capable of substituting for one another in accomplishing key missions. This entails a degree of redundancy in terms of procurement. For example, the evolution of an efficient American nuclear deterrent in the 1960s depended on the concurrent development of rival programs by the Air Force (XB-70 bomber, Skybolt missiles and Minuteman ICBMs) and Navy (ballistic missile submarines and the A-5 Vigilante bomber). Only in the latter development stages of these programs was it obvious which were most advantageous and which ones could be cancelled. Unfortunately, few states can afford the duplication of procurement effort needed for inter-service rivalry to pay dividends.⁴⁰

In addition to depending on competition in procurement, inter-service rivalry is only productive when armed forces replicate elements of each other's force structures. In the United States, the Air Force, Navy and Marines all maintain sizeable fleets of fixed-wing aircraft, the Army owns large numbers of attack helicopters, and with the Marine Corps, the Navy possesses

more ground forces than the United Kingdom.⁴¹ While this duplication of capabilities has increased the leverage of American policymakers vis-à-vis the armed forces and fostered military innovation, it is only affordable for a nation such as the United States, with a military establishment of 1.5 million and the world's largest defense budget.⁴² Thus, although inter-service competition can enhance civilian control of the armed forces and prompt military innovation, few states can afford to exploit the advantages it provides.

Besides these costs, relying on inter-service rivalry for political control can entail other disadvantages. During a period of budgetary uncertainty, inter-service rivalry may prompt armed services to run needless operational risks to guarantee their organizational future. For example, well-placed observers remarked that the United States Marines wanted to "win the [1991 Gulf] War on their own" to ensure their organization's well being in the post-Cold War environment.⁴³ Fears about their standing relative to the other armed services prompted marine commanders to lobby for a perilous amphibious landing and volunteer to attack Iraq's strongest defenses in Kuwait.

Akin to the tendency of rival armed services to run excessive risks for operational glory is their propensity to oversell what a single service can achieve. To obtain a greater share of the budget, armed services are prone to dismiss the joint nature of warfare and focus on their ability to single-handedly deliver decisive results. Thus, inter-service competition fosters tropisms such as "air power" or "sea power." Unfortunately, these single-service strategies rarely perform as effectively as advertised. Even worse than the tendency of competing services to oversell their individual capabilities is their propensity to pursue independent grand strategies. For example, the Imperial Japanese Navy and Army planned for entirely different wars throughout the 1930s. The Army focused on fighting China and preparing for a war with the Soviet Union in Northeast

Asia, and the Navy planned for a maritime and amphibious struggle with the United States and Britain in the Pacific and Southeast Asia.⁴⁴

In short, inter-service competition enhances civilian control over the armed forces, but not without a cost. Although it may seem like inter-service rivalry will prevail wherever multiple armed services exist, the scope and intensity of inter-service competition depends on the institutional structure of defense policymaking. Inter-service rivalry will be less pronounced where armed services are overseen by a powerful joint staff and provide collective advice to political leaders via their common structures.⁴⁵ In some cases, the commander of the joint staff may even be designated by law as the government's primary advisor on military affairs.⁴⁶ In these so-called "general staff systems," the armed services can logroll their differences beyond the gaze of political leaders and present their civilian superiors with unified positions.⁴⁷

By way of contrast, inter-service rivalry will be most pronounced when the leaders of armed services interact directly with political leaders and have minimal contact with one another. Without any joint structures, armed forces are likely to compete more vigorously for resources. However, the absence of any joint structures is also likely to prevent the cooperation necessary to successful military planning and operations. Debacles, such as Britain's 1882 campaign against Alexandria, when the Navy arrived and began bombarding the city six weeks before the Army arrived, can be attributed to the want of joint structures.⁴⁸

Experience has shown that a chiefs of staff committee and some form of joint staff are necessary for modern military operations, and it is no accident that most states possess such structures. However, it remains to be seen what mixture of inter-service competition and cooperation is most conducive to military effectiveness and civil-military relations. Although exalted to the status of a secular religion in recent American debates, the real benefits of inter-service "jointness" are difficult to ascertain. In terms of American defense policymaking, the "jointness" instituted in

the 1986 Goldwater-Nichols Act has been blamed for reducing civilian control of the armed forces, sustaining an inflexible division of resources between services and promoting bad policies, such as the Powell Doctrine of "overwhelming force." Table III, below, analyses the trade-offs associated with greater or lesser degrees of inter-service competition.

Table III: Advantages and Disadvantages of Inter-Service Competition	
Advantages	Disadvantages
Increases political control of the armed forces	Requires more active involvement in defense policymaking by civilian leaders
Fosters military innovation	Necessitates procurement and force structure redundancies
Prevents inter-service log-rolling	Promotes single-service strategic tropisms
Broadens strategic debates and options	Limits operational jointness

Designating a political figure, such as the minister of defense, to chair the chiefs of staff committee is one means of exploiting inter-service rivalry, while limiting efficiency costs due to poor joint coordination. If the professional leaders of separate services cannot meet without political supervision, then political leaders will become exposed to their internal quarrels. Even if political leaders do not actively direct chiefs of staff meetings, knowledge of inter-service disputes enhances their leverage.

Broadly speaking, inter-service competition will be maximized when weak joint structures exist or political leaders oversee meetings of the armed services' chiefs of staff. On the contrary, inter-service rivalry will be weakest when a powerful joint staff exists, if the commander of the joint staff is designated the government's principal military advisor and when the chiefs of staff can

meet without political supervision. Table IV, below, highlights the organizational forms that promote or limit inter-service competition.

Table IV: Institutions and Inter-Service Competition	
<u>Promote Inter-Service Competition</u>	<u>Discourage Inter-Service Competition</u>
Service chiefs of staff coequal to chief of the joint staff	Chief of joint staff superior to service chiefs
Chiefs of staff meet under political supervision	Chiefs of staff negotiate joint positions before meeting with political leaders
Minimal or nonexistent joint staff	Powerful joint staff

While inter-service rivalry is one means of undermining the high command's monopoly on military expertise, "broadening the defense policy community" is another.⁴⁹ As Kimberly Zisk demonstrated in the Soviet context, political leaders can enhance their options by sponsoring think tanks focused on security matters. When given direct access to policymakers, think tanks permit social scientists, economists and retired military officers to offer analyses and tender recommendations. Introducing these new actors into policy debates hitherto dominated by military organizations provides political leaders with more sources of advice. By employing a variety of analytic approaches, think-tank experts also offer different perspectives. And their noninvolvement in military organizations' competition for wealth and autonomy also helps guarantee the objectivity of their recommendations.

Although broadening the policy community provides fresh outlooks for political leaders to consider, think tanks constitute an imperfect counterweight to a cohesive high command's monopoly on military expertise. Secrecy permits military organizations to conceal background information from think-tank analysts, who must rely more heavily on open sources.⁵⁰ If they suc-

cessfully restrict access to information, military organizations can discredit think tanks by arguing that their own analyses are based on superior data. Moreover, even when think tanks obtain classified data, their influence is generally limited to specific policy areas. Economists and social scientists can criticize procurement strategies, military doctrines and grand strategy. However, they generally lack the arcane knowledge to debate tactics or operations.⁵¹

From an institutional perspective, the impact of think tanks depends on their funding, access to classified information and contact with political leaders. When endowed with all three of these attributes, think tanks provide policymakers with new and additional sources of expertise, thereby enhancing political control of the armed forces. However, even if well funded, think tanks will have a marginal impact on defense policymaking if they rely on open sources and lack direct contact with decision-makers.

Duplication planning and advisory staffs constitute a third technique for reducing the ability of the armed forces to wield its monopoly on military expertise. Unlike inter-service rivalry, which generates single-service strategies, fostering competition amongst rival inter-service staffs will generate multiple joint recommendations about operations and doctrine. Also, the knowledge that political leaders have direct access to another source of equivalent expertise increases the incentives for the principal joint staff to collaborate wholeheartedly with political leaders, rather than profiting from its informational advantage to pursue policies it prefers for bureaucratic-political reasons. With the creation of a joint Presidents' Military Staff, French political leaders acquired a counterweight to the larger joint Armed Forces General Staff. As will be seen in later chapters, political leaders elicited separate proposals from each staff and selectively enacted recommendations emanating from each.

Erecting a system of parallel military staffs requires a conscientious campaign of institutional creation on the part of political leaders. Enshrining clear hierarchy as their leitmotiv,

armed forces are likely to oppose the existence of parallel staffs. Because it is impractical to create two joint staffs of equal size, political leaders must guard against the secondary staff becoming a subordinate appendage of larger staff. One means of guaranteeing the influence of the secondary staff is to give it superior access to political leaders than the principle staff, whose influence resides in its superior resources for implementing policy. Another means of empowering the secondary staff is to force the principle-staff to communicate with political leaders via the secondary staff.

Besides relying on inter-service rivalry, think tanks and parallel staffs to provide multiple policy options, political leaders can also enhance civilian control through educational programs designed to familiarize civilian elites with military affairs. Because military influence inversely correlates with civilian decision-makers' understanding of defense matters, increasing civilian expertise decreases the ability of military professionals to manipulate them. Even if not competent to run military operations themselves, knowledgeable civilians can better question, prod and direct the armed forces. Also, direct exposure to military professionals through a common post-graduate professional education permits civilian policymakers to nurture ties with individual officers, breaking down the otherwise monolithic nature of the military establishment.

Efforts to provide civilian elites with a national security education can take many forms. It can target either a restricted number of senior civil servants or broad segments of political, civil servant, industrial and academic elites. Educational programs can be nested within civilian universities or entrusted to specially conceived organizations. And civilians can be educated alongside military officers, or independently of them. When examined closely, seemingly similar educational programs appear highly distinct. For example, the British Royal College of Defence Studies (RCDS) and French Institut des Hautes Etudes de Défense Nationale (IHEDN) purportedly serve the same role, but 75 percent of the RCDS's trainees are military officers, while 66

percent of the IHEDN is comprised of civilians.⁵² In general, the impact of civilian education programs increases with the depth of instruction dispensed, the scope of the civilian audience addressed and the ability of civilian elites to foster links with rising military officers.

In short, although the armed forces' monopoly on professional military expertise constitutes one of the greatest obstacles to a high degree of political control over the armed forces, there are at least four institutional means diminishing information asymmetries between military professionals and political leaders. Table V, below, illustrates the strategies for enhancing civilian control and the institutional structures that correspond to them.

Table V: Strategies for Redressing the Asymmetric Balance of Expertise	
Strategy	Institutional Structures
Inter-Service Rivalry	Requires a weak joint staff and/or placing chiefs of staff committee meetings under political supervision
Broadening the Policy Community	Think-tanks must be created, given high quality information and accorded access to political leaders
Parallel Joint Military Staffs	Parallel military staffs must be created and given access to political leaders
Educating Civilian Decision-makers	Educational institutions must be created

As already discussed, each of these strategies for enhancing civilian control has its limits, but none of them are mutually exclusive. A combination of the above-mentioned institutions will permit political leaders to draw on multiple independent sources of advice on military affairs. However, if few or none of these institutions are present, the control exercised political leaders over the armed forces will be bounded by the armed forces' monopoly on professional military expertise.

While the maximal political control rests on politician's tapping multiple independent sources of military advice, it also requires intensive monitoring of military activities to guarantee that the armed forces are complying with political instructions. Unless they can verify how their orders are implemented, political leaders risk having their directives reinterpreted to suite the armed forces' internal preferences. In general, monitoring rests in equal measure on technical and organizational capabilities.

Advances in communications technologies have progressively enhanced the ability of political leaders to monitor military operations from afar. Both the instantaneity and quality of monitoring have improved from Abraham Lincoln's use of the telegraph to follow Civil War campaigns to Kennedy's exploitation of radio and teletype during the Cuban Missile Crisis. Information technologies and satellite imagery has recently enhanced the potential for civilian monitoring still further.⁵³ However, the ability to monitor military operations nevertheless depends on substantial investments in technical means and special facilities.

Although armed forces are likely to favor monitoring technologies because they permit the high command to supervise field commanders, they prefer that political leaders not have access to similar facilities.⁵⁴ For this reason, the physical location of monitoring facilities plays a crucial role in determining whether civilian leaders will be able to exploit them. The French government deliberately installed the Armed Forces' Operational Center underneath the Ministry of Defense so that the Minister and his civilian collaborators can descend without notice and monitor the progress of French operations throughout the world.⁵⁵ By way of contrast, the armed forces monitor British interventions from traditional military headquarters' such as Northwood and High Wycomb. Although in the London area, these headquarters are sufficiently far from Whitehall and Downing Street that political leaders have difficulty exerted a regular presence.

While technical monitoring enhances civilian control over military operations, it is less suited to more prosaic challenges such as ensuring that military doctrine and procurement practices are consonant with political desiderata. Dubbed "police patrol" monitoring, regular investigations of military behavior provides a powerful incentive for armed forces to comply with political directives. Dedicated investigatory bodies can audit, examine and report on military activities, informing political leaders whether or not their wishes are being complied with. Officers found guilty of ignoring political instructions can be punished or relieved, while more pliant ones can be promoted into key positions. In order to be effective, such investigatory bodies must have a high degree of technical expertise, access to all relevant information and complete independence from the armed services.⁵⁶

In addition to institutions that provide political leaders with multiple sources of advice and monitor military activities, a third institutional check on military autonomy lies in constraining the limits of military authority. In addition to the purely military functions of conducting operations and developing war plans, defense policymaking compasses many roles that can equally be undertaken by military officers or civil servants. Procurement policy, budget management, supply contracting, base construction, force level recommendations and intelligence are all functions that can be handled either by the armed forces or civilian agencies.⁵⁷

While armed forces may willingly divest themselves of routine management functions, they prefer to control areas such as procurement, force level recommendations and intelligence, which enhance their influence vis-à-vis political leaders. When the armed forces undertake all of the non-military tasks associated with defense policy, they will wield greater influence. By way of contrast, political leaders can constrain military influence by divesting armed forces of all functions besides those associated with their central function of preparing for and conducting military operations.⁵⁸

Although no single institution defines whether a state will enjoy maximal or minimal control over the armed forces, the aggregate influence of many institutional factors shapes the degree of control that political leaders will enjoy. The institutional structure of decision-making defines the degree of power different groups of actors will have over policy outcomes and how those groups will interact with one another.⁵⁹ Political control will be maximized when armed forces are divested of all non-military functions, monitored by electronic means and oversight agencies, counterbalanced by civilian think-tanks, divided by inter-service rivalries, managed by specially trained civilians and commanded via parallel, yet redundant, joint staffs. By way of contrast, military influence will be maximized when the armed forces control the non-military aspects of defense policymaking, deal with their political superiors as a monolithic whole, and can restrict the information available to civilians in both the government and think tanks. In short, institutions can be expected to determine which form of political control over the armed forces a state will enjoy.

V. The Origins of Civil-Military Institutions

If institutions play a critical role in determining how political leaders control armed forces, it is natural to examine the processes whereby states develop civil-military institutions. At a basic level, institutions are created to fulfil specific needs and are subject to regular revision. However, routine institutional change occurs along path-dependent trajectories, whereby future institutional change is conditioned by and reinforces already dominant patterns. This form of change characterizes most periods of time and represents how states respond to all but the most traumatic events. Disruptive institutional change is much rarer and only occurs when circumstances demonstrate that existing institutional structures are no longer viable. Only then are states likely to substantially reinvent their civil-military institutions.

Because most institutional change is self-reinforcing and disruptive institutional change is comparatively rare, institutional patterns and performance remain stable over long periods of time. Through research on other domains of state activity, scholars have demonstrated how persistent certain institutional structures can be. Examining the foundations of economic performance, Peter Hall and David Soskice demonstrate that distinct institutional structures, in place by the 1950s, have shaped both the comparative advantages that states possess and the commercial sectors where they excel.⁶⁰ Kees van Kersbergen, Philip Manow and Bernhard Ebbinghaus have argued that the origins of welfare regimes in today's advanced industrial states lie in institutional structures generated by political compromises reached as states industrialized and consolidated in the 19th century.⁶¹ Likewise, Stein Rokkan and Seymour Lipset proved that modern party systems have roots in how political cleavages were represented and institutionalized as states democratized.⁶²

If domains as different as economic performance, welfare regimes and political party structures are all influenced by institutional developments that occurred long ago, the question arises as to whether defense policymaking is also the product of institutional structures devised over time. The extant literature on institutions highlights three reasons why institutional patterns persist. Firstly, once stable institutions are established, there are costs to changing them. Secondly, political leaders tend to "satisfice" rather than optimize when it comes to institutions. Finally, because path-dependency produces multiple equilibriums that each produce comparative advantages, there may not be any clearly "optimal" set of civil-military institutions.

Ever since Niccolò Machiavelli, political scientists have recognized that reforming institutions is a costly process.⁶³ The costs of reforming institutions are threefold and lie in the opposition of groups opposed to the reform, the difficulty in predicting the performance of new institutions and the policymaking friction that tends to result whenever institutional structures are

subjected to comprehensive reform. Partisans of existing institutions will defend them, while beneficiaries of new ones will support change only lukewarmly.

Moreover, the performance of existing institutions is comparatively easy to measure, but it is unpredictable how new institutions will perform. Therefore, it is difficult to be certain that new institutions will prove better than those they replace and it is entirely possible that they contain unanticipated defects. In addition to the political opposition and uncertain outcome of institutional reforms, the friction generated by the reform process itself constitutes an obstacle to reform. Even if new institutions are superior to those they replace, changing from one institutional process to another temporarily creates chaos as existing hierarchical relations are replaced by new ones.

Because institutional reform is an unpredictable and costly process, political leaders tend to satisfice. As long as existing institutions perform adequately, political leaders will not seek to make them perform optimally. Satisficing is a rationale behavior on the part of political leaders because decision-makers rarely possess the information needed to judge whether alternative institutional arrangements would function better than those in place.⁶⁴

While the costs of change and the tendency to satisfice inhibit disruptive institutional change, political economists also suggest that diverse institutional structures underlay distinct comparative advantages. Neither minimal nor maximal control of the armed forces represents a superior form of organizing defense policymaking. Rather, each embodies unique comparative advantages. Because each system possesses its own logic, which is rooted in networks of complementary institutions, it is costly and of dubious utility to shift from one institutional pattern to another. By way of contrast, it is simpler to meet new challenges by modifying existing institutions in a manner keeping with their essential logic.⁶⁵

If routine institutional change is commonplace and disruptive change rare, then states can be expected to retain their existing institutional structures for defense policymaking in most circumstances. However, this begs the problem of how maximal civilian control comes about. Unlike its minimal counterpart, maximal civilian control depends on the existence of a network of specific institutions to provide alternative advice, monitor military activity and divest the armed services of non-military functions. Creating such institutions is clearly an act of disruptive institutional change. Thus, the question emerges as to what conditions are necessary for a disruptive reform of defense policymaking institutions to occur?

By its nature, disruptive institutional change is a product of events demonstrating massive failings in existing institutional arrangements. At base, civil-military control institutions serve two purposes: 1) protecting the state against external threats; and 2) ensuring government's control over the armed forces. By extension, either a catastrophic military defeat or a significant crisis in civil-military relations might prompt the disruptive reforms needed to create the institutional networks required for maximal civilian control of the armed forces.

It has frequently been argued that military defeat is a primary cause for defense reforms. France after 1763 and Prussia after 1806 are both prominent cases where catastrophic military failure prompted a transformation of military practices and institutions. Logically, civil-military institutions bear a degree of responsibility in military failures and should be reformed along with other aspects of defense policy. Faced with the inadequacy of existing arrangements, political leaders can be expected to impose a greater degree of political control on the armed forces.

However, it would be false to infer that military defeat inexorably leads to institutional reforms and increased civilian control. Catastrophic military defeats frequently weaken civilian regimes more than military organizations. Recriminations between political parties, the collapse of popular legitimacy and physical eviction from the buildings of government make it difficult

for political leaders to continue governing in the wake of catastrophic military defeat. By way of contrast, military headquarters and hierarchies continue functioning even when field armies are vanquished. While the German blitzkrieg of 10 May 1940 precipitated the collapse of French civilian government on 16 June, the armed forces high command continued to function and ultimately imposed its preferences on the state. Similarly, military defeat in 1918 led to the fall of the German monarchy and the enfeeblement of civilian government. However, the armed forces retained enough cohesion to play a critical role in the politics of the immediate post-war period.⁶⁶ In short, military defeat weakens civilian governments to a greater extent than military organizations.

Even should civilian governments retain the cohesion needed to propose reforms, defeat can exalt the status of the armed forces, rendering any diminution of their authority unpopular. However paradoxical, defeated peoples tend to rally around their armed forces as a symbol of national strength and defiance. When the subsequent histories of the defeat are written, the responsibility for military failure is all too frequently (and incorrectly) attributed to political rather than military leaders. Germany's defeat in 1918 was the result of a "stab in the back" from socialists at home, France's collapse in 1940 came about because of the penny-pinching and anti-military policies of the Popular Front, and the United States' failure in Vietnam resulted from the gradualism and micromanagement of the Johnson administration.

The tendency of defeated populations to lionize their armed forces and the ability of the armed forces to shift blame to civilians renders it problematic for political leaders to create institutions capable of exerting greater control. In fact, defeat strengthens the autonomy and power of armed forces at least as often as it weakens them. The German Army wielded more political power under the Weimar Republic than the Second Reich and defeat produced a military regime in France after 1940. In the United States, the armed forces were so successful at diffusing their

interpretation of the Vietnam War that the 15 years following withdrawal from Indochina were characterized by a progressive weakening of political control over the armed forces. General Creighton Abrams' restructuring of the Army (1972-74), the publication of the Weinberger-Powell Doctrine (1984) and the Goldwater-Nichols Act (1986) all reduced the options available to political leaders.

In short, although catastrophic military failure can theoretically catalyze disruptive institutional reforms, it is difficult for political leaders to create civil-military control institutions in the wake of defeat. Because defeat weakens civilian governments and enhances the popularity of the armed forces, civilian leaders lack the cohesion to propose reforms and military commanders can leverage their popularity to oppose them. While a tempting culprit for disruptive change, military defeat is rarely responsible for the creation of civil-military control institutions.

If military defeat does not prompt disruptive institutional change, then civil-military strife might. While military force remains the *regio ultima ratio*—the last argument of kings—and is a fundamental component of national power, militaries can also pose a threat to the civilian governments they theoretically serve. In many parts of the world, more governments fall to military coups d'états than foreign invasions.⁶⁷ While the danger of a military coup d'état appears to have vanished from the advanced industrialized regions of Western Europe, North America and North-East Asia, states such as Portugal (1974), Greece (1974), Spain (1975), South Korea (1979) and Poland (1981) have recently suffered coups or army rule.⁶⁸ In the slightly more distant past, France, Italy, Germany and Japan all experienced severe civil-military strife.

While the coup d'état is the penultimate form of military intervention in politics, it would be mistaken to define civil-military relations merely in terms of the presence or absence of coups d'états. S. E. Finer identified four types of civil-military dysfunction, in ascending gravity, including influence, blackmail, displacement and supplantation. A coup fits into Finer's final cate-

gory. However, blackmail, which consists of threatening resignation or disobedience to gain a favored outcome, and displacement, which involves the military precipitating the replacement of one civilian regime by another, also represents grave transgressions of civilian control of the armed forces.⁶⁹

After states experience severe civil-military strike, they guard against future problems by developing institutions to check the military's power and prevent their intervening in politics. Thus, as numerous scholars have observed, civil-military crises provide a powerful impetus for disruptive institutional change.⁷⁰ Although a wide variety of control mechanisms can be theoretically developed, few are compatible with democracy. The civil-military institutions discussed earlier in the context of how political leaders control the armed forces are amongst the only ones compatible with an industrializing and democratizing state.⁷¹ "Dividing and ruling" the armed forces through inter-service rivalries and parallel staffs, creating invasive means of monitoring military behavior and circumscribing military responsibilities prevent armed forces from acting against a state's legitimate political authorities, but do not undermine the broader process of state-building.⁷²

Once civil-military control institutions are in place, they are likely to continue to play a role shaping defense policymaking long after the danger of a civil-military crisis has receded into the background. It is generally agreed that the growth of civil society and a polity's belief in the legitimacy of a particular form of government close the door on the most egregious military interventions in politics. And by the time states become advanced industrialized democracies, a military coup d'état or army mutiny is a virtual impossibility.⁷³ However, there is no compelling reason why institutions created during decades or centuries of civil-military strife should vanish once the original threat has abated.⁷⁴

As long as civil-military control institutions do not generate significant negative externalities, governments are unlikely to abolish them. Moreover, a robust network of institutions can provide benefits that were not anticipated at the time they were first created. As already discussed, maximal civilian control of the armed forces provides distinct comparative advantages and political leaders are unlikely to surrender their enhanced powers.

By way of conclusion, past research on institutions and civil-military relations provides key insights into how states develop their civil-military policymaking institutions. Maximal civil-military control is more demanding in institutional terms than its minimal counterpart. Under most circumstances, civil-military institutions evolve gradually and along path-dependent trajectories. Only events that starkly demonstrate the inadequacy of existing institutions can prompt the degree of disruptive change needed to change from one structure of civil-military relations to another. Even catastrophic military defeats rarely produce this sort of change because blame for military failure is rarely clear, civilian governments are weakened in the process, and armed forces benefit from the patriotic ambiance following defeat. However, civil-military crises produce disruptive institutional change because they unambiguously demonstrate that existing levels of military autonomy pose a threat to civilian government.

Thus, states that have experienced significant civil-military conflicts are likely to possess a network of civil-military control institutions. At the time of their creation, these institutions exist for the express purpose of protecting civilian government from the armed forces. However, as time goes by and the risks of civil-military strife diminishes, civil-military control institutions persist and permit political leaders to exert a greater degree of control over the armed forces than would otherwise be possible. States that have not suffered from significant civil-military conflict are unlikely to ever feel the impetus to create the many institutions associated with maximal con-

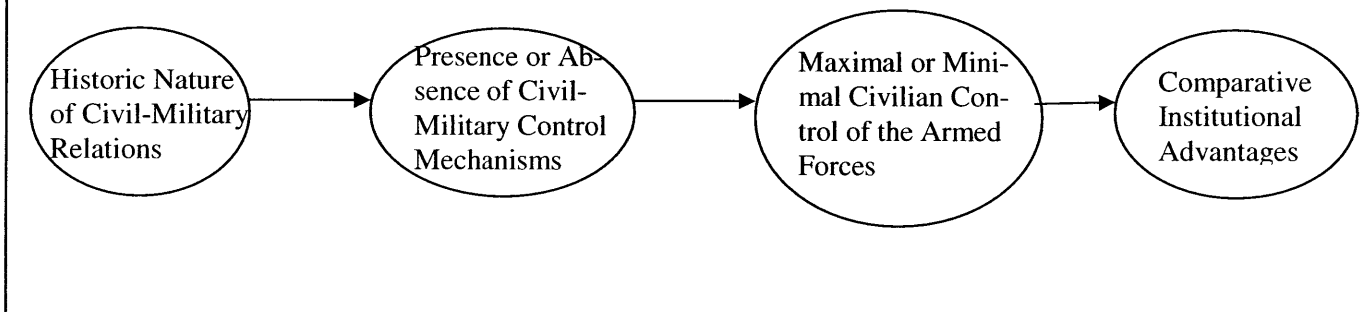
trol of the armed forces. Instead, the development of their civil-military institutions will evolve, by default, into a form of minimal control of the armed forces.

VI. Theory Summary

The theory I propose to explain defense policymaking in advanced industrialized democracies can be termed "Civil-Military Legacy Theory." Reduced to its fundamentals, civil-military legacy theory holds that historic patterns of civil-military relations underscore institutional patterns of civil-military relations in advanced industrialized states. Long after states are no longer prey to military interventions in politics, the institutions originally created to protect government *from* the armed forces will continue to shape how governments *use* military force. In states where civil-military conflict prompted sustained periods of institutional development, present day governments will possess institutional resources to exert maximal civilian control over defense policymaking. States with harmonious civil-military legacies will lack these institutional structures and will exercise a weaker degree of civilian control, manifested in a functional division of labor between political and military spheres. Each form of political control embodies distinct comparative advantages, one privileging the integration of military activities with the state's foreign policy, while the other provides for greater military effectiveness.

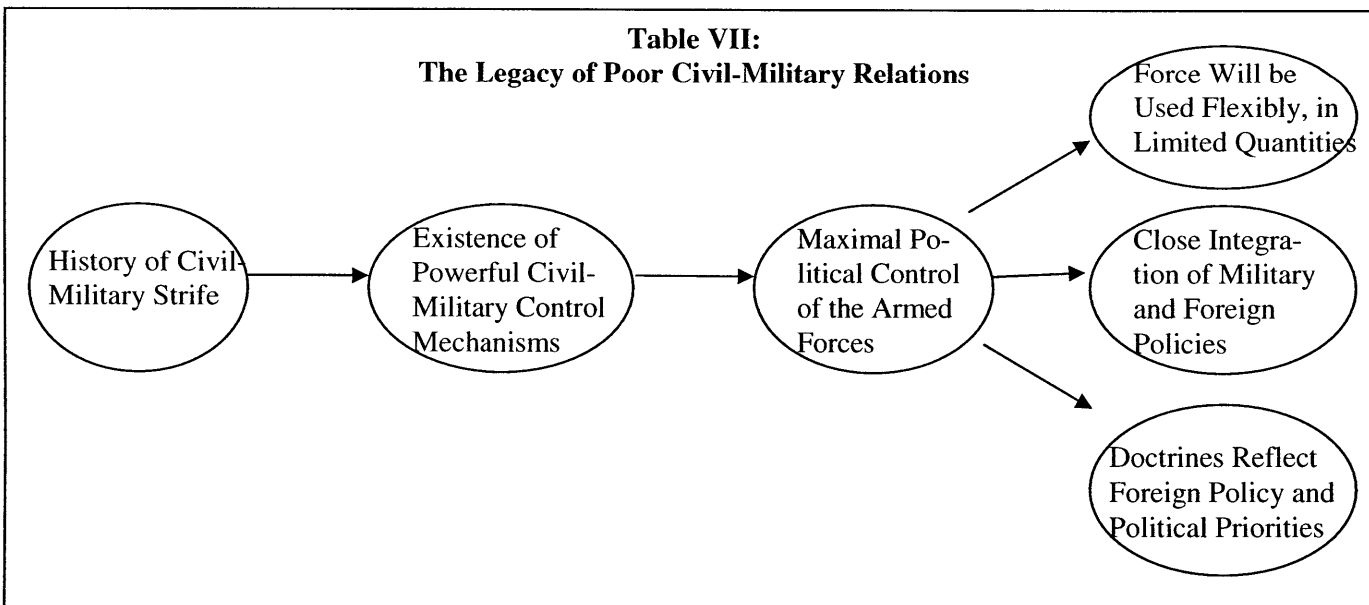
Explained by arrow diagrams, civil-military legacy theory possesses four steps in its causal chain. Table VI, below, illustrates the theory.

**Table VI:
Arrow Diagram (Generic) of Civil-Military Legacy Theory**

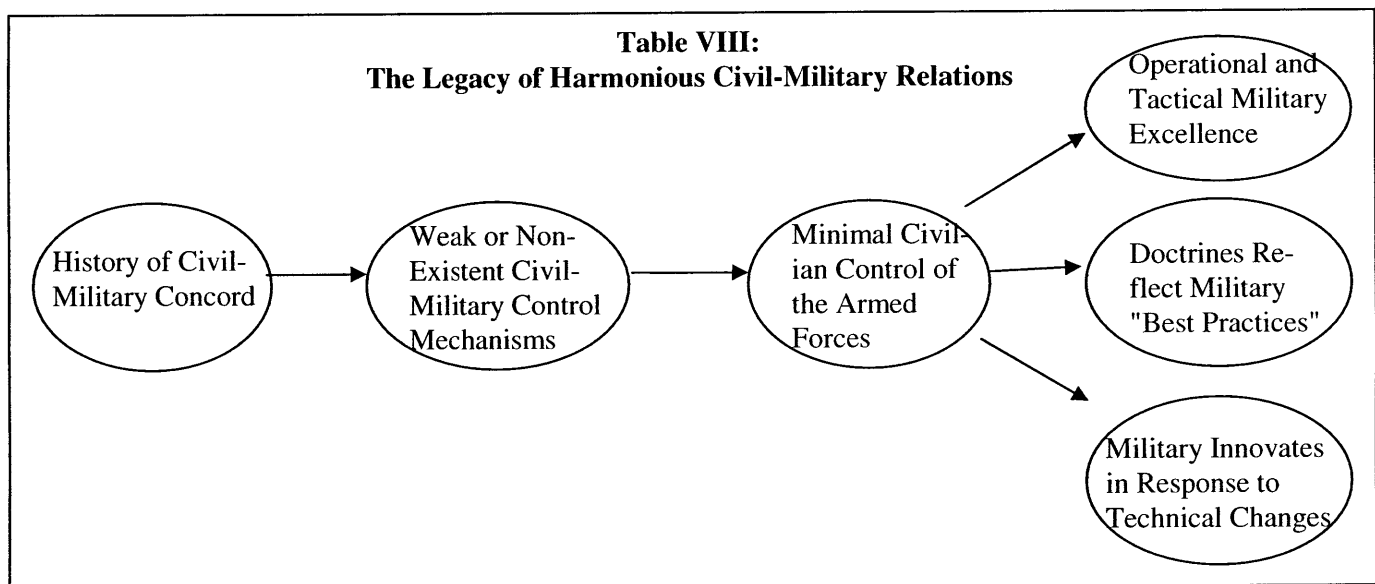


Because most of the variables in the theory are bi-variant, there are two ideal typical models of defense policymaking. In states that have suffered significant civil-military conflict in their pasts, the causal chain leads to the creation of a network of civil-military control institutions, the imposition of maximal political control over the armed forces and comparative advantages based on the tight integration of defense policies with the state's overall aims. Table VII, below, illustrates this causal chain.

**Table VII:
The Legacy of Poor Civil-Military Relations**



Conversely, states that have not suffered from civil-military problems are unlikely to develop elaborate institutional control mechanisms. Lacking the institutional tools, political leaders will exercise only minimal control of the armed forces. Political leaders will occupy themselves with determining foreign policy aims and allocating means to accomplish them, while the armed forces will enjoy substantial freedom to manage operations, doctrine and procurement. The resulting defense policies will reflect the professional judgments of military organizations above other considerations.



In the cases of both harmonious and contentious civil-military legacies, the character of present day defense policymaking derives from institutional developments prompted by circumstances that no longer exist.

To test civil-military legacy theory it is useful to break it down into six postulates.

Hypothesis #1: States that have suffered from substantial civil-military strife are likely to develop a network of civil-military control institutions. States that have enjoyed more harmonious civil-military relations are unlikely to possess these institutions.

Hypothesis #2: The danger of military interventions in politics recedes with the development of vibrant civil societies and the development of a belief that civilian government is legitimate. However, civil-military control institutions are likely to persist unless events prove them unreliable.

Hypothesis #3: The presence of a network of civil-military control institutions permits civilian leaders to exert maximal political control over the armed forces. This involves political leaders shaping military doctrine, micromanaging military interventions and dominating the procurement process.

Hypothesis #4: The absence of specific institutional structures consigns civilian leaders to exercising a minimal degree of political control over the armed forces. This consists of political leaders recognizing an independent sphere of military competence, and leaving military professionals a high degree of autonomy to manage operations and elaborate doctrine.

Hypothesis #5: Maximal political control of the armed forces is the source of distinct comparative advantages in the integration of military actions and doctrines with the overall foreign policy of the state. The disadvantages of this form of political control lay in the inexpert meddling of civilian politicians, who are less likely to comprehend military-technical realities than professional officers.

Hypothesis #6: Minimal political control of the armed forces is associated with other comparative advantages. More autonomous military organizations will be able to craft doctrines and conduct operations according to what the military profession considers "best practices." The drawbacks of minimal political control reside in the offensive and escalatory inclinations of military officers, and the likelihood that military actions will be poorly integrated with the state's foreign policy.

All six hypotheses will be tested in the seven case-study chapters that follow. While these hypotheses draw on existing theories of bureaucratic politics, civil-military relations and institutionalism, civil-military legacy theory represents the first attempt to connect past civil-military relations with present day institutional structures and military performance. If the theory can be demonstrated to hold true, it has powerful implications for students of security studies and comparative politics. The identification of systemically different national processes of defense policymaking should lead scholars of doctrine, war plans and military innovation to shift their focus from proposing universalistic theories to examining the particular processes by which different states produce military power.

Furthermore, by placing past civil-military relations at the heart of military performance, civil-military legacy theory should change the temporal outlook of scholars. Rather than examining only recent and large developments, a proper understanding of how a state produces military power obliges researchers to examine smaller and more remote events. Recognition that fundamentally different institutional processes underlay defense policymaking in advanced industrialized democracies may also open the door for developing policymaking typologies. Are maximal and minimal political controls the only two alternatives? Are they fixed categories or two extremes along a continuum, with mixed results possible? Finally, what implications do fundamental differences in domestic defense policymaking processes have for international cooperation? Especially in a European context, where many small and medium sized states are attempting to coordinate their defense policies and military interventions via the European Union and the North Atlantic Treaty Organization (NATO), do radically different models of political control of the armed forces pose a challenge to effective collaboration?

If proven to hold true, civil-military legacy theory will be a powerful analytic tool for understanding dynamics of defense policymaking and raises tantalizing questions for further inves-

tigation. Although the conclusion will touch further on the implications of the theory, the purpose of the following chapters is to test and hopefully prove the hypotheses underlying civil-military legacy theory.

VII. Road Map

To test civil-military legacy theory, I examine two states that have much in common, but differ according to their histories of civil-military relations. Both France and the United Kingdom are states whose levels of economic and democratic development render them immune from a military intrusion into politics. However, while the United Kingdom never experienced significant civil-military problems, France suffered from periodic civil-military turmoil for much of its modern history. The first successful military coup in France occurred in 1799, a decade after revolutionaries stormed the Bastille, while the last successful coup transpired exactly fifty-years ago, in May 1958. Because they differ according to this crucial independent variable, the United Kingdom and France can also be expected to vary in terms of the institutions they possess, the form of political control exercised and the types of policies that are enacted.

Similarities in other respects make it easier to determine the independent effect of institutions on policy outcomes. Unlike the United States, Britain and France both possess forms of government that concentrate political power in the hands of the executive. Cabinet government in the United Kingdom and semi-presidentialism in France grant a foreign and defense policy-making monopoly to the prime minister or president. Legislative oversight is virtually non-existent in both cases.⁷⁵

While their governmental systems are similar with respect to defense policymaking, the United Kingdom and France also have the same psychological views on the use of force. Unlike Japan, Germany and Italy, where the Second World War discredited the notion that military force

is a legitimate foreign policy tool, British and French leaders are swift to use force in defense of national interests. Both states also feel entitled to possess the entire gamut of weapons, including nuclear armaments.

During the period covered in my case studies, France and the United Kingdom dedicated almost identical resources to national defense. With populations of the same magnitude and similar technological means at a societal level, the two states had the same raw materials with which to plan the nation's defense. Moreover, as illustrated by Table IX below, France and the United Kingdom spent almost identical sums on defense.⁷⁶

<u>Country</u>	Mean Defense Spending Per Annum	Defense Spending As a % of GDP
United Kingdom	\$25.7 billion	4.9 %
France	\$25.7 billion	4.0 %

Saying that the United Kingdom and France are comparable does not mean that their foreign policies were identical. The United Kingdom strove to enhance its influence by positioning itself as the United States' most reliable ally, while France attempted to leverage its strategic independence to gain international influence and sympathy. Divergent views on the United States were reflected in different policies towards NATO, with Britain striving for a preeminent place and France keeping the alliance at arms length. Thus, comparability means that the United Kingdom and France dispose of similar means and face analogous constraints.

Tracing the origins of civil-military institutions and diagnosing their impact on policy-making requires in-depth process tracing of selected cases. The first step in testing civil-military legacy theory involves proving a relationship between historic civil-military relations and con-

temporary defense policymaking institutions. In Chapter 2, I explore the origins of civil-military institutions in the United Kingdom and France, weighing the relative impacts of routine functional pressures, military defeats and civil-military crises on institutional change. Because states are most liable to suffer from civil-military tensions while they are modernizing economically and democratizing politically, this chapter covers a temporally vast swath of time, from the late-eighteenth century to the mid-twentieth century.

Once the contours of British and French institutional structures are adequately defined, Chapters 3-8 examine the effects of these institutions on specific policy areas. To best ascertain the impact of different form of civilian control, I focus on three specific areas of defense policymaking where civil-military tensions run particularly high. In Chapters 3 and 4, I compare how France and Britain developed military doctrines and war plans. As already mentioned, prior research on civil-military interactions indicate that technical complexity and opacity make it particularly onerous for civilian leaders to meaningfully influence military doctrines.⁷⁷ Thus, military doctrine poses a tough test for the proposition that civilian leaders *can* shape military doctrines.

In Chapters 5 and 6, I examine the effect of civil-military institutions on procurement policies. According to Huntington, procurement is a policy domain that can either be managed by the armed forces, a civilian agency, or a combination of the two.⁷⁸ Under maximal control, civilian authority should be expected to be high, while military participation will be significant under minimal control. Because procurement involves defense policymaking institutions in intensive interactions with a variety of social actors, including enterprises and economic ministries, it provides a hard test for the ability of armed services to impose their preferences.

In Chapters 7 and 8, I contrast the way that France and the United Kingdom conduct military operations. Because the application of violent force lies at the heart of Huntington's definition of military professionalism, control of tactics and operations constitutes the core of his "in-

dependent sphere of military competence." Therefore, military organizations are likely to resist political intrusions into this domain with the greatest vehemence. However, because military success or failure can make or break a government, political leaders have a strong incentive to interfere. With political leaders prone to meddle and military commanders inclined to resist, military operations provide a valuable opportunity to examine the comparative power of each side.

Chapter 9 closes the dissertation with a conclusion summarizing the arguments presented and examining applications of civil-military legacy theory.

Because demonstrating the independent causal power of institutions is an empirically difficult task, the case studies in Chapters 3-8 demand rich sources of fine-grained information on how operational, tactical, doctrinal and procurement decisions were made. This sort of evidence is currently unavailable for events that transpired since the end of the Cold War. However, archival records, interviews with decision-makers and published primary sources provide the data for examining cases from the second half of the Cold War. For this reason, my case studies are drawn from the period stretching from 1965 until 1991. By 1965, France and the United Kingdom had largely divested themselves of their colonial empires, reducing both states to the status of middle-sized European states. With 1991 and the dissolution of the Soviet Union, the Cold War came to a definitive end, opening a new chapter in the history of the international relations.

While France and the United Kingdom were chosen as objects of study because they differ according to the independent variable (civil-military histories) and have rich sources of information available, both states are important actors in their own right. Although middle-sized states, France and the United Kingdom are recognized to exert more influence than their size alone would normally permit. Both states are permanent members of the United Nations Security Council and enjoy status as nuclear powers. Willing to use force to accomplish political goals, France and the United Kingdom have also intervened in more foreign conflicts than any state

besides the United States. Through these interventions, French and British decision-makers have arguably played a disproportionate role in shaping the contemporary world. Today, as European states attempt to formulate a single defense policy, France and the United Kingdom are the natural leaders of a more integrated and internationally assertive European Union (EU). Anglo-French concord is the probable motor for European defense integration, while Franco-British struggles for influence will likely mark the EU's policy debates.

In addition to proposing an innovative theory on the effects of civil-military legacies on defense policymaking, I hope that my work also illuminates the strengths, weaknesses and internal policymaking processes of two key international actors.

Endnotes

¹ Here I avoid using Huntington's terms of "subjective" and "objective" control of the armed forces. As Huntington presents them, these two modes of control represent a false dichotomy. For Huntington, subjective control aimed at "the maximizing of the power of some particular civilian group or groups [over the military]." For Huntington, this entails civilian leaders "trespassing" into military matters and politicizing the officer corps by promoting commanders based on their political credentials. The obverse of subjective control is objective control, which aims to professionalize the armed forces through "the recognition of autonomous military professionalism." Each of Huntington's two modes of control depends on two factors. Objective control combines a high degree of military autonomy with a high degree of military professionalism. Subjective control denies military autonomy and presupposes a lack of military professionalism. Unfortunately, Huntington's typology denies the possibility that high autonomy can be combined with low professionalism, or low autonomy with high professionalism. Huntington's explanation for his presentation of a dichotomy, when his two variables allow for four combinations, is that professionalism is a dependent variable of autonomy. Autonomous armed forces will be professional and non-autonomous armed forces will be unprofessional. Unfortunately, there is little proof for this proposition. Some armed forces, such as the West German Bundeswehr, sustained a high degree of professionalism despite severe limits on their autonomy. Others, such as many post-colonial African armed forces, have become unprofessional despite a high degree of autonomy. In fact, African cases demonstrate a trend whereby the professionalism of armed forces waned in direct proportion to their autonomy.

Another problematic assumption of Huntington is that unprofessional armed forces will intervene in politics, while professional ones will not. Morris Janowitz argues that professionalism creates pressure for the military to intervene in politics. According to Janowitz, "As the military profession grows larger and socially more heterogeneous, as it becomes more of a career, does not pressure develop for prestige recognition by the government at large?... Do not such trends force the military to become more obtrusive and place a strain on traditional patterns of civil-military relations." Several highly professional military organizations, such as the Israeli Army and the pre-World War II German Army, have played large role in national politics. Contrarily, the 19th century British Army, which remained one of the least "professional" amongst those of Europe's great powers, generally refrained from interference in domestic politics.

Because of the problematic nature of Huntington's categories, I have chosen to focus on the reality of how civilian control is exercised on the armed forces, which can either be in a minimal form that acknowledges an "independent military sphere" or a maximal form that allows for political intervention in all forms of military activity. See Samuel Huntington, *The Soldier and the State: The Theory and Politics of Civil-Military Relations* (Cambridge, Massachusetts: Harvard, 1998), 80-85; A.B. Assenson and Yvette Alex-Assenson, *African Military History and Politics: Coups and Ideological Incursions, 1900-present* (London: Palgrave, 2001); and Morris Janowitz, *The Professional Soldier: A Social and Political Portrait* quoted in Hew Strachem, *The Politics of the British Army* (Oxford: Clarendon Press, 1997), 23.

² Given Sun Tzu's laconic text and differences in translations, interpreting his views on civilian (royal) control is problematic. However, his text accords all authority over tactics, strategy, mobilizing resources, punishment and espionage to the military commander. The only role accorded the sovereign is selecting his general and, if necessary, relieving him. The 2nd Century General Cao Cao wrote in his commentary on Sun Tzu that "He [the sovereign] must dismiss and

get rid of the general that is incapable of laying [sound] plans." In his biography of Sun Tzu, the 1st Century historian Sima Qian left the most colourful account of Sun Tzu's views on civilian control. According to Sima, the King of Wu asked Sun Tzu to demonstrate his military prowess by drilling the women of his palace. When the women treated Sun Tzu's orders with derision, Sun Tzu ordered the execution of the king's two favorite concubines. The king attempted to stop the executions, but Sun Tzu replied, "You ordered me to assume the highest military command. He who is at the head of an army receives orders from no-one, not even his sovereign." Sun Tzu decapitated the concubines and the other women immediately accepted Sun Tzu's drill. See Valérie Niquet, trad., *Deux Commentaires de Sun Zi* (Paris: Economica, 1994), 4-5; and Sima Qian, *Mémoires Historiques: Vies de Chinois illustres* (Arles: Picquier, 2002), 48-49.

³ Clausewitz is emphatic about his vision of civilian control. Chapter Six of Book Eight in *On War* is where he elaborates his civil-military discourse most fully. According to Clausewitz, "Policy... is simply the trustee for all these interests against other states. That it can err, subserve the ambitions, private interests, and vanity of those in power, is neither here nor there. In no sense can the art of war ever be regarded as the preceptor of policy, and here we can only treat policy as representative of all interests of the community." In other words, while political leaders have the right to guide national policy and make mistakes, military leaders should not challenge their judgement about what constitutes national aims. Elsewhere, he added, "The assertion that a major military development, or plan for one, should be a matter of *purely military* opinion is unacceptable and could be damaging.... it makes even less sense for theoreticians to assert that all available military resources should be put at the disposal of the commander so that on their basis he can draw up purely military plans for a war or campaign." Concretely, Clausewitz proposed making the chief military commander a member of cabinet so that civilian leaders can participate in military decisions. Ironically, one major English translation from 1943 deformed this last recommendation to stating that the purpose of including the chief military commander in the cabinet was to enable him to participate in the cabinet's political discussions. See Carl von Clausewitz, *On War* (New York: Alfred Knopf, 1993), 732-35.

⁴ Huntington states that, "What does the military officer do when he is ordered by a statesman to take a measure which is in the military realm by extraneous considerations?... Here the existence of professional standards justifies military disobedience. The statesman has no business deciding, as Hitler did in the later phases of World War II, whether battalions in combat should advance or retreat (page 77)." Elsewhere, Huntington claims, "The military profession is expert and limited. Its members have specialized competence within their field and lack that competence outside their field. The relation of the profession to the state is based upon this natural division of labor.... The ideal military man is thus conservative in strategy, but open-minded and progressive with respect to new weapons and new tactical forms. He is equally expert in both the constant and variable aspects of military science.... It is this area within which the statesman must accept the judgements of the military professional (pages 70-71)." Finally, Huntington elaborates his view that, "The statesmen set the goal. It is them up to him [the military officer] to do the best he can. This is indeed the meaning of military strategy in relation to policy: 'the practical adaptation of the means placed at a general's disposal to the attainment of the object in view (page 72).'" Huntington, 70-78.

⁵ According to Huntington, "The military ethic emphasizes the permanence, irrationality, weakness, and evil in human nature.... It accepts the nation states as the highest form of political

organization and recognizes the continuing likelihood of wars among nation states. It emphasizes the importance of power in international relations and warns of the dangers to state security. It holds that the security of the state depends upon the creation and maintenance of strong military forces (page 79)." Huntington considered the "conservative realism" of military officers better adapted to national security affairs than liberalism, which Huntington diagnosed as the dominant American political ideology. For Huntington, "Liberalism originated in the assertion of the rights of the individual against the state. Liberal thought focused upon the relation of the individual to the state that the relations among individuals within a society. Liberalism never questioned the existence of the state. Instead it presupposed the state's self-sufficiency and external security (page 149)." Huntington likewise considered Marxism and Fascism incompatible with an optimal defense policy. See Huntington, 79, 91-93, 149, and 456-66.

⁶ Huntington, 69.

⁷ For von Moltke himself, "Politics uses war for the attainment of its ends; it operates decisively at the beginning and the end [of the conflict], of course in such manner that it refrains from increasing its demands during the war's duration or from being satisfied with an inadequate success.... Strategy can only direct its efforts towards the highest goal which the means available make attainable. In this way, it aids politics best, working only for its objectives, but in operations independent of it." The similarities between Huntington and von Moltke are not coincidental. According to Huntington, "The two outstanding military leaders of the [German] Empire -- von Moltke who was Chief of Staff from 1857 to 1888 and von Schlieffen who occupied the same post from 1891 to 1905 -- were both disciples of Clausewitz.... Under their influence the values and attitudes of the German military probably came closer to approximating the ideal-type military ethic than those of any other officer corps in history." See Moltke, quoted in Gordon Craig, *The Politics of the Prussian Army, 1640-1945* (London: Oxford University Press, 1955), 216; and Huntington, 100.

⁸ Jean Colin, *Les transformations de la guerre* (Paris: Economica, 1989, originally 1911), 241.

⁹ In discussing Huntington's influence, Elliot Cohen remarked, "Almost half a century ago, in what became a classic work of political science, Samuel P. Huntington set out a theory of civil-military relations to guide both civilians and soldiers in their relationships. *The Soldier and the State* has ever since set the terms of debate about civil-military relations in this country. A simplified secondhand version of the book has come, in fact, to be commonly viewed as the 'normal' theory of civil-military relations--the accepted theoretical standard by which the current reality is to be judged." Elliot Cohen, *Supreme Command: Soldiers, Statesmen, and Leadership in Wartime* (New York: FreePress, 2002), 226.

¹⁰ *Ibid.*, 186-88.

¹¹ In his classic treatment of the Vietnam War, long assigned at the United States Army's Command and General Staff College, Colonel Harry Summer's blames military leaders for not resisting civilian incursions into their sphere of competence. In his more recent book, H.R. McMaster claims that the Joint Chiefs of Staff had a "duty" to collectively resign in protest at how the President Lyndon Johnson and Defense Secretary Robert McNamara managed the Viet-

nam War. Harry Summers, *On Strategy: A Critical Analysis of the Vietnam War* (Novato, California: Presidio, 1982); and H.R. McMaster, *Dereliction of Duty: Lyndon Johnson, Robert McNamara, the Joint Chiefs of Staff, and the Lies that Led to Vietnam* (New York: Harper-Collins, 1997).

¹² Richard Betts, *Soldiers, Statesmen and Cold War Crises* (New York: Columbia University Press, 1991); and Peter Feaver and Christopher Gelpi, *Choosing Your Battles: American Civil-Military Relations and the Use of Force* (Princeton: Princeton University Press, 2004).

¹³ Stephen Rosen, *Winning the Next War: Innovation and the Modern Military* (Ithaca: Cornell University Press, 1991).

¹⁴ According to Graham Allison and Philip Zelikow, "The behavior of each of the U.S. military services (Army, Navy, and Air Force) seems to be characterized by effective imperatives to avoid, (1) a decrease in dollars budgeted, (2) a decrease in manpower, (3) a decrease in the number of key specialists (e.g., for the Air Force, pilots), (4) reduction in the percentage of military budget allocated to that service, (5) encroachment of other services on that service's roles and missions, and (6) inferiority to enemy weapon of any class." Peter Feaver adds that, "The military agent would prefer to deal with threats from a position of advantage, controlling the tempo and scope of the conflict.... The forgoing logic also suggests that the military agent would be more likely [than political leaders] to inflate threats and inflate requirements for meeting those threats so there would be less chance of being taken by surprise." Graham Allison and Philip Zelikow, *Essence of Decision: Explaining the Cuban Missile Crisis, Second Edition* (New York: Longman, 1999), 169; and Peter Feaver, *Armed Servants: Agency, Oversight, and Civil-Military Relations* (Cambridge, Massachusetts: Harvard University Press, 2003), 63.

¹⁵ According to Todd Sechser, "Military officers are socialized to envision national security as a strictly military problem. In this view, officers tend to undervalue economic and diplomatic aspects of international relations while fixating on the balance of military forces, thus exaggerating both threats external threats and the availability of opportunities to destroy them." Todd Sechser, "Are Soldiers Less War-Prone than Statesmen?," *The Journal of Conflict Resolution* 48, no. 5 (October 2004): 750.

¹⁶ Harold Lasswell's concept of the "garrison state" was an early articulation of this concept. For Lasswell, perceived threats to national security would permit "specialists on violence" to control a wide range of state behavior. Lasswell predicted that his new elite would suppress civilian consumption to channel research and production into the creation of large permanent armed forces, equipped with ever-improving equipment, and manned through universal conscription. In his examination as to why the Cold War did not transform the United States into a garrison state, Aaron Friedberg identified military pressures for measures such as universal military training (UMT), which would have monopolies of much greater resources. However, countervailing civilian influences played a critical role in preventing these measures from being implemented. According to Friedberg, "The 'strong' Soviet state lacked countervailing influences.... The end result, as some Russian observers are now quick to point out, was a true garrison state, one that sapped the nation's economy, militarized its society and led it ultimately to the brink of collapse and disintegration." Harold Lasswell, "The Garrison State," *The American Journal of*

Sociology 46, no. 4 (January 1941): 455-468; Aaron Friedberg, "Why Didn't the United States become a Garrison State," *International Security* 16, no. 4 (Spring 1992): 125-28, 142.

¹⁷ Jack Snyder, *The Ideology of the Offensive: Military Decision Making and the Disasters of 1914* (Ithaca: Cornell University Press, 1984); and Barry Posen, "Inadvertent Nuclear War?: Escalation and NATO's Northern Flank," *International Security* 7, no. 2 (Autumn 1982): 32.

¹⁸ Betts, 10-15.

¹⁹ The United States armed forces responded to their failure in Vietnam by demanding more force, with fewer limits. More soldiers, fewer bombing limits, the right to invade North Vietnam and the use of tactical nuclear weapons were all requested. Robert Buzzanco goes so far as to argue that the armed forces realized that their requests would be denied, but sought to shift the blame for failure to political leaders. Robert Buzzanco, *Masters of War: Military Dissent and the Politics of the Vietnam War* (Cambridge: Cambridge University Press, 1996), 345-49.

²⁰ Sechser, 750-51; 770-71.

²¹ Morton Halperin, *Bureaucratic Politics and Foreign Policy* (Washington D.C.: Brookings, 1974), 28.

²² Edward Katzenbach, J.R., "The Horse Cavalry in the Twentieth Century," rpt. in *The Use of Force* (Boston: Little, Brown and Company, 1971), 297.

²³ Andrew Krepinevich first observed that the United States Army refused to prepare to fight a counterinsurgency, using techniques similar to the British in Malaya, despite direct orders from President John Kennedy. Instead, the army attempted to apply its favored strategy of aggressive conventional operations. At a broader level, it appears as though the United States Army's vision of the military profession excludes serious preparation for operations other than war. Despite fighting Native Americans for much of its history, the army never developed a doctrine for "Indian fighting," but instead focused on waging European-style conventional wars. Andrew Krepinevich, *The Army in Vietnam* (Baltimore: Johns Hopkins University Press, 1986).

²⁴ Armed forces are actually aggregations of distinct platform communities. In general, there is a rough hierarchy between communities as to their power and prestige. Because military organizations are focused on fighting and reward heroism and glory, they elevate those communities directly engaged in combat. This means that combat arms are favored at the expense of support functions. For example, in the United States Navy, naval aviation, submarine and surface warship communities receive resources preferentially when compared to minesweepers and amphibious support ships. When military organizations control their budgets, they proceed down shopping lists that correspond to the informal hierarchy between different platform communities. Thus, the United States Navy may invest something in minesweepers if it receives an ample budget, however this investment will be disproportionately small when compared to its investment in aircraft carriers. When budgets are tighter, less prestigious platform communities are likely to suffer first. See Carl Bilder, *The Masks of War: American Military Styles in Strategy*

and *Analysis* (Washington D.C., Johns Hopkins University Press, 1989); and Allison and Zelikow, 171-72.

²⁵ Barry Posen emphasized the important of civil-military integration. See Barry Posen, *The Sources of Military Doctrine: France, Britain, and Germany Between the World Wars* (Ithaca: Cornell University Press, 1984), 227.

²⁶ Cohen.

²⁷ Posen, *The Sources of Military Doctrine: France, Britain, and Germany Between the World Wars*, passim.

²⁸ Craig, 291-93.

²⁹ Andrei Kokoshin, *Soviet Strategic Thought, 1917-91* (Cambridge, MIT Press, 1999): 147-92; David Glantz, *The Evolution of Soviet Operational Art, 1927-1991: Volume II, Operational Art, 1965-1991* (London: Frank Cass, 1995); and Richard Ned Lebow, "The Soviet Offensive in Europe: The Schlieffen Plan Revisited?" in *Soviet Military Policy* (Cambridge, MIT Press, 1989, article originally published 1985), 312-46.

³⁰ Feaver, *Armed Servants: Agency, Oversight, and Civil-Military Relations*, 68-71.

³¹ Norman Friedman, *The Fifty Year War: Conflict and Strategy in the Cold War* (Annapolis: Naval Institute Press, 2000), 377.

³² Rosen, 10-11.

³³ William Burr, "'Is this the best they can do?'" Henry Kissinger and the US quest for limited nuclear options," *War Plans and Alliances in the Cold War: Threat Perceptions in the East and West* (London: Routledge, 2006), 118-35.

³⁴ Allison and Zelikow, 230-36.

³⁵ Richard Neustadt originally argued that an (American) presidential order will only be executed if it is unambiguous, widely publicized to all who play a role in its execution and perceived as legitimate. Rosen has suggested that these arguments also apply to military innovation. Rosen, 10.

³⁶ Kimberly Zisk, *Engaging the Enemy: Organization Theory and Soviet Military Innovation, 1955-1991* (Princeton: Princeton University Press, 1993), 31-46.

³⁷ According to Huntington, "A group which is structurally united possesses great advantages in dealing with a group which is structurally disunited. If the officer corps is originally divided into land, sea, and air elements, and then is unified under the leadership of a single, over-all staff and military commander in chief, this change will tend to increase its authority with regard to other institutions of government. It will speak with one voice instead of three. Other

groups will not be able to play off one portion of the officer corps against another." Huntington, 87.

³⁸ Harvey Sapolsky, "The Interservice Competition Solution," *Breakthroughs* 5, no.1 (Spring 1996): 1; and Harvey Sapolsky, "On the Theory of Military Innovation," *Breakthroughs* 9, no.1 (Spring 2000): 38.

³⁹ Zisk argued that the overwhelmingly terrestrial nature of the threat facing the Soviet Union led that country to develop a "general staff system," wherein inter-service competition is muted and the state's overall defense policy is dominated by the ground forces. Analyzing France's failure to develop a powerful air force before the Second World War, Vennesson argues that the French Army's dominant position within the defense policymaking process permitted it to confine the Air Force to a supporting role. Zisk, *Engaging the Enemy: Organization Theory and Soviet Military Innovation, 1955-1991*, 32-37; and Pascal Vennesson, "Institution and Airpower: The Making of the French Air Force," *The Journal of Strategic Studies* (March 1995): 36-67.

⁴⁰ In his masterful study of the politics of the British Army, Hew Strachem argues that inter-service rivalry had become an excessively costly means of exercising political control over the British armed forces by the late 1950s. Strachem, 247-62.

⁴¹ In terms of personnel, the United States Air Force counts 336,081 personnel, the Navy's aviation branch counts 98,588, and Marine Aviation numbers, 34,700. By way of comparison, the British Royal Air Force possesses 41,920 personnel. Redundancy in the United States is affordable because of the relative scale of the United States' defense effort. For comparable air forces, the United States Marine Corps numbers a total of 175,350 personnel, whereas the entire British armed forces number 180,527. The International Institute for Strategic Studies, *The Military Balance, 2008* (London: Routledge, 2008), 29-46, 157-63.

⁴² However, few states can sustain the scale of defense effort needed to endow multiple services with redundant capabilities. Even in great powers, such as France and the United Kingdom, with military establishments of 250,000 and 180,000 respectively, inter-service redundancy has become an unaffordable luxury. *Ibid.*, 118-63.

⁴³ Peter de la Billière, *Storm Command: A Personal Account of the Gulf War* (London: HarperCollins, 1992), 92-93.

⁴⁴ Redundancy between services and a lack of inter-service cooperation reached pathological levels in the pre-World War II Japanese armed forces, where the Navy and Army replicated almost all of one another's basic functions. In one of the oddest examples of inter-service duplication, the Japanese Army operated three light aircraft carriers (*Akitsu Maru*, *Nigitsu Maru*, and *Shimane Maru*) designed to defense convoys, transport aircraft and play a combat support role. No fewer than four additional Army aircraft carriers were in various stages of completion when the war ended.

The Navy possessed its own infantry from the late-1920s, known as Special Naval Landing Forces (*rikusenti*). However, loath to acknowledge the Navy's pre-eminence in amphibious landings, the Army formed its own specialized amphibious forces, the Sea Landing Brigades. Not to be outdone, the Navy converted three of its naval infantry battalions into paratroop units,

which competed with the Army's larger paratroop units. See "World Aircraft Carrier List: Japanese Aircraft Carriers," *Haze Grey and Underway: Naval History and Photography*, www.hazegray.org (last accessed 18 May 2008); and G. Rottman and A. Takizawa, *Japanese Paratroop Forces of World War II* (London: Osprey, 2005).

⁴⁵ Huntington, 87; and Strachem, 260-62..

⁴⁶ The Goldwater-Nichols Act of 1986 designated the Chairman of the United States' Joint Chiefs of Staff as the primary military adviser to the president. The British preceded the Americans by designating the Chief of Defense Staff as the government's primary military advisor in 1982. Cohen, 189-90; and Bill Jackson and Dwin Bramall, *The Chiefs: The Story of the United Kingdom Chiefs of Staff* (London: Brassey's, 1992), 399-401.

⁴⁷ In the American case, the Joint Chiefs of Staff had worked out a system for inter-service log-rolling by the 1960s and 1970s that reduced the ability of civilians to play the services off against one another. It was dissatisfaction with the advice they were receiving that led Congress to empower the joint staff to a greater extent with the Goldwater-Nichols Act of 1986. Feaver, *Armed Servants: Agency, Oversight, and Civil-Military Relations*, 162; and Zisk, 31-46.

⁴⁸ Jackson and Bramall, 16.

⁴⁹ According to Zisk, "The term 'policy community' was developed to describe the influence that elite policy experts have over the range of ideas that are considered by policymakers. Those who have used the term to describe the American political system have stated that a policy community is defined by two characteristics: it is made up of people who have expertise in a certain policy area and are passionately concerned about policy outcomes in that area; and it is made up of people who interact with each other regularly to exchange ideas. Because political access of expert groups to the policy agenda is more limited in the Soviet Union than in the United States, I will add... a group enters a policy community when it obtains a certain degree of access to decision makers." Zisk, 21-22.

⁵⁰ Feaver, *Armed Servants: Agency, Oversight, and Civil-Military Relations*, 71.

⁵¹ *Ibid.*, 69.

⁵² "Defence Academy of the United Kingdom: Intellectual Excellence in Defence," www.da.mod.uk (last accessed 18 May 2008); and "IHEDN: Promouvoir la culture de la défense," www.ihedn.fr (last accessed 18 May 2008).

⁵³ Feaver, *Armed Servants: Agency, Oversight, and Civil-Military Relations*, 156-57.

⁵⁴ For example, although the United States Navy resented McNamara's intrusion into the Center for Naval Operations during the Cuban Missile Crisis; Chief of Naval Operations Admiral George Anderson complained about his not permitting the field commanders to run the Cuba blockade "by the book." On the other hand, the Joint Chiefs of Staff issued precise instructions for moving ships during the *Mayaguez* crisis of 1975. Thus, while the military high command resents political leaders using communications technologies to monitor operations from afar, it nonetheless draws on the same technologies to enhance its authority vis-à-vis field commanders.

Allison and Zelikow, 231-36; and Feaver, *Armed Servants: Agency, Oversight, and Civil-Military Relations*, 157.

⁵⁵ The Centre Opérationelle des Armées occupies two stories and 2500 m² underneath the ministry of defense. Jacques Isnard, "Enterré à Paris: Le centre nerveux des opérations," *le Monde* (19 January 1991).

⁵⁶ Feaver refers to such monitoring institutions as "police patrol" monitoring. According to Feaver, "An important indicator of police patrol monitoring is the size of the civilian secretariate of the Office of the Secretary of Defense and the service secretariats. These are extensions of the executive branch principals, the patrol officers, who are in place to monitor closely and direct the activities of their military counterparts. Accordingly, large numbers of civilian officials are evidence of a police patrol monitoring mechanism." While I agree with Feaver's emphasis on investigatory monitoring as a means of exerting civilian control, I question whether quantitative measures of numbers of civilian employees is the most effective means of measuring the strength of "police patrol" monitoring. Administrative independence, access to information and proximity to political leaders are, from my research, shown to be more important than sheer numbers of civilian employees. Feaver, *Armed Servants: Agency, Oversight, and Civil-Military Relations*, 84-85.

⁵⁷ Huntington proposed a typology wherein defense policymaking is divided into 1) professional military, 2) administrative-fiscal, and 3) policy-strategy functions. See Huntington, 428.

⁵⁸ Contradicting his earlier passages about the salutary effects of the conservative military perspective on broader national policymaking, Huntington argues that the optimal arrangement is one whereby the armed forces are divested of administrative and policymaking functions and forced to concentrate on their core responsibilities of planning and conducting military operations. Observing the status of the United States' Joint Chiefs of Staff, Huntington even remarked, "The fundamental need was to 'militarize' the Joint Chiefs, to divest them of their non-military functions and to develop appropriate organs to discharge the administrative-fiscal and policy-strategy responsibilities." *Ibid.*, 186-92, 428-30.

⁵⁹ Peter Hall and Rosemary Taylor, "Political Science and the Three New Institutionalisms," *Political Studies* (1996): 937-42.

⁶⁰ Peter Hall and David Soskice, ed., *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage* (Oxford: Oxford University Press, 2001); and Peter Hall, *Governing the Economy: The Politics of State Intervention in Britain and France* (Oxford: Oxford University Press, 1986).

⁶¹ Bernhard Ebbinghaus and Philip Manow, ed, *Comparing Welfare Capitalism: Social Policy and Political Economy in Europe, Japan and the USA* (London: Routledge, 2001); and Kees van Keersbergen, *Social Capitalism: A Study of Christian Democracy and the Welfare State* (London: Routledge, 1995).

⁶² Stein Rokkan and Seymore Lipset, ed., *Party Systems and Voter Alignments* (New York: The Free Press, 1967).

⁶³ In *The Prince*, Machiavelli stated: "It ought to be remembered that there is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, then to take the lead in the introduction of a new order of things. Because the innovator has for enemies all those who have done well under the old conditions, and lukewarm defenders in those who may do well under the new. This coolness arises partly from fear of the opponents, who have the laws on their side, and partly from the incredulity of men, who do not readily believe in new things until they have had a long experience of them. Thus it happens that whenever those who are hostile have the opportunity to attack they do it like partisans, whilst the others defend lukewarmly, in such wise that the prince is endangered along with them." Niccolò Machiavelli, *The Prince*, Chapter VI, www.gutenberg.org/files/1232/1232-h (last consulted June 6, 2008).

⁶⁴ The concept of satisficing was developed by economist Herbert Simon and combines the terms "satisfy" and "suffice." The concept of satisficing was developed as an alternative to optimizing. It argues that individuals sometimes pursue merely *satisfactory* rather than optimal outcomes. Subsequent work suggests that satisficing is a result of the difficulty of individuals examining all of the possible alternatives to a problem. Rather than systematically evaluate all outcomes, "The satisficer stops searching upon finding the first satisfactory alternative, where the agent is serially evaluating alternatives as to their likelihood of satisfying his or her preferences." Michael Byron, "Satisficing and Optimality," *Ethics* no. 109 (October 1998): 1-5.

⁶⁵ Paul Pierson, "Increasing Returns, Path Dependence, and the Study of Politics," *The American Political Science Review* 94, no. 2 (June 2000): 251-67.

⁶⁶ At the end of the First World War, the German Army: 1) forced the Kaiser to abdicate, 2) gave conditional support to the social democrats, and 3) organized the crushing of communist and sparticist movements. Craig, 346-63.

⁶⁷ There were approximately 357 attempted coups in the developing world between 1945 and 1985. Almost half of all third world states experienced a military coup d'état. Of the attempted coups d'états, over half (183 or 51 percent) were successful. Between 1986 and 2000, there were a further 75 attempted coups d'états. In 1958, 60 percent of the world's states were governed directly or indirectly by the military. Aaron Belkin and Evan Schofer, "Toward a Structural Understanding of Coup Risk," *The Journal of Conflict Resolution* 45, no. 5 (October 2003): 596; and Strachan, 8.

⁶⁸ The vulnerability of a society to military coups d'états is highly correlated with: 1) the degree to which independent civil society organizations exist; and 2) the perceived legitimacy of the ruling form of government. Because the strength of civil society and support for democratic forms of government both correlate highly with per capita wealth, coups d'état are least likely in advanced industrialized democracies. However, there is nothing inherent about democracy that impedes coups d'états. Poor democracies in Africa, Southeast Asia and the Americas have frequently been overthrown. Equally, certain non-democratic regimes, such as revolutionary communist governments, Islamic theocracies and traditional monarchies, have exhibited a certain

immunity from coups d'états because of their ability to draw legitimacy from other sources. Belkin and Schofer, 594-620.

⁶⁹ S. E. Finer, *The Man on Horseback: The Role of the Military in Politics*, 2nd ed. (Boulder, CO: Westview, 1988).

⁷⁰ P.W. Zagorski, *Democracy vs. National Security: Civil-Military Relations in Latin America* (Boulder, Colorado: Lynne Rienner, 1992); J.T. Quinlivan, "Coupe-proofing: Its Practice and Consequences in the Middle East," *International Security* no. 24 (1999): 131-65; and Donald Horowitz, *Ethnic Groups in Conflict* (Berkeley: California, 1985), 533-59.

⁷¹ J. Migdal, *Strong Societies and Weak States* (Princeton: Princeton University Press, 1988). *passim*.

⁷² The gamut of coup-proofing strategies discussed in this literature is much wider than the institutions discussed above and includes ethnically stacking the army, bribing commanders to behave, hiring foreigners to serve as a praetorian guard, conducting regular purges of the officer corps and ideologically indoctrinating soldiers in a particular ideology. However, many of these practices are prejudicial to democracy because they transform the armed forces into the tool of a single ethnic group or faction, rather than the state as a whole.

⁷³ Most scholars of civil-military relations are unanimous in the belief that modern liberal democracies are immune to the worse forms of civil-military strife. Edward Luttwak argued that the participation of a small elite in government and a high centralization of decision-making in a single location renders coups more likely. Therefore, democracy and federalism provide the best antidotes to the threat of coups. Finer contended that power vacuums and domestic political crises provide military with the opportunity to intervene in politics. In this context, stable government provides the best remedy. Curzio Malaparte provided the first argument that civil society could foil a military coup in his analysis of General Kapp's putsch in 1922. Finer; Belkin and Schofer; Edward Luttwak, *Coup d'Etat* (London: Penguin, 1968), 28-56; and Curzio Malaparte, *Coup d'Etat*.

⁷⁴ Without examining the subject, Belkin and Schofer postulate that states that are guaranteed against coups by a vibrant civil society and legitimate government will not also possess coup-proofing institutions. However, a long tradition of research into institutions highlights the tendency of institutions to outlive their original leitmotif and adapt themselves to new circumstances. Belkin and Schofer, 599.

⁷⁵ Both Samuel Huntington and, more recently, Deborah Avant, have highlighted the critical role of a powerful and independent legislature in shaping American defense policymaking. Because of Congress' power, the executive branch has greater difficulty imposing its will on the armed forces. Congress gives the armed forces a platform to legally express discontent with the government and contest unpopular policies. According to Avant, the armed forces used Congress to evade presidential orders to fight the Vietnam War differently. Deborah Avant, "The Institutional Sources of Military Doctrine: Hegemons in Peripheral Wars," *International Studies Quarterly* 37, no. 4 (December 1993): 409-430; and Huntington, 163-92.

⁷⁶ *World Armaments and Disarmaments, SIPRI Yearbook 1985* (London: Taylor and Francis, 1985), 271, 277.

⁷⁷ Rosen, 57-105.

⁷⁸ Huntington, 428-29.

Chapter II:

The Origins of Civil-Military Institutions

I. Introduction

Writing in the early 19th century, Prussian military theorist Karl von Clausewitz observed that war was the extension of politics by other means. With this apparently anodyne statement, Clausewitz advanced a normative ideal as to what the proper relationship between armed forces and governments ought to be. If military force is a means of achieving the ends set by a state's political leaders, then the high command of the armed forces must be subordinate to the government. Occupying this proper and subservient role in a well-constituted state, armed forces need only concern themselves with perfecting the martial skills needed to vanquish international opponents. Confident in the loyalty of its military servants, governments can draw on the leaders of their armed forces as a reservoir of the specialized knowledge and capabilities necessary for survival in an international environment characterized by antagonistic relations between states.

Ironically, Clausewitz's military idol, Napoleon Bonaparte, demonstrated precisely how problematic it can be for a state to wield, yet control military force. As the most powerful component of the state's "monopoly on legitimate violence," armed forces are physically capable of imposing their will on civilian governments and essential to defending states against significant internal threats. Before ever commanding an army, Napoleon used artillery to dispel rioters threatening the Directory ruling France. Napoleon learnt from this experience how dependent civilian government is on military forces serving it and how force (a proverbial "whiff of grapeshot") can be used to quell civilian malcontents. After subduing Italy at the head of a French army and leading

another French army, less successfully, to the pyramids, Napoleon seized power with the help of only a handful of soldiers.

Seven years of warfare and the combined armies of Europe's monarchies failed to unseat France's revolutionary governments. However, on 9 November 1799 (the 18th Brumaire), a single ambitious general and a small number of loyal soldiers succeeded where Prussia, Russia, Austria and the United Kingdom had not.

The gulf between Clausewitz's ideal of subservient and professional armed forces and the reality of Napoleon's creation of the first modern military dictatorship demonstrates the ambiguity of the relationship between armed forces and the states they are supposed to serve. While armed forces represent the state's final rampart against foreign aggression and provide the state's most forceful means of imposing its will on rivals, armed forces also constitute a threat to the governments they are supposed to serve.

The problem of armed forces abusing their position transcends the question of coups d'états. There are many other ways that armed forces can depart from perfect obedience. Without seizing power, armed forces can substitute one civilian regime for another, sabotage government policies, precipitate unwanted wars, refuse to defend the state from internal disturbances and claim excessive human and material resources. Peter Feaver likened all military deviations from civilian preferences to "shirking" within a principal-agent framework.¹ More specifically, S. E. Finer identified four types of civil-military dysfunction, in ascending order—influence, blackmail, displacement and supplantation, with coups d'états fitting into the final category.

The dual nature of armed forces, as the guardians of a state against external threats, yet themselves representing a threat to domestic regimes, cannot help but impact how armed forces are structured and integrated with the rest of government. Armed forces are amongst the oldest, most costly and largest bureaucratic organizations. The institutional structures needed to produce, manage and control armed force have evolved continuously, although at highly variable speeds. Two distinct causes account for a vast majority of institutional reforms. The first category of factors prompting institutional reforms are the functional imperatives of adapting existing military institutions to perform more effectively and/or fulfill new combat roles. The second category of factors has to do with improving the ability of governments to control their armed forces.

Warfare has changed immensely since the birth of bureaucratic armies and navies. With the industrial revolution, military bureaucracies had to develop institutional mechanisms for introducing new technology. After centuries of dominance, the muzzle-loading canon, horse and musket have been displaced by waves of innovation, including quick-firing guns, breech-loading rifles, nitrous explosives, machine guns, tanks, gas, aircraft, rockets and nuclear weapons. Failure to introduce technology as efficiently as one's enemies has meant defeat, if not national extinction.

Likewise, armed forces have had to develop the planning capacity, embodied in the general staff system, to foresee the many separate tasks comprised in a military action or campaign. To master new technologies and lay complex plans requires a more professional military ethic and education than existed in ancien regime Europe. More recently, the need to combine the actions of diverse military services has led to the development of combined or joint staffs, schools and ministries of defense.

The functional demands of improving military effectiveness are such that many institutional innovations have been international in scope. Modern military academies were founded in Europe and the United States at the beginning of the 19th century. General staff systems multiplied throughout Europe and abroad after the German victories of 1866 and 1870 demonstrated their utility. Later, the United States, the United Kingdom and France developed multi-service ministries of defense within the space of a couple decades. International competition obliges states to respond to foreign improvements in military institutions, either by copying foreign institutions or developing a domestic counter to them.

If the functional demands of military efficiency are one source of pressure for institutional reform, the need to guarantee or improve political control of armed forces provides another. Because military force is capable of overthrowing the regime it is supposed to serve, governments have developed institutional structures and processes designed to control their armed forces. Historically, these systems have adopted a wide variety of forms, including political commissars, parallel militias, paramilitary forces, the selection of commanders based on political criteria, invasive intelligence agencies and divided command structures.

Not all structures designed to enable civilian leaders to control their armed forces are of equal efficacy however. Civil-military control institutions are frequently found wanting, either because they fail at their primary task of controlling the armed forces, or because they adversely impact on military effectiveness. In both cases, proven defects in civil-military institutions are habitually addressed by new rounds of institutional reform.

Thus, civil-military institutions can be the product of two distinct set of concerns—the need for greater military effectiveness and the struggle of governments to assert control over their armed forces. Perceived shortcomings or manifest failings in either domain are likely to prompt further cycles of institutional development. Conversely, existing institutions are less likely to be subjected to disruptive reforms if they are perceived to function adequately. As such, an Army that has never been defeated is less likely to be subjected to significant reforms aimed at improving its military efficacy than one that has suffered substantial and unexpected reverses. Similarly, an Army that has never given its political masters cause to fear is less likely to have its autonomy questioned and be saddled with intrusive control institutions than one that has meddled in politics. Finally, if institutional reform is highly correlated with failure of existing structures to provide either military victory or civil-military peace, then periods of domestic and international calm will be less likely to witness dramatic change than more tumultuous periods.

This chapter will examine the evolution of civil-military institutions in France and the United Kingdom, from the beginning of the modern-era in 1789 until the latter stages of de-colonization in the 1960s. Compared to the subsequent decades, this period witnessed waves of significant political and strategic upheavals. Major wars alternatively confronted France and the United Kingdom with evidence that their existing institutions needed to be improved. At the same time, both states evolved from early modern forms of government—an absolute monarchy in France’s case and a limited democracy in the United Kingdom’s case—to liberal democracies based on universal adult suffrage. In France’s case this transformation was accompanied by considerable tension between

military and civilian elites. In the United Kingdom, civil-military relations were comparatively calm, although problems were not entirely absent.

Neither state has endured a significant military or a civil-military crisis since the mid-1960s. If reforms of civil-military institutions are prompted by the failure of existing arrangements under the pressure of events, then it is reasonable to assume that the institutional structures of defense policymaking in France and the United Kingdom have evolved slowly since the mid-1960s, compared with the preceding epoch when periodic crises promoted disruptive reforms.

If one accepts the argument that the process of institutional creation is more rapid during crises than periods of calm, then civil-military institutions in France and the United Kingdom evolved in two very different environments. In the United Kingdom, civil-military institutions evolved under the sole constraint of improving military efficiency. Military disasters, including the siege of Sebastopol, the British Army's "Black Week" of 1899, the strategic controversies of 1917 and necessities of joint- and global-warfare during the Second World War all expedited institutional reform.

As in the United Kingdom, civil-military institutions in France were also periodically renovated in the wake of military defeat—the debacles of 1870 and 1940 providing the most notable examples. However, French institutions were also reformed in response to a sequence of civil-military crisis. The Boulanger Crisis, the Dreyfus Affair, the governmental crisis of 1940 and the General's Putsch of 1961 prompted civilian governments to act to prevent similar events from repeating themselves in the future.

Civil-military institutions in the United Kingdom were the result of the state's need to defend itself against foreign threats, while equivalent institutions in France delicately balanced the imperatives of thwarting external enemies with protecting the Republic's government from its own armed forces.

II. France, 1789-1871: The Origins of Civil-Military Problems

As with most aspects of French history, the Revolution of 1789 looms chasm-like in French civil-military relations, separating the modern-era from the more distant past. The *ancien regime* was a period of civil-military harmony, at least at the elite level. Noble and bourgeois officers had an innate loyalty to monarch and state. This relationship was reinforced by the symbiosis of the highest echelons of the armed forces and the state. Major commanders frequented the royal court, while the king periodically accompanied his armies in the field.

Revolution fissured this edifice of civil-military relations. When the Revolution took a radical turn with the King's arrest and the purge of the Girondins, much of the officer corps emigrated or fought for France's enemies. Faced with the rapid collapse of the Monarchy's officer corps, the Republic hurriedly created a new one out of the few Royal officers remaining loyal, non-commissioned officers promoted from the ranks, revolutionary politicians and fresh volunteers.

Although the new officer corps won its first battle in September 1792, mistrust colored the relations of the Republic with its generals. During the debates preceding the Republic's declaration of war, Jacobin leader Maximillian Robespierre warned that war would permit a military Caesar to overthrow the Republic. Over the course of the

following years, the Republic's efforts to control its officers and the panicked responses of these latter did little to improve civil-military relations. The Jacobin-run Committee for Public Safety dispatched political commissars to the armies and guillotined commanders suspected of disloyalty. Fearing for their lives, a number of prominent generals, including Lafayette, Rochambeau and Dumoriez defected to France's enemies.

At the same time, officers were promoted for political reliability rather than military experience. Some of these men, including Napoleon Bonaparte, proved remarkable strategists, while others, such as Generals Léchelle and Westermann, were dismal failures.² Whatever their abilities, politicized officers helped political factions crush opponents. Before ever commanding armies, Napoleon and Joachim Murat (future Marshal of France and King of Naples) used artillery and cavalry to disperse a Parisian royalist mob on 13 Vendemiaire 1795. Four years later, political schemers, including Napoleon's brother, convinced the general to overthrow the governing Directory.

Napoleon seized this opportunity and took power in the coup d'état of 18 Brumaire. However, contrary to the expectations of civilian politicians, Napoleon kept power for himself and ruled France as a dictator. Thus, in 1799, a Jacobin general realised Robespierre's nightmare, the advent of a French Caesar. Superficially, Napoleon brought an end to the ambiguities of civil-military relations in revolutionary France. Having seized power in a coup d'état. Napoleon placated civilian elites with reforms of public administration, including the creation of the Code Civil, the metric system and the establishment of prefectures. He also rendered his new regime more palatable to catholics by signing a concordate with the Vatican.

On the military level, Napoleon struggled to co-opt the Army's elites into his regime. He bestowed the rank of Marshal and gave peerages in the imperial nobility to influential generals. To coerce where co-opting might fail, Napoleon created his own praetorian institution—the Imperial Guard—and established an efficient secret police. While these measures solidified Napoleon's authority, he never assured himself of unquestioned loyalty.

Having built his power on support from comrades-of-arms from the Army of Italy, Napoleon possessed only the equivocal allegiance of the Army of the Rhine. After a political disagreement, Napoleon exiled the popular former commander of the Army of the Rhine, General Jean-Victor Moreau.³ Although Moreau's exile prevented his serving as a rallying point for military disaffection, the tenuous nature of Napoleon's hold over the officer corps became apparent after he began suffering military setbacks. As France's *Grande Armée* braved atrocious weather and enemy attacks during the 1812 retreat from Russia, General Claude-François de Malet attempted a Republican coup d'état.⁴

While Malet's coup d'état failed, Napoleon faced two French generals in battle the following year, 1813. Having become king of Sweden, Marshal Jean Baptiste Bernadotte joined the coalition against Napoleon to win the French throne.⁵ Meanwhile, as military councilor to Tsar Alexander I, Moreau assisted Russia in toppling Napoleon's dictatorship.⁶ The defeats of 1814 had an even more dramatic effect, prompting many of Napoleon's closest associates to abandon or betray him.

During 1814 and 1815, when France changed regimes three times, the fragility of French civil-military relations became apparent. While most French officers followed Napoleon so long as the Emperor was victorious, the prospect of military collapse raised

the question of to whom did commanders owe their loyalty—a given regime, the state, the nation or merely their own interests. The absence of any universally accepted definition of loyalty helps explain the many unpredictable changes of allegiance leading to two monarchic restorations and Napoleon’s “Hundred Days.”

Louis XVIII’s definitive restoration in 1815 and Napoleon’s exile to South Atlantic brought an end to a period of civil-military crises. Nevertheless, it would be a mistake to infer that the reestablishment of the Bourbon monarchy marked a return to the civil-military symbiosis of the *ancien regime*. By and large, the Restoration inherited an officer corps that was a product of the Revolutionary and Napoleonic Wars. Officers were more liberal than the state’s governing elite and retired generals became pillars of the left-wing opposition.⁷ The Monarchy’s policy of reincorporating émigré officers into the Army did little to change the institution’s political coloration, which only evolved with the passage of time and the aging of revolutionary officers.⁸

During this epoch, many officers came to distinguish between the regime and the state. French officers owed the state enthusiastic loyalty, but only formal obedience to the regime. Explaining this doctrine of “passive obedience,” Raoul Girardet remarked that, “The political loyalty of the Army thus became both revocable and perpetual. It [the loyalty] was not attached to any one of the changing political regimes, but to the concept of political power itself.”⁹ This concept of “passive obedience” was problematic because it left ambiguous when a regime was considered “in power.” The situation was clear so long as the government issued clear orders from official buildings in Paris, however did the Army still owe the regime loyalty if the government abandoned the national capital? What if two “legitimate” authorities competed for the Army’s support?

When Parisian crowds attacked the Bourbon monarchy in 1830, the Paris garrison struggled for three days to repress the insurrection. The Army followed royal orders as long as King Charles X remained in power. However, military commanders did not display great zeal in their task and withdrew to barracks once the king abdicated. When the new constitutional “Monarchy of July” faced popular insurrections in 1831 (Lyon), 1832 (Paris) and 1834 (Lyon and Paris), the Army obeyed the dictates of King Louis-Philippe. During the Revolution of February 1848, the Army followed the government's orders with lackluster enthusiasm until the regime abdicated.¹⁰ Ultimately, Charles X and Louis-Philippe surrendered power once the Paris garrison failed to put-down uprisings. Neither monarch attempted to call on outside military forces to retake the capital because they were uncertain how the Army would respond.

The low-prestige and apolitical Army of the Restoration and Monarchy of July came to an abrupt end with the revolutions of 1848. After the successful February revolution, fresh disturbances in June prompted France’s national assembly to invest General Louis Cavaignac with executive authority. Cavaignac, in turn, used 50,000 regular soldiers to suppress Paris—killing 1,500 insurgents and deporting a further 11,000. The June 1848 disturbances marked a minor watershed in French civil-military relations, with the Army using hitherto undreamt of force to repress social unrest.¹¹

Although the French Army did no more than it had during previous crises, obeying the orders of a legally constituted regime, the nature of the 1848 combats altered the Army’s perceived role in society. A significant portion of the French populace, including the peasantry and the bourgeoisie, came to view the Army as a rampart against

socialism and the urban proletariat. Conversely, the French political left began to see the Army as a force of political reaction and obstacle to social progress.

In the meantime, the Army's entry into politics did not end with the repression of 1848. In December 1848, an unlikely alliance of populists, peasants and monarchists swept Louis Napoleon Bonaparte, the nephew of Emperor Napoleon I, to power.¹² Faced with disputes between the President and a National Assembly dominated by conservative monarchists, Louis Napoleon mounted a coup d'état against the National Assembly on 2 December 1851. Although Louis Napoleon's coup d'état was an act of one elected institution (the presidency) against another (the legislature), it benefited from military support and was partially planned by General Le Roy Saint-Arnauld.

Under the Second Empire, which Louis Napoleon ruled as Emperor Napoleon III, France's armed forces were revalorized after decades of neglect. Imitating his uncle, Louis Napoleon made military pomp a feature of official festivities, recreated the Imperial Guard and dressed in military uniform. He showered titles on successful generals and invested heavily in new barracks and weaponry. These intangible signs gave the Second Empire a martial air.¹³ At the same time, Louis Napoleon broke with the conservative foreign policies of the Restoration and Monarchy of July.

Soon French armies were once again engaged in foreign campaigns against major armies, providing martial glory and greater visibility within France. During the Crimean War (1854 to 1856), the French Army proved more competent than its British, Russian, Sardinian and Turkish counterparts, before going on to vanquish the Austrian Army in Italy in 1858 and 1859. Added to numerous colonial campaigns and the navy's development of the first ironclad, these triumphs restored the French Army's prestige.

Unfortunately, martial pomp and close civil-military relations failed to overcome Prussia. When France declared war on Prussia in 1870, French military commanders proved incapable of mobilizing and maneuvering large military forces. The French Army neither had a General Staff nor any body designated, during peacetime, with elaborating war plans. The Army botched its mobilization and concentration of troops by railway. In less than a month, German armies surrounded France's largest army in Metz and then cut-off its reserve army at Sedan. Personally accompanying the reserve army, Napoleon III was captured at Sedan. On 4 September 1870, the Third Republic was proclaimed in Paris.

The birth of the Republic was attended by unparalleled military and civil-military challenges. Militarily, the state produced new armies in a vain attempt to break the German siege of Paris. After the inevitable conclusion of a disadvantageous peace with the new German Empire, the provisional government confronted a mass uprising, the Paris Commune, whose suppression resulted in 20,000 insurgent deaths and contributed to the growing enmity between the Army and France's extreme left.¹⁴

In sum, between the French Revolution of 1789 and the advent of continuous republican governments in 1870, the French armed forces' relationship to the state and government changed considerably. Unlike the *ancien regime*, French governments never felt that they enjoyed the unreserved loyalty and support of the armed forces. Between 1789 and 1799, civilians feared the rise of a military "Caesar." After Napoleon's coup d'état, the new Imperial regime went to great lengths to co-opt and control ambitious commanders. However, even these measures failed to guarantee officers' loyalty once military defeats sapped Napoleon's prestige. After Napoleon, the Army punctiliously

demonstrated “passive obedience” to the Restoration (1815 to 1830) and Monarchy of July (1830 to 1848) regimes, but neither government felt that it enjoyed sufficient military support to suppress significant urban uprisings. Finally, the Army’s role in Louis Napoleon’s coup d’état produced an overtly militaristic regime, which fell only when the Army suffered a catastrophic military defeat.

III. France, 1871-1940: The Third Republic and the Army

The advent of the Third Republic in 1870 created a dilemma for civil-military policymaking. Existing military institutions had proved their inefficacy. However, the end of the Imperial regime also swept away the mechanisms for exercising civilian control over the armed forces. Over the coming decades, political leaders repeatedly attempted to reconcile the requirements for military efficiency and civilian control of the armed forces. This process was cybernetic, with civil-military crises and worries about military preparedness alternatively forcing civilian and military leaders to reengineer civil-military institutions.

Because of the enormity of the challenges facing it, the Republic’s early governments improvised solutions to their twin dilemmas of producing a military institution that would be both efficient and loyal to the regime. The dramatic collapse of the French Army meant that rebuilding credible military institutions enjoyed a greater priority than addressing the civil-military question. Since the Republic’s first regularly elected president, Marshal Patrice Mac-Mahon, was a respected commander in the imperial army, the military’s loyalty was accepted explicitly during his tenure. At a broader level, republican politicians and military leaders of the Franco-Prussian War held

a grudging respect for one another. Republican politicians such as Leon Gambetta and Charles de Freycinet proved better leaders than Napoleon III or reactionaries like Adolphe Thiers.¹⁵

During the first years of the Third Republic, civil-military concord depended on collaboration between a small cadre of (perhaps 20) loyal, competent generals and the republican politicians they had come to esteem.¹⁶ Political leaders intended to institutionalize the cooperative civil-military relations of this period, by isolating the Army from politics, yet giving the high command autonomy over operational and administrative matters.¹⁷

Elected leaders constructed a legal framework designed to segregate the Army from politics. Laws promulgated in 1872, 1875, 1884 and 1889 denied soldiers and officers the rights to vote and stand for election.¹⁸ Simultaneously, in 1871 and 1872, Minister of War General Courtot de Cisse created disciplinary statutes that prohibited soldiers from politically expressing themselves.¹⁹ As a counterpoint to isolating the armed forces from politics, elected leaders granted the military high command technical, administrative and operational autonomy.

Ministers of war played a crucial role in this system. For the first 18 years of the Third Republic and intermittently thereafter, political leaders selected ministers of war from the ranks of the Army's general officers to serve as "ambassadors" between the Army, the state and the rest of society.²⁰ Initially, war ministers enjoyed sweeping powers to accomplish their objectives. They oversaw military planning, would command the armed forces in the event of war and enjoyed sole authority to present the Army's desiderata to the government, legislature and press.²¹

New institutions permitted ministers of war to exercise their vast authority.²² When the government formed a general staff, based on the victorious German model, it subordinated the new structure to the minister of defense.²³ The minister of war also presided over the superior war council, which assembled important military commanders to advise on strategy and organization.²⁴ A third organization, the General Control of the Armies, reinforced the minister's ability to monitor the application of his directives.²⁵

Initially this system worked well, but the Third Republic's civil-military institutions began showing their deficiencies as the political and military leaders of the Franco-Prussian War retired or passed away. The first civil-military crisis to shake the Republic erupted in 1886 with the nomination of General Georges Boulanger as Minister of War. As a member of the government, Boulanger capitalized on his right of public expression to claim credit for a range of military reforms and diffuse a virulently nationalistic message. During the Schnaebelé war scare of 1887, Boulanger's bellicose statements won him popular support, while increasing the likelihood of war and undermining parliamentary support for the government.²⁶

Following the collapse of the government, the general capitalized on his popularity to launch a nationalistic and anti-Republican political movement. After Boulanger won a Parisian legislative seat in January 1889, his supporters urged him to seize power. However, Boulanger demurred and his political coalition disintegrated. Destabilized by his political failure, Boulanger committed suicide two years later.

The Boulanger crisis highlighted the parlous state of civil-military relations. Although Boulanger enjoyed little support within the officer corps, many segments of the electorate preferred a charismatic military autocrat to ephemeral civilian governments.²⁷

The exceptional powers accorded to the Minister of War permitted him to play this role. The government's immediate reaction to the Boulanger affair was to name Charles de Freycinet as the Republic's first civilian Minister of War.²⁸ Although generals continued to be appointed minister of war for some time, Freycinet's nomination ended their monopoly on the post.

More fundamentally, Freycinet contrived to reduce the minister of war's role, dividing the minister's former powers amongst the occupants of three positions. Freycinet strengthened the General Staff and rendered it autonomous of the minister of war. However, unlike in the German Army, the chief of the general staff was not the designated commander-in-chief in the event of war. This latter role devolved onto the occupant of a new position, the vice-president of the Superior War Council. Under this system, no single individual wielded the extensive powers Boulanger had enjoyed. Rather, the minister of war served as the government's liaison with the army, the chief of the general staff oversaw war planning and the vice-president of the superior war council prepared to lead France's armies.²⁹

Shortly after the denouement of the Boulanger affair, a longer and more complex civil-military crisis, the Dreyfus Affair of 1894 to 1899, proved highly corrosive to civil-military relations. By framing an innocent Jewish staff officer, Captain Albert Dreyfus, of passing classified documents to Germany, Minister of War General Auguste Mercier committed an injustice. The high command's exoneration of the actual traitor, Captain Esterhazy, and refusal to revise Dreyfus' sentence convinced political leaders and the intelligentsia that the Army was riddled with anti-republican and anti-semitic officers.³⁰

Whether the Army was in fact a bastion of political reaction is open to debate. However, the Dreyfus Affair gave birth to the myth of an anti-republican army, which republicans struggled to control and nationalists, such as Paul Déroulède, tried to coax into mounting a coup d'état.³¹ Changing perceptions of the Army, in turn, discredited the Third Republic's existing mode of civil-military relations, which was based on the existence of an autonomous, apolitical officer corps. Perceptions that the officer corps had become anti-republican despite its autonomy generated political pressure to change the ideological composition of the officer corps, limit its autonomy and symbolically punish the Army for its transgressions.

When René Waldeck-Rousseau formed a new Radical Republican government in the wake the Dreyfus Affair, his priority was increasing government control over the officer corps. His first minister of war, General Gaston de Galliffet, summarily retired the vice-president of the superior war council as a punishment for derogatory remarks about the government.³² Galliffet then seized control of all officer promotions. Elected leaders had excoriated the prior system of promotion commissions, wherein hierarchical committees of superior officers assessed the aptitude of junior officers for promotion, for empowering a reactionary clique of generals.³³

Galliffet refused to go further and resigned as Minister of War in 1900, to be replaced by General Louis André, a freemason and radical republican.³⁴ Serving in this capacity for almost five years, from June 1900 to November 1904, André struggled to fundamentally transform the political loyalties and organizational structure of the French high command. Within a year of coming to power, André drove France's two most important officers to resignation. Then, with the help of a web of informants, André

denied promotion and desirable assignments to officers on the basis of social origin, religious beliefs or political affiliation.³⁵

André struggled to heighten the high command's internal divisions as a response to its diffidence during the Dreyfus Affair. To begin with, he formalized the command structure introduced by Freycinet, which entrusted the Army's peacetime management and wartime leadership to separate officers, of equal rank.³⁶ Then, André insisted that the minister of war, rather than the chief of the general staff, could name officers to the general staff. Finally, André prohibited the designated wartime commanders of army corps from inspecting their units in peacetime.³⁷ As an ensemble, these measures atomized the high command and limited the authority any individual yielded.³⁸

André politicized and divided the officer corps in a manner unprecedented since the Revolution. However, André's policy backfired when it provoked a crisis in military morale. During André's tenure, the number of applicants to the French Military Academy (Saint-Cyr) fell by 50 percent, non-commissioned officer reenlistments fell by 43 percent and duals motivated by politicized promotions increased 12 fold.³⁹ At higher levels, divisions and interpersonal animosity reduced the army's leadership to "a ruined citadel incapable... of providing the army with effective leadership."⁴⁰ When newspapers revealed that personnel reports were clandestinely held at France's most influential Masonic lodge, the scandal brought down the government.⁴¹

In his crusade to divide the high command and ideologically remold the officer corps, André grievously affected the army's military readiness. Although André's fall from power in 1904 brought an end to the worst of his abuses, the army's morale

remained low and its command divided as the clock ticked onwards to the First World War.

Elected leaders had little incentive to revisit André's reforms so long as civil-military tensions appeared likely and inter-state conflict improbable. The provocative arrival of the German gunboat *Panther* in the Moroccan Port of Agadir in July 1911 refocused French political leaders on the danger of war and promoted them to maximize military effectiveness, even if it meant relinquishing the control entailed by a divided chain-of-command.⁴² Having deliberately divided control of the army after civil-military crises in 1888 and 1903, the danger of war prompted the government to concentrate more power in General Joseph Joffre's hands than any of his predecessors.⁴³

The 1911 reunification of command authority arguably permitted the army to weather the German onslaught of 1914.⁴⁴ Although the challenges of a war longer and larger than expected obliged civilian and military leaders to reassess command relationships, victory and the absence of a civil-military crisis superficially confirmed the soundness of French civil-military institutions.⁴⁵

Despite the apparent validation of a unified command in 1914, the functions of chief of the general staff and vice-president of the superior war council were again separated in 1917.⁴⁶ After the war, Field Marshal Henri Pétain sustained this division of command as a means of reducing his own workload as vice-president of the superior war council. However, when most of the high command argued for the return to a unified structure in 1929, civilian leaders perpetuated divided command as an instrument of civil-military control.⁴⁷

Divided command inhibited the development of a dynamic military doctrine.⁴⁸ In a repetition of the pre-war period, the increasing threat of war prompted the French government to reunify command authority in the cautious hands of General Maurice Gamelin in 1935. Given a timorous disposition, sweeping powers and his position as the government's sole source of military advice only reinforced Gamelin's ability to prevent the government from thwarting the first German and Italian challenges to the balance of power.⁴⁹ Thus, extensive powers concentrated in the wrong hands contributed directly to the diplomatic failures of 1935 to 1939, as well as the military collapse of 1940.

In sum, French defense policymaking institutions evolved considerably between 1870 and 1940. Although reforms were discussed almost continuously, meaningful changes were the product of events and crises that revealed defects in existing arrangements. As Table I below illustrates, military and civil-military crises contributed in equal measure to this process.

Cause	Year	Resulting Reforms
Franco-Prussian War	1870-71	Creation of a General Staff Creation of the Superior War Council Creation of the General Control of the Armies Legislating the "Apolitical Army"
Boulangier Crisis	1887-89	First Civilian Minister of War
Schnaebelé Incident	1887	Strengthening General Staff Reconvening Superior War Council
Dreyfus Affair	1894-99	Division of the Chain of Command Abolition of Classification Boards Attempt to politicize army
Moroccan Crisis	1911	Reunification of the Chain of Command
	1920	Division of Chain of Command, as requested by Pétain, but sustained for civil-military reasons
German Rearmament	1933	Reunification of the Chain of Command (1935)

Military defeat in 1870 led to the creation of a weak general staff subordinated to a powerful technocratic minister of war. The civil-military crises of the Boulanger Crisis and the Dreyfus Affair forced civilian leaders to revise the institutions they had recently created, civilianizing the ministry of war, strengthening the general staff and then dividing the army's high command. Experience demonstrated that certain civil-military "solutions" bore unacceptable costs. Civilian leaders' early attempt to trade organizational autonomy for apolitical loyalty failed when the officer corps did not demonstrate the anticipated degree of subordination. André's politicization of the officer corps proved even more costly as it provoked grave problems in officer recruitment and retention at a time when war with Germany loomed on the horizon.

Debates raged from the Boulanger Crisis until the defeat of 1940 concerned whether it was better to concentrate military authority under a single generalissimo or entrust peacetime planning and wartime command to separate individuals. In theory, a divided command enhanced civilian control, while a unified command maximized military effectiveness. However, historians have rightly questioned whether unified command under Joffre or Gamelin best served France's strategic interests.

IV. France, 1940-1962: Reforming Civil-Military Institutions

During the inter-war period, debate on civil-military relations focused on the hackneyed issues of how officers should be promoted and whether the high command should be united or divided. However, behind the scenes two subtle changes occurred—the role of the General Control of the Armies grew and the government created the College for Higher National Defense Studies. Although these developments ultimately

proved beneficial, they occurred too late to improve the quality of civil-military policymaking during the inter-war period.

Military defeat in 1940 demonstrated the inefficacy of French military institutions and inaugurated a epoch of poor civil-military relations, which lasted until General Charles de Gaulle's return to power in 1958. Facing a recent legacy of military collapse and civil-military crisis, de Gaulle's government undertook the most comprehensive reorganization of civil-military decision-making since the opening decades of the Third Republic. De Gaulle's government removed procurement authority from the armed forces, formed parallel military staffs and created a think-tank answerable to the Minister of Defense.

Even before the collapse of 1940, France's political and military leaders recognized that the state's civil-military institutions functioned inadequately. During the post-war investigation of the causes of the defeat, General Weygand argued that, "This [mutual distrust] is properly insane... [and] is at the base of our defeat. It is necessary that between our military leaders... and those who have direct charge over our interests there exist a complete understanding."⁵⁰ Weygand contended that the problem was too little military input into the government's foreign, defense and economic policies.

Testifying in front of the same parliamentary committee, former President of the Council of Ministers Albert Sarraut complained about the difficult civilian leaders had in either obtaining neutral military advice or influencing military plans. He argued that, "Statesmen and heads of state always hesitated before making the smallest intrusion in the military domain. . . . We did not have the right to involve ourselves in those issues and when, from time to time, a politician would comment on military affairs . . . a

denunciation would appear in the press saying : ‘What’s this! Soldiers know their business, you don’t! Why are you meddling?’”⁵¹ Thus, while agreeing with Weygand that France’s collapse was a result of dysfunctional civil-military policymaking, Sarraut believed that more political oversight and participation in military planning was the solution.

Any dispassionate examination of whether the armed forces or civilians should wield more authority over state policy was forestalled by a succession of civil-military incidents. During the negotiations over the Rhineland clauses of the Versailles Treaty (1919), French policy towards the Geneva disarmament negotiations (1930 to 1934) and the reduction of the duration of compulsory military service (1933), the high command used pressure tactics to impose its preferred policies.⁵² Even worse, elements of the high command were suspected of complicity in anti-government plots during the Stavisky Riots (1934) and the Cagoule and Corvignolles conspiracies (1937 and 1938).⁵³

What many elected officials and military leaders could agree on was the need for officers and civilian elites to possess a greater understanding of their respective missions and responsibilities. Weygand, his frequent political opponent Edouard Daladier and Major de Gaulle shared the conviction that France should create an educative institution designed to prepare civil and military elites to work together in the national interest.⁵⁴ To this end, Daladier founded the College for Higher National Defense Studies in 1936.⁵⁵

The College mixed high-level civil servants and military officers in a single body. As per Daladier’s vision, the College’s curriculum was balanced, addressing equal time to economic and military considerations, and half as much time to foreign policy and colonial affairs.⁵⁶ Initial feedback from the College was positive and convinced Daladier

that the institution was fulfilling its role. However, as with any educative institution, the College's could only exert an impact on defense policymaking over the long-term, once a critical mass of its students had attained top positions in their respective armed services, branches and ministries. Unfortunately, war interrupted the College's activities after only three annual sessions of students had benefited from it.

At the same time as civilian and military leaders collaborated to create the College, ministers of war relied increasingly on the General Control of the Armies to administer the ministry's growing bureaucracy. From 1919 until 1939, three members of the General Control of the Armies successively occupied the highest administrative position in the Ministry of War and members of the Control were tasked with numerous specialized studies about how France should organize its defense.⁵⁷

Defeat in 1940 revealed the defects of defense policymaking and the fragility of civil-military relations. General Weygand refusal to permit Paul Reynaud's government to withdraw to North Africa made capitulation inevitable after the May defeats. Then pressure from Weygand and Pétain brought the government down and replaced it with Pétain's authoritarian regime. Although military errors produced defeat in May, disobedience to elected leaders destroyed the Third Republic in June 1940.⁵⁸ Almost as soon as it was created, the Vichy Government put many Third Republic politicians on trial. While the Riom trials were quickly adjourned, elected leaders, including Reynaud, remained imprisoned, while at least one, Georges Mandel, was executed without trial.

The war itself soon dissolved conventions of military discipline. Officers chose whose orders they would follow, Marshal Pétain or (brevet) Brigadier-General de Gaulle, each claiming to incarnate France's honor and interests. Although events vindicated the

minority who followed de Gaulle, Pétain possessed a more legitimate claim to obedience and most officers followed his dictates until late-1942.⁵⁹ While the allied victory restored France's borders, the norm of disobeying orders to uphold the nation's true interests remained ingrained in the psyche of the officer corps. Marshal Alphonse Juin, who commanded French forces during the Italian Campaign, set an early, corrosive example by disobeying government dictates about the de-colonization of Tunisia and sabotaging the government's efforts to ratify the European Defense Community.

Ironically, Juin also favored expanding the mandate of the College for Higher National Defense Studies. Renamed the Institute for Higher National Defense Studies, the College reopened in 1949. In addition to military officers and civil servants, the Institute now included industrialists, union leaders, scientists, parliamentarians and academics. After its reestablishment, the Institute played a greater role than during its brief inter-war existence. Under the Fourth Republic, ministers systematically used reports produced by working groups of Institute students as an alternative source of advice on defense matters.⁶⁰ With time, the Institute added abbreviated sessions for regional elites and graduate students.

Soon the Algerian War (1954 to 1962) brought French civil-military relations to a nadir not reached since the depths of French Revolution. The decline in civil-military relations can be divided into four phases. Elements within the armed forces went from sabotaging government policies, to substituting one civilian regime for another, to mounting a military coup d'état, and finally, to resorting to outright terrorism against the government. The first step in this evolution was crossed on 22 October 1956, when the French Air Force intercepted and incarcerated the leaders of the Algerian insurgency,

who were flying on a Moroccan aircraft to negotiations with the French government. The second stage was reached in May 1958, when elements within the armed forces used an uprising planned by the Fourth Republic's civilian enemies to call for the creation of a new government under General de Gaulle.

Although the Army returned him to power, de Gaulle upset many officers by favoring Algerian independence. When de Gaulle clearly enunciated his plan, a conspiracy of colonels mounted a coup d'état in Algiers, in the hopes of replacing de Gaulle's government in Paris. The colonels who planned the 22 April 1961 putsch recruited four generals to their cause. Although the putsch collapsed after four days, the attempt marks the only time that the armed forces corporately challenged the abstract concept of civilian primacy. After the failure of the putsch, many of its architects continued their struggle as part of the terrorist Organisation de l'Armée Secret (OAS).

De Gaulle understood that France's civil-military institutions needed renovation and introduced three distinct reforms. First, he reorganized the command structure of the armed forces. Based on his analyses of the inter-war period, de Gaulle concluded that neither unified nor divided command systems were effective. Instead, France required a system combining elements of both systems. France needed a general staff of the armed forces with the centralized authority to efficiently carry out government directives, but political leaders should possess multiple sources of independent military advice so as not to be beholden to a general staff monopoly on military expertise.

Inter-service policymaking was consolidated under the General Staff of the Armed Forces, which coordinated the army, air force and navy staffs. However, the French government developed a number of safeguards to inhibit the greater centralization

of inter-service decision-making from enabling the armed forces to wield greater authority vis-à-vis elected leaders. One check on the armed forces' corporate authority was the inability of the service chiefs to meet without civilian oversight. Borrowing from the 1888 reform of the Superior War Council, de Gaulle specified that the Minister of Defense rather than the Chief of Staff of the Armies, should convoke and preside over all meetings of the Chiefs of Staff Committee.⁶¹ By this measure, the Minister of Defense became privy to inter-service disputes and could control the agenda discussed by the service chiefs.

The creation of parallel military staffs constituted another barrier to a monopoly on defense expertise. De Gaulle endowed each of the three most important governmental officials involved in defense policymaking—the president, the prime minister and the minister of defense—with an independent military staff presided over by a general or admiral. The President possesses a Private Military Staff, the Prime Minister controls the General Secretariat of National Defense, and the Minister of Defense can call on his military cabinet.

The second major institutional innovation that de Gaulle introduced as President was his decision to remove military procurement from the authority of the armed services. Through personal experience, de Gaulle became convinced that military officers are conservative, preferring horses to tanks, and tanks to nuclear weapons.⁶² When the traditional armament directorates failed to accord a high priority to nuclear missiles, de Gaulle's Defense Minister, Pierre Messmer, created a new procurement organization, independent of the services and directly subordinated to the Minister of

Defense. De Gaulle approved Messmer's initiative and the Ministerial Delegation for Armament was formed and strengthened between 1961 and 1963.⁶³

The third and final structural innovation introduced during de Gaulle's presidency was the creation of a think-tank under the Minister of Defense's authority. As Zisk argued, governments can use think-tanks to provide them with advice and opinions different from conventional military wisdom. In France's case, Messmer capitalized on a suggestion by an ambitious armaments engineer, Hughes de l'Étoile, and created the Center for Perspectives and Evaluations.⁶⁴ Although de Gaulle did not play a personal role in the Center's creation, he rapidly assigned it critical tasks and ensured its longevity.

The institutions created during the first years of the Fifth Republic empower civilian leaders to control the armed forces and shape defense policymaking. In chronological order, the General Control of the Armies, the Institute for Higher National Defense Studies, parallel chains of command, the Ministerial Delegation for Armament and think-tanks have shifted the balance-of-power between military professionals and political leaders in favor of the latter. Since the mid-1960s, these institutions have proven durable and only undergone minor modifications. Table II shows the civil-military institutions developed during this period.

Cause	Year	Resulting Reforms
Inter-War Period	1918-39	Creation of the College of Higher National Defense Studies Enhanced role of the General Control of the Armies
The Algerian War	1958-62	Creation of Parallel Chains of Command Creation of the Ministerial Delegation for Armament Creation of the Centre d'Analyse et Provision

France's military and civil-military institutions have been the result of continuous engineering and considerable trial-and-error. Significant changes occurred in the wake of crises, both military and civil-military. While the defeats of 1870 and 1940 sparked reforms, equal impetus came from civil-military crises such as the Dreyfus Affair and praetorianism during the Algerian War. As a consequence, the institutional structure of French defense policymaking evolved under the difficult dual constraint of ensuring both the loyalty and competitive efficiency of the armed forces.

V. The United Kingdom and the 19th Century: 1793-1899

Whereas French institutions developed in response to both military and civil-military imperatives, their British counterparts have evolved more narrowly in response to requirements for increased military effectiveness. While the British armed forces have not necessarily eschewed politics and have frequently pushed for a wider interpretation of military autonomy, they have rarely threatened outright disobedience or regime change. The dominant pattern marking the evolution of British civil-military institutions has therefore been one of enhancing the professional qualifications of officers and the centralized administration of the armed forces once military disaster demonstrates that reforms are necessary.

The French Revolutionary and Napoleonic Wars called for a military effort hitherto unparalleled in British history, resulting in a six-fold increase in the army's strength and a five-fold growth in the navy.⁶⁵ Although geographic separation from continental Europe meant that the United Kingdom could avoid France's main armies and concentrate against lesser forces in Egypt, Calabria, Copenhagen, Portugal, Spain and the

Scheldt, early military disasters demonstrated that only a reformed army could beat the French.

Commanding the ill-starred Flanders campaign of 1793 to 1794, Frederick Augustus, the Duke of York, witnessed the British Army's shortcomings at first hand. Upon being named Commander-in-Chief in 1795, York led the army's quest for greater professionalism. To rectify the worst excesses of the purchase system, whereby British officers purchased ranks, York promulgated mandatory periods of service needed for specific ranks and established military schools, introducing professional education into the British Army.⁶⁶ York went on to standardize infantry drills, improve soldier living conditions and ameliorate the military justice system.

The victories won by Arthur Wellesley, Duke of Wellington, vindicated York's institutional reforms and comforted conservatives in their belief that further reform was unnecessary.⁶⁷ A social conservative, Wellington opposed educating soldiers and favored retaining the purchase system. After succeeding York as the army's commander-in-chief, Wellington opposed reforms until his demise in 1852.

The post-Napoleonic era British officer corps was therefore increasingly professional, but lagged behind the most innovative continental powers in terms of professional education, administrative organization and promotion according to merit. Nevertheless, incessant overseas campaigning, involving between 65 and 75 percent of the infantry, meant that the army retained a professional ethos, confining amateurism to the socially prestigious Guards regiments and cavalry.⁶⁸

Although would-be reformers gradually succeeded in renovating insalubrious barracks and restricting flogging, they failed to change the armed forces' bureaucratic

structure or promotion system. In the absence of international crises, the influence of Wellington and other military conservatives prevented thoroughgoing reforms. Likewise, while the Army continued to act as a loyal partner to civilian government, the imprecise nature of the relationship between military commanders and colonial authorities remained a constant source of friction, with military commanders frequently interpreting their mandates very broadly.⁶⁹

To a limited extent, the Crimean War of 1854 to 1856 shook the British Army from its self-satisfied torpor. Although British forces proved brave and well disciplined, the Army was deficient in the higher arts of war. Critically, the commissariat and medical services proved incapable of responding to dysentery, cholera and cold weather, which swept away 15 percent of the British expeditionary force. Fighting in identical conditions, French non-combat casualties were half those of the British.⁷⁰ The British Army's performance in the technically intensive siege of Sevastopol also proved disappointing, while revelations about infighting amongst field commanders scandalized the light brigade's suicidal charge at Balaklava.⁷¹

William Russel's articles in *The Times* exposed the British public and parliament to the chaotic administration and unsanitary conditions afflicting British soldiers. Popular outrage, parliamentary commissions and the Army's own efforts to improve its performance soon led to reform. The Army's cumbersome administration—divided between six major governmental departments (War Office, Colonial Office, Home Office, Treasury, the Commander-in-Chief, and the Bureau of Ordnance)—was reorganized as a diarchy, with the newly created Secretary of War and the Commander-in-Chief sharing responsibility for equipping, paying and supplying the Army.⁷²

Meanwhile, the Army's newly-appointed Commander-in-Chief, the Duke of Cambridge, worked to repair the British Army's deficiency in staff and technical officers. By changing the selection criteria and doubling the intake of officers at the Senior Department of the Royal Military College, Cambridge paved the way for the creation of the dedicated Staff College at Camberley.⁷³ Similar reforms to the technical school at Woolwich improved the professionalism of the Army's artillery and engineering branches. Although politicians argued for further structural reforms, they disagreed on exactly what should be done. Meanwhile, the search for scapegoats to blame for the Army's shortcomings in the Crimea overshadowed the more technical and productive matter of improving the system.

The next wave of institutional reform therefore occurred under the guidance of Edward Cardwell, who served as Secretary of State for War from 1868 until 1874. The Army's difficulties meeting increasingly global commitments demanded improved organization and a more scientifically trained officer corps. One of Cardwell's most dramatic reforms involved abolishing the purchase system, whereby officers bought and sold their commissions. Because pay was not raised to a level whereby officers could subsist without a second income, the end of the purchase system had little impact on the social composition of the officer corps. However, it obliged ambitious officers to pay greater attention to their professional education if they hoped for promotion.⁷⁴

Of more immediate consequence were Cardwell's reforms of the War Office. Cardwell reorganized the Office along functional lines, empowering the Commander-in-Chief, the Surveyor General of Ordnance and the Financial Secretary to respectively manage military, supply and financial matters. Cardwell also obliged the Commander-in-

Chief to relocate to the War Office building in Pall Mall, where the Secretary of State and the Commander-in-Chief could henceforth work in close proximity to one another.⁷⁵

While the Cardwell reforms significantly improved the British Army's command and administration, they did not go as far as they might have. A revolution in warfare was underway in continental Europe when Cardwell was appointed. Prussian victories over Denmark (1864), Austria (1866) and France (1870) set new standards for effective military administration and demonstrated the value of a general staff system. Based on these lessons, Undersecretary for War Lord Northfield pleaded for the creation of a Prussian-style General Staff. However, entrenched interests and the mistaken belief that the British Army would never have to fight a large-scale war led Cardwell to dismiss the notion of a British general staff.⁷⁶

Colonial policing, rather than continental warfare, prompted the United Kingdom's first effort at institutionalized inter-service cooperation in the guise of the Colonial Defence Committee, which was established in 1885. Subordinated to the Colonial Office, this interdepartmental committee dealt exclusively with the defense of Britain's colonies.⁷⁷ With the creation of the Joint Naval and Military Committee (1891) and the Standard Defence Committee of the Cabinet (1895) elected officials continued to enhance institutional structures for inter-service and inter-ministerial coordination.⁷⁸

Misguided fears of a French invasion prompted the government created a Royal Commission, under Spencer Cavendish, Marquis of Hartington, to examine military reform in the late-1880s. The Hartington Commission recommended the creation of permanent military and naval planning staffs based on the German General Staff. Shortly

thereafter, Oxford professor Spenser Wilkinson's 1890 book *The Brain of the Army* popularized the concept of a general staff amongst civilian and military elites alike.⁷⁹

However, opposition within the Army, especially from the serving Commander-in-Chief, the Duke of Cambridge, prevented the creation of a general staff.⁸⁰ A cousin of Queen Victoria, Cambridge used his influence to stymie the creation of a general staff, which he did not believe events justified and feared would supplant his own role. Candidly, Cambridge reflected that, "There is a time for all things: there is even a time for change; and that is when it can no longer be resisted."⁸¹ The Navy, for its part, argued from a firmer basis in fact that its existing structure sufficed.

Although repeatedly reformed, the British armed forces, particularly the Army, embarked on an era of large-scale warfare with administrative structures that lagged behind those of continental Europe. While some British civilian and military policymakers understood developments on the continent, the paucity of direct experience with large-scale warfare after 1815 enabled conservative political and military elements to stifle certain reforms. Table III below shows causes of changes in the United Kingdom's institutional structure for defense policymaking, demonstrating that direct military experience was critical for most reforms.

**Table III:
Major British Reforms and their Origins, 1793-1899**

Cause	Year	Resulting Reforms
French Revolutionary & Napoleonic Wars	1793-1815	Creation of Military College and Cadet School Permanent existence in Peacetime of the Commander-in-Chief Establishment of Minimum Durations of Service for Advancement
Crimean War	1854-56	Reorganization of Army Administration Creation of a Dedicated Ministry of War Expansion of Staff and Technical Training Creation of an Independent Staff College
Imperial Policing	1868-74	Abolition of the Purchase of Ranks Reorganization of the War Office Co-location of Commander-in-Chief and Secretary of State

The comparative rarity and limited stakes of Britain's 19th Century wars with European great powers fostered an unwarranted degree of complacency in the country's military institutions. Meanwhile, the unquestionable loyalty of the armed forces to the state meant that politicians were both predisposed to accept the professional judgments of the high command and willing to countenance the armed forces' demands for a high degree of operational autonomy.

VI. The United Kingdom and Great Power Warfare, 1899-1945

Although the advantages of institutionalized inter-service cooperation and permanent planning staffs had been recognized for some time, entrenched interests and organizational inertia impeded serious reforms until events proved that existing institutions were inadequate. At the end of the 19th Century, British defense

policymaking institutions lagged behind those of most European great powers.

Thankfully for the United Kingdom, the Second Anglo-Boer War of 1899 to 1902 discredited the existing system and permitted reforms that were largely complete before the nation faced the much greater challenge of the First World War. From the Boer War onwards, regular exposure to great power warfare forced successive British governments to reform defense-policymaking institutions at regular intervals.

Misplaced civilian and military confidence that the British Army would quickly route what it considered unorganized farmers was shattered by the three defeats of “Black Week” in 1899. Beyond questions of tactics and training, failures during the Boer War highlighted deficiencies in the United Kingdom’s higher administrative machinery for waging war. Army planning, joint operations and civil-military integration were all found wanting. As the Marquis of Salisbury told Parliament, “It is evident that there is something in your machinery that is wrong.”⁸²

As during the invasion scare of the late-1880s, the government created commissions and committees, including the Education of Officers Committee (1902), the Royal Commission on the Boer War (1903) and the Esher Committee (1904), to determine the root causes of poor military performance. The Royal Commission, under the chairmanship of Lord Elgin, recommended reorganizing the War Office along the same lines as the Board of the Admiralty—a reform that was duly implemented. In line with the spirit of Elgin's reforms, Prime Minister Arthur Balfour remodeled the Cabinet’s Standing Defence Committee into the Committee for Imperial Defence (CID), within which both the armed services and relevant ministries were represented.

Meanwhile, the committee chaired by Viscount Reginald Esher focused its energy on the poor quality of British staff work. On close inspection, the Esher Committee was appalled to learn that the Army possessed neither adequate planning machinery nor competent staff officers capable of filling senior posts. Faced with this situation, the Committee urged the creation of a general staff and suggested expedients for improving the quality of staff officers.⁸³ Contrary to the situation prevailing when Northfield and Hartington proposed the same reforms in previous decades, the Army's poor performance in South Africa undermined its ability to oppose unwanted change.⁸⁴ Long after Europe's other great powers had shown the way, the British Army finally acquired a General Staff organization between 1904 and 1909.⁸⁵

The institutions founded in the wake of the South African debacle permitted the United Kingdom to elaborate the sound policies and plans with which it entered the First World War. Grand strategic issues were examined in the CID, where the Army and Navy presented their preferred strategies and the CID adjudicated between them. Once the Army's proposal to send an expeditionary force to France was accepted over naval plans to conduct amphibious operations in the North Sea, the Army's General Staff prepared administratively and diplomatically for the dispatch of a small but superbly trained expeditionary force to France. Faced with its comparative inability to argue strategic matters at the CID, the Navy reluctantly adopted a general staff organization in 1912.⁸⁶

While the relative success of Britain's military intervention in 1914 owes much to the reforms implemented in the wake of the Boer War, the First World War revealed the shortcomings of even these new institutions. Both the General Staff and the CID were designed for peacetime planning, rather than managing large-scale military operations in

war. The CID closed its doors and all but one member of its secretariat assumed active service military appointments in August 1914. Likewise, most of the key members of the Army's General Staff quit their positions for command assignments with the field army.⁸⁷

The decapitation of military and civil-military structures in London inhibited strategic planning and contributed to the Dardanelles debacle and inter-service and inter-ministerial disputes over manpower allocations. Faced with a war much longer and larger war than anticipated, the government reinvigorated the Army's General Staff in September 1915.⁸⁸ Meanwhile, the higher direction of war was entrusted to a War Council on which the two service chiefs were advisors, but not members. Ad hoc cabinet committees and new ministries established to oversee munitions production and the allocation of manpower dealt with many of the practical questions of industrial mobilization and the allocation of scarce human and material resources. Nevertheless, strategic policymaking and joint operations remained two domains where the institutional processes of British decision-making proved continually unreliable.⁸⁹

Arguably, poor civil-military relations in the period immediately preceding the First World War hindered the United Kingdom's prosecution of the war. Imperial service accustomed many military commanders to pro-consular status during the Victorian and Edwardian eras. For officers accustomed to interpreting the national interest when serving on the fringes of Empire, it was a short step to disobedience of political orders deemed contrary to the good of the Empire. The political question of Irish Home Rule crystallized the willingness of many officers to defy the British government.

Genuinely worried lest Irish Home Rule incite rebellion elsewhere in the Empire, a sentiment magnified by the many Anglo-Irish officers prominent in the Army's ranks,

powerful elements within the British Army opposed the government's plans for Irish Home Rule. The former commander-in-chief of the army, Field Marshal Frederick Roberts, helped create the paramilitary Ulster Volunteer Force in 1912. Dedicated to forcibly preventing Ulster from being incorporated in a more autonomous Ireland, the Ulster Volunteers drew 62 percent of their battalion, regimental and divisional commanders from the Army and were led by a retired Army general.

When the British government moved forward its plans for Irish Home Rule, military officers publicly expressed their refusal to coerce Ulster or fight their former comrades-in-arms in the Ulster Volunteers. The Curragh Incident of March 1914 brought civil-military tensions to a head. Although details remain murky, a majority of officers in the 3rd Cavalry Brigade requested dismissal rather than face the possibility of coercing Ulster Unionists. The prospect of mass resignations alarmed the British government, which feared that it could not rely on the Army to execute its orders for Ireland. Although the Curragh Incident resulted from a misunderstanding, suspicions linger that military authorities contrived the episode as a warning to the government.⁹⁰

While the outbreak of the First World War temporarily pushed the issue of Irish Home Rule into the background, the Curragh Incident demonstrated that military officers were well versed in political scheming and willing to use their skills. Importantly, two of the officers suspected of duplicity during the Curragh Incident, John French and Henry Wilson, played active roles in the civil-military controversies of the First World War.

Although the first months of the war were remarkably free of civil-military tensions, considering that the Curragh Incident transpired only three months before the assassination of Archduke Franz-Ferdinand, the stabilization of the front in late-1914 and

repeated failures to break the stalemate precipitated a search for scapegoats. Civil-military tensions came to a head in May 1915, when General French publicly blamed the Lord Asquith's Liberal Government for the failure of the British attack at Aubers Ridge, which cost 12,000 British lives. The resultant Munitions Crisis brought down the Liberal Government.⁹¹ Ironically, French's victory was short lived as two of his subordinates, Douglas Haig and Henry Rawlinson, conspired to blame him for the failure of the Loos Offensive in September 1915. Throughout the remainder of the war, relations remained tense between military commanders and political leaders, however no clash such as occurred in 1915 transpired again.⁹²

Winning the First World War necessitated the creation of new ministries and cabinet committees to apportion scarce manpower, develop weapons and organize the production of armaments on hitherto unimaginable scales. Created under the pressure of war, most of the new institutions could not be retained after the Armistice, when the size of the British government shrunk and its defense budget returned to pre-war levels. However, some institutional innovation was necessary. Pre-war institutions had been found wanting and new imperatives, such as fielding ever improved weapons and mounting joint operations, called for organizational efforts unappreciated in 1914.

Conscious of the many ad hoc changes being made to government as a result of the First World War, Prime Minister David Lloyd George appointed Lord Haldane to chair a committee to examine the reorganization of government administration after the war. Naturally, the higher coordination of defense occupied much of this committee's attention when it began meeting in late 1917. In terms of the procurement, the committee recommended creating a single ministry, the Ministry of Supply, responsible for

transmitting the operational requirements of the armed services to industry.⁹³ When it came to addressing the more complicated matter of strategic policymaking, the committee vacillated between two distinct alternatives, and ultimately presented the cabinet with both; either resuscitating the pre-war Committee for Imperial Defence (CID) or uniting the armed services under a single centralized Ministry of Defence.⁹⁴

Despite pressures from prominent political leaders and the armed services for a Ministry of Defence, the conservative alternative of reviving the CID prevailed, due in large measure to the lobbying of its pre-war secretary, Maurice Hankey. Nevertheless, some effort had to be made to rectify the worse deficiencies of the CID and appease calls for a more radical reorganization of Britain's defense. One attempt to improve the CID resulted in the creation of a Chiefs of Staff Sub-Committee. Comprised of the three service chiefs, this body was supposed to discuss inter-service defense matters and advise the CID. The other major effort to improve the CID consisted of establishing the Imperial Defence College to train senior officers from the three services and a limited number of civil servants to manage the CID's secretariat and conduct joint operations.⁹⁵

Regardless of these efforts to improve its efficiency, the CID's performance during the inter-war period was lackluster.⁹⁶ The Prime Minister's abdication of his right to chair the CID robbed the committee of its ability to impose controversial decisions on services or ministries. As a consequence, the body increasingly occupied itself with routine matters, rather than supervising the formation of higher-level strategy.⁹⁷

Meanwhile, increasing inter-service rivalry, occasioned by the formation of the RAF, generated acrimonious conflicts over resources and authority, rather than cooperative planning to meet potential threats.

The public disputes of the service chiefs and increased popular concern for national security brought renewed calls for a Ministry of Defence in the wake of German rearmament. However, adepts of the CID resisted this development. Instead, in 1936 Hankey proposed the compromise of creating a Minister for the Co-ordination of Defence (MCD) instead of a new centralized ministry. Under this scheme, the services would retain their own ministries and the CID would continue to oversee the direction of higher strategy. The new Minister would merely preside over two CID sub-committees in an effort to impose inter-service cooperation.⁹⁸

Because of its compromise nature, the Ministry for the Co-ordination of Defence failed to provide the centralized direction needed for the formation of sound security policy. With a minimal staff, the Minister for the Co-ordination of Defence, Thomas Inskip, had difficulty challenging the arguments of the services, which possessed greater administrative resources. Moreover, the continued presence in cabinet of ministers representing each armed service made it hard for Inskip to impose solutions, obliging him to work for compromise. However, without clear strategic guidance from the CID, the services continued independently planning for whichever missions were most congenial to them.⁹⁹ Commenting on, Inskip's failure to generate sound defense policies Admiral Roger Backhouse's opined that, "I do not think it is the man so much as the machine."¹⁰⁰

Britain's failure to create adequate defense-policymaking institutions proved catastrophic in the last years preceding the Second World War and the initial stages of that conflict. Not without reason, Williamson Murray has harshly described the end of the inter-war period as one during which, "nearly every decision made by the British... in terms of rearmament, diplomacy and military doctrine appears in the harsh light of May

1940 to have been disastrous.”¹⁰¹ Lacking centralized direction, the navy planned for a war with Japan, the RAF focused on Germany and the army concentrated on colonial policing. The British government lacked the neutral administrative and scientific institutions necessary for weighing the biased solutions promoted by the services. With too many resources invested in an ill-conceived bomber offensive and the fortification of Singapore, and too few in the British Army’s expeditionary force, the United Kingdom’s military resources were poorly configured for war with Germany.

Because of the gravity of the crisis, Winston Churchill personally assumed the burden of acting as the United Kingdom’s Minister of Defence beginning in 1940. Churchill had agreed with pre-war proponents of the need to create a unified Ministry of Defence. However, the crisis environment of war was ill-suited to fundamentally re-thinking defense-policymaking institutions and determining the respective roles of Prime Minister and Minister of Defence. Churchill, therefore, unified both roles in his person, and undertook managing cabinet and the parliament, while at the same time coordinating the actions of three armed services and their respective ministries. Without the centralized policymaking staff of a ministry of defense, Churchill relied heavily on strategic instinct and his wealth of personal experience.

Churchill’s wartime tenure as both Minister of Defence and Prime Minister was felicitous. The war cabinet and chiefs of staff succeeded, under Churchill’s prodding and interference, in establishing clear priorities between competing armed services, industries and theaters. However, Churchill’s wartime fulfillment of two functions provided no model for his peacetime successors to follow. During peacetime, the Prime Minister could not act as minister of defence. Even worse, lacking Churchill’s unique

combination of military and political-military experience, no other British politician possessed the skills needed to coordinate British defense efforts in the absence of a centralized bureaucracy.¹⁰²

Thus, the era of large-scale warfare that began with the Second Anglo-Boer War and ended with the Allied victory of 1945 witnessed a more-or-less continuous process whereby British defense policymaking institutions evolved within a crucible. New enemies and the evolving character of warfare tested the effectiveness of British institutions and prompted reforms when they were found wanting. Table IV below illustrates this process.

Cause	Year	Resulting Reforms
Boer War	1899-1902	Creation of the Committee for Imperial Defence Creation of the Army General Staff Reorganization of War Office
First World War	1914-18	Resuscitation of the Committee for Imperial Defence Creation of the Ministry of Supply Creation of the Chiefs of Staff Committee Creation of the Imperial Defence College
German Rearmament	1933-39	Creation of the Minister of Defence Co-operation
Second World War	1939-45	Attribution of the Title Minister of Defence to Prime Minister Winston Churchill

The overall trend behind British defense organization is one of increasing centralization and coordination. However, British political leaders were hesitant to

challenge the prerogatives of existing services and agencies, and only did so when military experience proved the necessity of reform. Although the Hartington Committee recommended the creation of a Prussian-style General Staff in the late-1880s, it took the dolorous experience of the Boer War to prompt actual reform. Even worse, despite the fact that a unified ministry of defense had been suggested in parliamentary debate as early as 1890, the title of Minister of Defence was only provisionally given life in 1940. While this period also witnessed the nadir of modern British civil-military relations, as demonstrated by the Curragh Incident and the 1915 Munitions Scandal, the mildness of civil-military problems compared to the demands of warfare meant that civil-military factors accounted for no appreciable change in defense policymaking institutions.

VII. The United Kingdom and the Armed Peace, 1945-1964

While the United Kingdom's improvised decision-making structures proved adequate to the demands of winning the Second World War, Churchill's personalized role in making the machinery of government function posed a grave challenge for his successors. As was done in the wake of the First World War, Clement Attlee's post-war government appointed a committee of three, including Generals Hastings Ismay and Ian Jacob, and Lord Bridges, to recommend how British defense policymaking should be structured. Because Ismay, Jacob and Bridges were all "insiders" familiar with the workings of Churchill's wartime system, the aim of their committee was institutionalizing practices and lessons from the war.¹⁰³

In typically British fashion, the Ismay-Jacob Committee recommended incremental improvements on pre-war structures. Its greatest innovation was the

establishment of a Ministry of Defence for peacetime. By carrying through Churchill's wartime practice of excluding service ministers from cabinet, the new Minister of Defence became cabinet's exclusive contact when dealing with military affairs. Under the Ismay-Jacob recommendations, the Ministry of Defence also received a small, centralized staff drawn from the armed forces and civil service. However, with less than 500 personnel compared to the thousands in the service departments, the role of the new Ministry remained one of coordinating and prioritizing between the activities of the separate services, rather than creating policy.

Although it was intended that the new Ministry would fulfill many of the Committee for Imperial Defence's (CID) former duties of coordinating the armed services, the Ismay-Jacob Committee nonetheless felt that the CID system should be retained to oversee policymaking at the higher political-strategic level. Renamed and integrated in the United Kingdom's evolving system of cabinet government, the CID became the cabinet's Defence Committee. Despite their exclusion from the full cabinet, the service ministers still retained seats on the Defence Committee, where they could contest the Minister of Defence's authority.¹⁰⁴

The Korean War and the accompanying military buildup sorely tested the United Kingdom's administrative structures. Facing the prospect of war with the Soviet Union, the United Kingdom rearmed. However, the increasing cost and complexity of weaponry posed new challenges to British defense policymakers. The United Kingdom simply could not afford to develop the entire panoply that the superpowers were acquiring and it was far from evident which military service should possess certain weaponry. Should the

Army or the RAF develop land-based anti-aircraft missiles? And should carrier-based or land-based aircraft deliver nuclear weapons?

The dilemmas were numerous and called for a greater degree of centralized inter-service planning. Duplication and waste were the inevitable result. Although created shortly before the Korean War, the office of the Ministry of Defence's chief science advisor grew in both size and importance during this period. So too did the Ministry of Defence's role in procurement, which was virtually nil at the beginning of the 1950s, but evolved into a veto power over service requests by the end of the decade.¹⁰⁵

However, by the mid-1950s greater reforms were clearly needed. Based on the reports of a Cabinet subcommittee, Prime Minister Anthony Eden promulgated a series of measures in October 1955 to ease friction in British defense planning. Foremost amongst Eden's reforms was the creation of the separate position of Chairman of the Chiefs of Staff Committee (COS), which had previously been occupied by the service chiefs on a rotating basis. The government's desire to obtain neutral recommendations about defense needs and the requirement of representing the armed forces at NATO conferences meant that a service chief could no longer adequately chair the committee. Eden also strengthened the Ministry of Defence, by giving it authority over the Ministry of Supply and rendering it responsible for military force structures complemented policies determined by the Defence Committee.¹⁰⁶

Although significant, the 1955 reforms were always viewed as a provisional step in a broader process of institutional development. Debate continued unabated as to what form British defense institutions should take. Two lexicographical changes in the 1950s pointed to the direction that reformers were taking. The Cabinet's Defence Committee

was renamed the Defence and Overseas Policy Committee, emphasizing its focus on strategic rather than defense matters, and the title of Chief of Defence Staff was appended to the Chairman of the Chiefs of Staff Committee, highlighting this officer's role in presenting advice unmarred by a service bias and his nominal status as *primus inter pares* amongst the chiefs of staff.

After more than a decade of tentative reforms following the Second World War, the years 1958 to 1963 loom as the decisive period for the centralization of defense policymaking. While British elected leaders favored centralization, military professionals provided the impulse for reform. Admiral Louis Mountbatten, who served for six years as Chief of Defence Staff, broached the controversial subject in 1962 by proposing to reorganize the ministry of defence along functional, rather than inter-service lines. Mountbatten's suggestion provoked united opposition from the three service chiefs, who favored continued service autonomy over functional integration.

Prime Minister Harold Macmillan called on General Ismay and Jacob, the authors of the 1946 reforms, to resolve the dispute between Mountbatten and the chiefs. Adopted in 1963, the Ismay and Jacob compromise administratively subordinated service departments to the ministry of defense and physically relocated them to the ministry's office block. Abolishing separate service staffs in favor of a centralized "defense staff" was nonetheless rejected.¹⁰⁷

Mountbatten hoped to push through larger reforms under the Labour government elected in 1964. However, the new Minister of Defence, Denis Healey, considered inter-service rivalry one of the few means of extracting honest analyses and multiple policy options from the services. Healey refused to renew Mountbatten's mandate and shelved

his proposal for reorganizing the ministry.¹⁰⁸ Nevertheless, Healey pursued other dimensions of defense centralization. In 1967 and 1968, he introduced combined defense estimates, whereby services budgets were approved collectively rather than individually, downgraded service ministers to parliamentary under-secretaries, and abolished the deputy service chiefs.¹⁰⁹

Healey's rejection of further efforts to strengthen the defense staff and eliminate service departments postponed the final round of administrative centralization until the early 1980s. By the early 1980s, the armed services were exasperated with ministers exploiting their internal rivalries and understood that a united defense voice would carry greater weight vis-à-vis other elements of the state than a cacophony of inter-service bickering. Critically, two of the chiefs of staff in the early 1980s, Field Marshal Edwin Bramall and Admiral Terence Lewin, contributed to Mountbatten's earlier proposals as junior members of his staff. With Bramall's support, Lewin changed the relationship between the service staffs and the defense staff. After 1982, the chief of defence staff became the government's principal strategic advisor, rather than the chair of a fractious committee, and represented the chiefs of staff on the war cabinet. Instead of reporting to the chiefs of staff committee, field commanders henceforth answered to the chief of defence staff alone. Other measures, such as increasing the size of the defense staff and the creation of a deputy chief of defence staff, enhanced the ability of the central defence staff to coordinate service requirements.¹¹⁰

In a related development, 1981 saw the abolition of service undersecretaries and their replacement by "functional" undersecretaries responsible for armed forces and procurement. Under a new Minister of Defence, Michael Heseltine, the process of

defense centralization beginning after the Second World War finally ground to a conclusion. Heseltine reinforced the central defense staff further, relegating the service chiefs and staffs to purely administrative functions. Although united opposition from the chiefs obliged Heseltine to moderate his reforms, he halved the size of service staffs and abolished the policy whereby the services took turns nominating candidates for chief of defence staff.¹¹¹

In retrospect, the period from 1945 until the mid-1980s represents a period of continuous, steady evolution towards a unified defense staff and centralized ministry of defense. The lessons of the Second World War and pressures of the Cold War demonstrated the necessity of centralization. However, entrenched interests, bureaucratic inertia and natural conservatism meant that reforms were implemented in small increments, rather than a single massive reorganization. Table V illustrates this process.

**Table V:
Major British Reforms, 1945-1985**

Year	Reforms
1946	Creation of the Ministry of Defence <ul style="list-style-type: none"> • Exclusion of Service Ministers from Cabinet • Ministry endowed with small staff CID renamed the Cabinet Defence Committee
1955	Establishment of a Chairman of the Chiefs of Staff Committee Ministry of Supply subordinated to Ministry of Defence
1958	Chairman of Chiefs of Staff Committee re-designated Chief of Defence Staff
1963	Service departments subordinated to Ministry of Defence and relocated to a common office block
1967-1968	Combined defense estimates introduced Service Ministers downgraded to Permanent Under-secretaries
1981	Service undersecretaries abolished, replaced by functional undersecretaries for armed forces and procurement
1982-1984	Central defense staff strengthened <ul style="list-style-type: none"> • Chief of Defence Staff becomes Cabinet's strategic advisor • Field Commanders subordinated to Chief of Defence Staff • Service staffs halved, defence staff enlarged • Rotation of Chief of Defence Staff amongst services abolished

Gradualism was an inevitable result of dealing with armed services that were organizationally conservative, yet respected for their professional expertise. In many cases, the initiative came from military officers, including Ismay, Jacob, Mountbatten and Lewin. Even when ministers promoted reform, they usually proved unwilling to overrule the chiefs of staff and only attempted reform when at least part of the high command supported them. As a consequence, the pace of reform was dictated by evolving perceptions of military professionals, who disliked hurried change. Reflecting on his time in office, Healey remarked that, "The services were sick and tired of continual

reorganization.”¹¹² Given the military role in reforms, institutional changes unsurprisingly enhanced military autonomy by limiting the ability of civilian leaders to exploit inter-service rivalries.

VIII. The Origins of Institutions

Defense policymaking institutions, by their nature, evolve continually in response to external stimuli. The economic, scientific and social components of warfare developed rapidly between the end of the eighteenth century and the second half of the twentieth. In order to remain competitive in a changing environment, great powers have been obliged to reform their military institutions. One by one, states had to professionalize and educate their officer corps, form general staff systems, create inter-service planning organizations and improve weapons procurement procedures. Entrenched interests and organizational inertia blocked most reforms until military failure pointed the way forward.

Britain fought four significant wars (Crimean, Boer and the World Wars) between 1815 and 1945, while France fought five (Crimean, Italian, Franco-Prussian and the World Wars). Shortcomings revealed by these conflicts provided a prime impetus for military reforms, proving more important than colonial warfare or peacetime imitation of foreign developments. Twice suffering the supreme humiliation of defeat and occupation, France’s disasters in 1870 and 1940 laid the basis for thoroughgoing reform. Sheltered by geography, military defeat did not bring the British state down. However, scandalous and unexpected failures led to institutional changes after each of the United Kingdom’s major wars.

Because reforms were driven by technical realities and international competition, many British and French institutional developments parallel one another. France and the United Kingdom introduced professional military education within several years of one another. Later, both states formed general staffs within a space of three decades—France in 1874 to 1888 and the United Kingdom in 1904 to 1909. Finally, since the Second World War, both states have established unified ministries of defense and inter-service defense staffs.

While British and French defense establishments have been subject to similar external stimuli, civil-military problems featured more prominently in the development of French institutions than their British counterparts. Although the British Army was never the ideal apolitical servant of politicians and the French Army rarely threatened civilian regimes directly, French civil-military relations were qualitatively much worse than their British counterpart.

Returning to Finer’s typology of military interventions in politics, omitting “influence” which is difficult to detect, the French Army planned two coups d’états, was involved in four efforts to substitute one civilian regime with another and attempted to blackmail governments on at least three occasions. The British Army, by contrast, was implicated in one attempt at substitution and one blackmail effort. Table V compares civil-military crises in both states.¹¹³

<u>Country</u>	<u>Blackmail</u>	<u>Substitution</u>	<u>Supplantation</u>
France	3	4	2
United Kingdom	1	1	0

If anything, Finer's typology understates the difference between British and French civil-military relations. Finer's categories fail to capture the enmity that socialists felt to the army as a result of the Commune and Dreyfus Affair, the regimes that fell in 1830, 1848 and 1934 because political leaders doubted the army's willingness to quell disturbances, and the attempts by right-wing nationalists to drag the army into coups d'états in 1889, 1899 and 1934.

Because of civil-military problems, French politicians delegated less authority to the armed forces and developed mechanisms for monitoring and controlling the military high command. Some attempts to control the armed forces bore intolerable costs. The Third Republic's initial effort to exchange military autonomy for apolitical obedience backfired. Later, outright politicization of the officer corps and a fragmented command structure degraded military efficiency to an unacceptable degree, leading political leaders to repeal both efforts.

Through trial and error as much as engineering, French developed institutions that ensured civilian supremacy at an acceptable cost in terms of military efficiency. While not sacrificing the advantages of an inter-service general staff, political leaders have given themselves multiple sources of alternative advice in the form of the smaller military staffs beholden to the president, prime minister and minister of defense. Civilian authority to monitor the armed forces and exploit inter-service rivalry is enhanced by the activities of the General Control of the Armies and the chiefs of staff committee's statutory inability to meet without the minister of defense. Finally, the outsourcing of procurement to an independent agency limits the scope of military authority.

Absent the civil-military tensions afflicting France, British politicians have delegated more power to their armed forces. In the United Kingdom, the armed forces' monopoly on military advice has grown rather than diminished with the introduction of general staff systems (1904-1912), the creation of the chiefs of staff committee (1924) and the designation of the chief of defence staff as the cabinet's principal strategic advisor (1982). Without the ability to exploit inter-departmental, inter-branch and inter-service rivalries, British governments have become more vulnerable to bureaucratic collusion amongst the armed forces. Meanwhile, functional reforms increasing the centralization of the defense bureaucracy have had ambiguous effects on military autonomy.

Having evolved along different lines for two hundred years, British and French defense policymaking institutions are likely to remain distinct. Recent studies suggest that institutions are durable, resisting dramatic change and evolving along predictable "paths." Moreover, present-day British and French defense policymaking institutions are perceived as adequate and will enjoy confidence so long as there are no military or civil-military catastrophes. In France's case, institutional path dependence means that civil-military monitoring and control mechanisms developed between 1882 and 1963 can be expected to endure even though civil-military relations have been excellent since 1962 and are likely to remain so.¹¹⁴

The following chapters will examine the effect of distinct British and French institutions on how these two states develop and employ military power. Based on the institutions they possess, one expects French elected leaders to invasively monitor,

manage and control the armed forces, while British politicians will establish broad objectives and accord the armed forces considerable autonomy in accomplishing them.

Social science theory is contradictory as to which procedure produces better results. Samuel Huntington argues that functional autonomy is a prerequisite for effective performance, Feaver implies all forms of civilian monitoring bear a cost in terms of military effectiveness, and Stephen Biddle and Kenneth Pollack highlight pernicious effects of poor civil-military relations on military performance.¹¹⁵ In contrast to these arguments in favor of military autonomy, other authors focus on the beneficial results of invasive civilian control. Eliot Cohen suggests that intrusive civilian control enhances military performance, and Barry Posen argues that civilian intervention generates military innovation and guarantees that military doctrines complement foreign policies.¹¹⁶ To preview coming chapters, I contend that neither system is superior, but each embodies specific comparative advantages.

Endnotes

¹ Feaver uses the term “shirking” as an antonym for “working.” The typology originates in principal-agent theory and has nothing to do with the standard military definition of shirking. See Peter Feaver, *Armed Servants: Agency, Oversight, and Civil-Military Relations* (Cambridge, Massachusetts: Harvard, 2003), 68.

² Napoleon began his officer training under the monarchy at the Ecole militaire de Brienne. However, his rise to positions of military responsibility owed much to politics. In Corsica, the Bonaparte family attached itself to the Jacobin cause, thereby entering into conflict with Pascal Paoli, who was sympathetic to the Girondins and encouraged British intervention on the island. Later, political machinations in Paris contributed to Napoleon’s rise, such that he was appointed commander of the Army of Italy in 1796 at the age of 26 and without ever having held a field command. Léchelle and Westermann also owed their advancement to an early association with the Jacobins. However, revolutionary ardor failed to compensate for basic illiteracy in the cases of these officers, who both suffered military disasters at the hands of Royalist rebels in the Vendée. See Yves Gras, *La guerre de Vendée (1793-1796)* (Paris: Economica, 1994), 53-82.

³ Frédéric Hulot, *Le Général Moreau* (Paris: Pygmalion, 2001), 124-69.

⁴ Jean Tulard, *Joseph Fouché* (Paris: Fayard, 1998), 193-98, 257-67.

⁵ Margareta Beckman, “‘Very Well Go, and Let Our Destinies be Accomplished’—Napoleon Loses a Marshal – But Gains a King?,” *Between the Imperial Eagles: Sweden’s Armed Forces during the Revolutionary and the Napoleonic Wars, 1780-1820* (Stockholm: Armémuseum, 2000), 372-87.

⁶ Moreau extracted a promise from Tsar Alexander I that Russia would reestablish a republic in France, rather than the monarchy. Hulot, 190-208.

⁷ Raoul Girardet, *La Société militaire de 1815 à nos jours* (Paris: Perrin, 1998), 21-25.

⁸ The military profession was decidedly un-prestigious under the Restoration and the Monarchy of July. According to one study, 63 percent of French officers commissioned between 1825 and 1865 were promoted from the enlisted ranks. Frequent shifts of garrison prevented soldiers from establishing roots. Girardet, 45-67.

⁹ *Ibid.*, 89.

¹⁰ Francis Démier, *La France du XIXe siècle, 1814-1914* (Paris: Seuil, 2000), 116-19, 122-31.

¹¹ Alexis de Toqueville observed of 1848 that, “I saw society split in two: those who possessed nothing united in a common greed; those who possessed something in a common fear. No bonds, no sympathies existed between these two great classes, everywhere was the idea of an inevitable and approaching struggle.” Writing about the same events, Friedrich Engels stated that, “It was the first time that the bourgeoisie showed to what insane cruelties of revenge it will be goaded the moment the proletariat dares to take its stand against the bourgeoisie as a separate class.” Alexis de Tocqueville, cited in Alfred Cobban, *A History of Modern France*, vol., 2, 1799-1871 (London: Penguin, 1991), 143; Friedrich Engels, “Introduction,” *The Civil War in France* in Robert Tucker, *The Marx-Engels Reader* (New York: Norton, 1978), 620.

¹² Démier, 226-27.

¹³ Girardet, 27.

¹⁴ The Commune was the bloodiest event wherein the French Army suppressed an urban uprising and resulted in thirteen times the number of Parisian dead as the June uprisings of 1848 (although both events pale compared to the repression of the royalist uprisings in Western France during the Revolution). Karl Marx viewed the Commune as a step in the inevitable escalation of class conflict and vilified the Army being used to repress the revolt as, “a handful of *Chouans* fighting under a white [royalist] flag” and a “motley crew, composed of sailors, marines, Pontifical Zouaves, Valentin’s gendarmes, and Pietri’s *sergents-de-ville* and *mouchards*.” Karl Marx, *The Civil War in France*, 642; and Cobban, 215.

¹⁵ Republicans offered better prospects to the armed forces in the immediate aftermath of defeat. Republicans were comparatively united in their desire for revenge against Germany, while monarchists were divided into three movements (legitimist, orleanist and bonapartist), each more interested in placing a particular dynasty on the French throne. Republicans were also willing to contemplate universal conscription, which military leaders understood to be necessary for continental warfare, while reactionaries, like Thiers, preferred a small long-service army that would be more reliable for combating social revolution. In one sense, republicans and anti-republicans offered different visions of the army. Republicans preferred a mass army whose purpose would be great power warfare. Anti-republicans wanted a small professional army designed to quell internal unrest. Despite the conservative bias of many officers, the republican project was more valorizing and provided greater resources than its counterpart. Douglas Porch, *The March to the Marne: The French Army, 1871-1914* (Cambridge: Cambridge University Press, 1981), 1-16.

¹⁶ Eric Bonhomme, “Les militaires et le gouvernement de défense nationale: les officiers républicains de la défaite à la politique,” *Militaires et République, 1870-1962: Les officiers, le pouvoir et la vie publique en France* (Paris: Publications de la Sorbonne, 1999), 577-85.

¹⁷ Douglas Porch described the arrangement in terms of, “The entente between the republicans and its pretorians rested upon this understanding: the republic looked after the professional interests of its soldiers and allowed them a large degree of institutional autonomy in return for their discreet loyalty.” Porch, 16.

¹⁸ Fabienne Bock, *Un parlementarisme de guerre, 1914-1919* (Paris: Belin, 2002), 23.

¹⁹ Olivier Forcade, “Les murmures de la ‘Grande Muette’ sous la Troisième République,” in *Militaires et République, 1870-1962: Les officiers, le pouvoir et la vie publique en France*, 507-09.

²⁰ Jean Estebe, “Prosopographie des militaires ministres sous la Troisième République,” in *Militaires et République, 1870-1962: Les officiers, le pouvoir et la vie publique en France*, 206-07.

²¹ Porch, 46-49.

²² Georges Gugliotta, “Un grand commis de la République: Le général de Cissey (1810-1882), réorganisateur de l’armée française,” in *Militaires et République, 1870-1962: Les officiers, le pouvoir et la vie publique en France*, 220.

²³ Subordinating the General Staff to the Minister of War differentiated the French general staff from its Prussian/German inspiration. As a member of the civilian government, the French minister of war was subordinate to the cabinet, a parliamentary majority and, ultimately, the electorate. The Prussian/German General Staff was entirely unaccountable to civilian government, answering only to the King/Emperor. de La Gorce, 19.

²⁴ Frédéric Guelton, “Les hautes instances de la Défense nationale sous la Troisième République,” in *Militaires et République, 1870-1962: Les officiers, le pouvoir et la vie publique en France*, 58.

²⁵ The General Control of the Armies was created on 24 March 1882. Its purpose was to ensure uniformity throughout different commands and verify the application of the minister’s orders. See Jean Fleury, *Faire face: mémoires d’un chef d’état majeur* (Paris: Jean Picollec, 1997), 166-67.

²⁶ The Schnaebelé incident involved German soldiers arresting a French police commissioner (Schnaebelé) near the Franco-German border. Démier, 350.

²⁷ As Minister of War, Boulanger had alienated much of the Army by maneuvering to sack the popular (and republican) General Saussier and illegally stripping the retired Orleans Princes of their military ranks. Although Boulanger’s political

movement depended on his military credentials as “General Revanche,” his followers were almost entirely civilian. Porch, 49-53.

²⁸ Estebe, 207.

²⁹ Porch, 52-53.

³⁰ The motivations of military actors during the Dreyfus Affair have been the source of considerable debate amongst historians. Much French historiography of the Affair has argued that the officers were, in fact, motivated by anti-republican and anti-semitic political views. Dreyfus’ Jewish, atheistic and technocratic background made him a target for a reactionary officer corps, which preferred punishing him rather than the Catholic scion of one of Europe’s most eminent military families, Captain Esterhazy. Douglas Porch has argued that, “Dreyfus’ conviction was not the result of a conspiracy against the republic or an anti-semitic plot. It was a blunder produced by a blinkered bureaucracy in which notions of justice and common decency had been sacrificed to a misconceived sense of loyalty, careerism and political ambition.” Thus, War Minister Mercier’s political dictates led to the forging of documents to convict Dreyfus, who was believed guilty, but proof was lacking. When Dreyfus’ innocence became apparent, the military establishment did everything possible to prevent revelations that could embarrass it. A still more charitable view of the Army’s role in the Dreyfus Affair has been provided by Jean Doise (*Un secret bien gardé* 1994) and Robert Kaplan (“Making Sense of the Rennes Verdict” 1999). These authors have argued that Esterhazy was not a traitor, but involved in a deliberate effort to misinform the Germans about the direction of French artillery development. Conducted under Mercier’s orders and without the knowledge of the General Staff, a problem arose when French counterintelligence recovered a list of documents supplied to the Germans by an unnamed French traitor. According to this interpretation, Mercier decided to frame the innocent Dreyfus rather than compromise his misinformation campaign. This hypothesis advanced independently by Doise and Kaplan is appealing, but is so far based on slender and circumstantial evidence. See Porch, 65-67; and Robert Kaplan, “Making Sense of the Rennes Verdict: The Military Dimension of the Dreyfus Affair,” *Journal of Contemporary History* 34, no. 4 (October 1999): 499-515.

³¹ The Dreyfus Affair led to the consecutive resignations of four ministers of war. Déroulède attempted to convince General Roget’s troops at President Felix Faure’s funeral to overthrow the regime on 23 February 1899. Vincent Duclert, “La République devant l’armée: Les ministres de la Guerre pendant l’affaire Dreyfus (1894-1899),” in *Militaires et République, 1870-1962: Les officiers, le pouvoir et la vie publique en France*, 613-43; and Porch, 64.

³² Jean-Charles Jauffret, “Un sabreur au gouvernement: le général de Galliffet, ministre de la Guerre (22 juin 1899 – 28 mai 1900),” in *Militaires et République, 1870-1962: Les officiers, le pouvoir et la vie publique en France*, 226-27.

³³ Porch, 69.

³⁴ Girardet, 194.

³⁵ Ibid.

³⁶ Paul-Marie de La Gorce, *La République et son armée* (Paris: Fayard, 1963), 58-59.

³⁷ Porch, 176.

³⁸ Ibid., 71-104.

³⁹ de La Gorce, 71-72.

⁴⁰ The quote comes from Hubert Lyautey, a future French field marshal and minister of war. Porch, 72.

⁴¹ The so-called “affaire des fiches” was revealed in two stages. First, the newspaper *Le Matin* revealed the scandal, but presented no proof, in the autumn of 1904. Then, disgusted with the excesses of André’s system, his military adjunct, Bidegoin, passed proof on to Deputy Guyot de Villeneuve, who present the affair to the National Assembly. de La Gorce, 76.

⁴² Diplomatic crises revealed poor military preparation beginning in 1905. During the First Moroccan Crisis, the high command informed the government that France stood no chance in a war with Germany. The chief of the general staff, General Hagron, resigned two years later in protest against the military’s abysmal readiness. During the 1911 Second Moroccan Crisis, Joffre counseled the government that France’s odds for victory were less than 70 percent in a war with Germany. Robert Doughty, *Pyrrhic Victory: French Strategy and Operations in the Great War* (Cambridge, Massachusetts: Belknap Press, 2005), 19-21; and Porch, 169-71.

⁴³ Joffre was appointed to the position of chief of the general staff after minister of defense Adolphe Messimy’s first choice, General Gallièni, refused the position on the basis of being too old, and his second choice, General Pau, was rejected for demanding complete authority over all promotions. Joffre was widely respected and a natural third choice, having proved his competence in a series of colonial and administrative positions. Arthur Conte, “Joseph, Jacques, Cesaire Joffre: catalan et maréchal de France,” *Revue historique des armées* no. 154 (March 1984): 4-8; and Porch, 169-73.

⁴⁴ The effect of the reunification of the French high command has been the subject of some debate. Jack Snyder argues that the reunification of command authority in Joffre’s hands led the French Army to emphasize the offensive and belittle the role of reserves—actions that served the officer corps’ corporate interest. Porch blames Joffre

for not opposing the doctrine of the offensive or recognizing the importance that the Germans attributed to reserve formations. However, he dismisses the overall argument that the parochial interests of the officer corps underscore the failures of 1914. While Doughty also faults Joffre on promoting the offensive, he suggests that Joffre's elaboration of peacetime plans and actions during the first battles permitted the French Army to recover from its defeats in the Battle of the Frontiers, to launch the counterattack on the Marne. See Jack Snyder, *The Ideology of the Offensive: Military Decision Making and the Disasters of 1914* (Ithaca: Cornell, 1984), 90-106; Porch, 169-254; and Doughty *Pyrrhic Victory: French Strategy and Operations in the Great War*, 4-97.

⁴⁵ Although the organization of the French high command changed little during the war, the interactions of civilian leaders and military personnel varied considerably. Believing in a short war, Joffre convinced the government to accord him virtually unlimited operational autonomy, in line with the thesis of General Jean Colin, who argued, "Once war is decided upon [by the government], it is absolutely necessary for the general to act as he sees fit." Although cabinet remained in session, the legislature (National Assembly and Senate) recessed to permit Joffre to serenely run the war. The stagnation of the front, the need to mobilize industrially and the opening of "secondary fronts" raised new questions about command authority. Gradually, both the cabinet and legislature assumed an increasing role in forging a unified French and coalition strategy. Jean Colin, *Les transformations de la guerre* (Paris: Economica, 1989), 241; and Bock, 49-88.

⁴⁶ Doughty, *Pyrrhic Victory: French Strategy and Operations in the Great War*, 358-60.

⁴⁷ When Minister of War André Maginot wanted to reunite the two offices in 1929 and 1930, parliament refused because the officer in question, General Maxime Weygand, was politically conservative. See Philip Bankwitz, *Maxime Weygand and Civil-Military Relations in Modern France* (Cambridge, Massachusetts: Harvard, 1967), 36-38.

⁴⁸ Robert Doughty, *The Seeds of Disaster: The Development of French Army Doctrine, 1919-1939* (Hamden, Connecticut: Archon, 1985), 112-35.

⁴⁹ When Germany reoccupied the Rhineland, Gamelin deliberately exaggerated German military strength to prevent the government from reacting militarily. He acted similarly when Leon Blum wanted to aid the Spanish Republic as well. Adam Athamwaite, "French Military Intelligence and the Coming of War, 1935-1939," *Intelligence and International Relations, 1900-1945* (Exeter: University of Exeter, 1987), 192.

⁵⁰ Weygand, cited in Doughty, 121.

⁵¹ *Les Événements survenus en France de 1933 à 1945. Témoignages et documents recueillis par la commission d'enquête parlementaire*, vol. 3, Paris, PUF, 1947, p. 671., cited in Samy Cohen, 41.

⁵² Bankwitz, 49-115.

⁵³ General Weygand's Chief of Staff, Colonel Jean de Lattre de Tassigny, nurtured contacts with the regime's right-wing opposition during the Stavisky Affair. Whether Weygand was aware of or encouraged these contacts is unknown. Later, when the government learned of the existence of the Corvignolles network, a conspiracy within the Army to purge the armed forces of Communists and anti-militarists, it turned out that the organization was run by Major Georges Lousaunau-Lacau, who had been a trusted member of Pétain's staff. The Corvignolles network possessed apparently intimate links with the Cagoule, an extreme right-wing group whose existence was discovered after its murder of two anti-Fascist Italian refugees in 1937. Although their roles were never fully revealed, many important military figures were implicated in either the Corvignolles or the Cagoule, including serving members of the Superior War Council and two of France's marshals (Pétain and Louis Franchet d'Esperey). Bankwitz, 168-280.

⁵⁴ The concept of a joint education for military and civilian elites enjoyed wide support. Nevertheless, Marshal Pétain opposed the idea. De Gaulle was too junior in rank at the time of the College's creation to have been asked to take a position on the issue. Nevertheless, in his 1932 book, *Le Fil de l'épée*, de Gaulle projected that, "One can predict that a farsighted state will prepare a political, administrative and military elite, through common studies, to direct the military effort of the nation. Besides increasing the likelihood of achieving wartime harmony between different administrations, such an institution would likely elevate the level of discussions and laws concerning the nation's defense." Charles de Gaulle, *Le Fil de l'épée* (Paris: 1932), rpt. in de Gaulle, *Le Fil de l'épée et autres écrits*, 224.

⁵⁵ Hervé Coutau-Bégarie, *Castex, le stratège inconnu* (Paris: Economica, 1985), 172-73.

⁵⁶ The College's first director, Admiral Raoul Castex, developed a curriculum emphasizing Daladier's vision of providing a multidisciplinary education for high-level civil servants and military officers. Castex's curriculum dedicated only 33 percent of course hours to military subjects, as compared to 32.6 percent to economic factors, 10 percent to foreign policy and 6.3 percent to colonial issues. *Ibid.*, 179.

⁵⁷ Pierre Hoff, *Les programmes d'armement de 1919 à 1939* (Vincennes: Etat-Major de l'Armée de Terre, 1982), 40-44, 154-56.

⁵⁸ Paul Reynaud evoked the possibility of France continuing the war from North Africa on 25 May. Weygand instead succeeded in committing the government to a desperate defense of the Somme River. On 13 June, Weygand refused in the most vocal

tones to withdrawing to North Africa, announcing to the government that he “would refuse to leave the soil of France even if put in irons ... should the government quietly decide to take cover in Africa or elsewhere.” On 15 and 16 June, Weygand refused Reynaud’s proposal that the French government should follow the example of the Dutch, where the government withdrew overseas while the land forces were surrendered by their commander in chief. Weygand effectively left the government no choice but to seek an armistice by his repeated refusals to countenance either the Army or the government abandoning metropolitan France, while at the same time refusing to resign, which would have permitted the government to name a more pliant successor. Ultimately, these actions brought down the Reynaud government on 16 June. Bankwitz, 290-325.

⁵⁹ According to any traditional measure of an individual’s right to issue orders, Pétain’s authority was more legitimate than de Gaulle’s. De Gaulle was the colonel of an armored regiment when war was declared in 1939, while Pétain was widely known as the “savior of Verdun” and had commanded the French Army to victory in the First World War. On 18 May 1940, Pétain had been brought back from a diplomatic mission in Madrid to act as Vice-President of the Council of Ministers, who was theoretically the second most important member of the Reynaud government. Meanwhile, de Gaulle was named Under-Secretary of State for War and sent on a diplomatic mission to the United Kingdom, to beg Churchill to send more aircraft to the front in France. Pétain’s authority was sanctioned by the French legislature, meeting in Bordeaux, which voted to give him dictatorial authority. De Gaulle’s authority was self-proclaimed over the radio transmitter that the BBC provided him with. Thus, in terms of military rank, position held within France’s last elected government and the origin of the authority that was claimed, Pétain’s claims outweighed de Gaulle’s.

⁶⁰ Pierre Dabezies, “Subversion, antisubversion, autosubversion,” in *Militaires et République, 1870-1962: Les officiers, le pouvoir et la vie publique en France*, 553-74.

⁶¹ As already detailed, the 1888 reform of the Superior War Council established that either the Minister of War or the President would preside over the body. The powers of French Ministers of Defense were set out in the Decree of 18 July 1962. See Décret du 18 juillet 1962, fixant les attributions du ministre des Armées, in *La politique de défense de la France: textes et documents* (Paris: Fondation pour les Etudes de la Défense Nationale, 1989), 38-39.

⁶² In 1934, de Gaulle had attempted to promote the creation of an entirely professional army corps equipped with tanks and motorized infantry. Institutional resistance to his proposal led de Gaulle to conclude that armed forces are inherently conservative. When generals proved critical of a nuclear strike force, de Gaulle raised his arms and exasperatedly told his son, “I was sure that the [nuclear] strike force would clash with the mentality of the conventional army. It upsets the perpetual routines of staffs. The old regiments are no longer viewed the same way.... They [the establishment] view new technologies the same way as the old cavaliers of 1940 did, who spat on my tanks from the saddles of their horses.” On another occasion, de Gaulle

reflected that, “Everything that one day modified the nature of warfare, all new ideas, came from outside [the armed forces] and if they came from inside, they were just as quickly criticized or combated by the general staff.” Philippe de Gaulle, *De Gaulle, mon père*, vol. 2 (Paris: Plon, 2004), 199, 208.

⁶³ Dominique Pestre, “Innovation technique, fonctionnement des institutions et politique: créer la DMA et concevoir les missiles de la force de frappe française,” Maurice Vaïsse, ed. *Armement et Ve République: fin des années 1950 – fin des années 1960* (Paris: CNRS, 2002), 9-10.

⁶⁴ Pierre Lacoste, *Un amiral au secret* (Paris: Flammarion, 1997), 85-86.

⁶⁵ The navy grew from a peacetime establishment of 20,000 to 110,000. At its peak, the navy counted 398 ships—one-third more than during the peak of the American War. Richard Harding, *Seapower and Naval Warfare, 1650-1830* (London: UCL Press, 1999), 290-95; and Brian Lavery, *Nelson’s Fleet at Trafalgar* (London: National Maritime Museum, 2004), 1-13.

⁶⁶ Before York’s reforms, it was theoretically possible to purchase ranks up to that of lieutenant-colonel in rapid succession. One colonel observed, “An officer who had money could purchase up to the rank of lieutenant-colonel in three weeks or a month.” David Gates, “The Transformation of the Army, 1783-1815,” in *The Oxford History of the British Army* (Oxford: Oxford University Press, 1994), 146-47.

⁶⁷ Wellington’s views were not representative of the entire British officer corps. Wellington’s predecessor as commander of the Peninsular Army, General John Moore, pushed for the education and humane treatment of soldiers. Moore felt that only positively motivated soldiers, led by professional officers, could beat the French, whose tactics relied on the autonomy of their skirmishers and élan of their infantry columns. Wellington, by contrast, believed that fear of draconian punishment was the only means of producing military effectiveness and opposed educating soldiers on principle. Wellington, however, believed that officers should look after the material sustenance of their soldiers, ensuring adequate food and lodgings. It is interesting to reflect on whether the British Army would have evolved differently if Moore’s untimely death in 1809 had not removed an enlightenment officer from the head of Britain’s largest field army, while opening the way for Wellington’s accession.

⁶⁸ Peter Burroughs, “An Unreformed Army? 1815-1868,” in *The Oxford History of the British Army*, 170.

⁶⁹ Colonialism integrally linked military and civil administrative responsibilities. This frequently blurred lines between military and civilian roles. For example, nearly half the members of the Indian Political Office, essentially a diplomatic structure, were military officers. These officers, known as “politicals” sometimes clashed with both civilian diplomats and combat officers. During General Charles Napier’s first tenure as commander of the Indian Army, he invaded Sind in 1843 despite the objections of the

political officer in charge of relations with the local emirs. Later, Napier clashed with the Governor-General Lord Dalhousie during his second period in India over whether the Indian Army should be concentrated (Napier) or dispersed (Dalhousie). Hew Strachan, *The Politics of the British Army* (Oxford: Clarendon, 1997), 74-91.

⁷⁰ Whereas the 15% of the British force dispatched to the Crimea died from disease and exposure, the French only lost 7%. See Carver, 129.

⁷¹ The growth of the British Empire after the Napoleonic Wars meant that 65 to 75 percent of British infantry was serving overseas at a given time between the 1820s and 1840s. As a result, line infantry officers became a professional class comparatively early. On the other hand, the cavalry and guards regiments, which rarely deployed overseas, retained an aristocratic and amateur quality. Because the charge of the light brigade received so much attention, it has arguably given contemporary audiences an unbalanced view of the British officer corps as a whole. The classic account of the charge of the light brigade is: Cecil Woodham-Smith, *The Reason Why: The Incredible Story of the Charge of the Light Brigade* (New York: Barnes and Noble, 1953).

⁷² The military duties of the Colonial Office and the commissariat, previously administered by the Treasury, were transferred to the War Office. The Board of Ordnance was abolished and its functions were split between the Commander-in-Chief and the Secretary of War. Burroughs, 183-84.

⁷³ Correlli Barnett, *Britain and Her Army: A Military, Political and Social Survey* (London: Allen Lane, 1970), 291.

⁷⁴ A War Office memorandum that influenced Cardwell argued that the purchase system permitted officers to remain in the Army and rise to the rank of colonel without applying themselves to learning their profession. A custom associated with the purchase system, Exchanges, also helped motivate the reform. By the Exchange System, a rich officer slated to be deployed overseas could pay a poorer officer of equal rank to exchange places. As a consequence, overseas service and actual war experience tended to be concentrated in the Army's poorer officers. Thomas Gallagher, "British Military Thinking and the Coming of the Franco-Prussian War," *Military Affairs* 39, no. 1 (1975): 20.

⁷⁵ Edward Spiers, "The Late Victorian Army, 1868-1914," in *The Oxford History of the British Army*, 187-91.

⁷⁶ Gallagher, 21.

⁷⁷ Bill Jackson and Dwin Bramall, *The Chiefs: The Story of the United Kingdom Chiefs of Staff* (London: Brassey's, 1992), 12-13.

⁷⁸ John Gooch, "Adversarial Attitudes: Servicemen, Politicians and Strategic Policy in Edwardian England, 1899-1914," *Government and the Armed Forces in Britain, 1856-1990* (London: Hambledon, 1996), 53.

⁷⁹ Wilkinson argued that a general staff was a rational extension of the division of labor affecting the economy as a whole. Wilkinson contested the notion that a general staff weakened the authority of commanders, but that a staff permitted commanders to "see clearly and judge coolly... only the large problem of the campaign." Bryce Poe II, "British Army Reforms, 1902-1914," *Military Affairs* 31, no. 3 (Autumn 1967): 133.

⁸⁰ Jackson and Bramall, 16-17.

⁸¹ Poe, 132.

⁸² Gooch, 54.

⁸³ The Staff College was not particularly rigorous in its selection of officers or the course work in general. For example, the Staff College had a policy whereby 25 percent of the annual intake of students would be chosen by nomination rather than competitive examination. Having failed the mathematics portion of the exam, Douglas Haig was admitted to the 1896 course by nomination. Tim Travers, "The Hidden Army: Structural Problems in the British Officers Corps, 1900-1918," *Journal of Contemporary History* 17, no. 3 (July 1982): 536.

⁸⁴ The main reason for the Army's resistance to the creation of a General Staff was that a general staff would clearly be subordinated to the War Office, whereas the Army argued that the old position of Commander-in-Chief entailed the Army's direct subordination to the monarch. *Ibid.*, 56-57.

⁸⁵ The decision to create the General Staff was taken in 1904, it was established with 72 officers in 1906 and expanded to cover the Empire in 1909. Poe, 134.

⁸⁶ Gooch, 65-77.

⁸⁷ Jackson and Bramall, 57-59.

⁸⁸ David French, "'A One-Man Show'? Civil-Military Relations during the First World War," *Government and the Armed Forces in Britain, 1856-1990*, 82-83.

⁸⁹ Amphibious operations, calling for joint planning, remained a source of frustration for the United Kingdom throughout the war. The early British attempt to hold Antwerp in 1914 and the failure to take Gallipoli in 1915 were critical early examples. Later, First Sea Lord Jackie Fisher's repeated efforts to promote an amphibious campaign in the Baltic Sea and the abortive attempts by the high command to plan a combined land and amphibious campaign in Flanders showed that joint planning had not necessarily

improved. From 1915 onwards, the British government and armed forces remained divided between “Westerners” who favored concentrating all strategic efforts on defeating Germany on the Western Front and “Easterners” who argued that campaigns against Germany’s more vulnerable allies was preferable. Ultimately, both strategic controversies between Easterners and Westerners and the consideration of joint planning suffered from a deficit in centralized planning institutions.

⁹⁰ Strachan, 112-17.

⁹¹ Jackson and Bramall, 71-72.

⁹² Feuds within the British high command continued during the war and frequently entailed the falsification or misconstruction of military events. It has been argued that French's use of the Munitions Scandal aimed at replacing Minister of War Field Marshal Kitchener rather than the Liberal Government. Haig deliberately misrepresented the issue of reserves at the Battle of Loos both to protect his own reputation and blame French for the attack's failure. Whether or not he knew of Haig's manipulation of the record, Kitchener seized on the issue of mishandling of reserves to dismiss French. Once in command, Haig maintained a regular correspondence with King George V as a means of protecting himself politically. Later in the war, Haig feuded with General Henry Wilson. After Haig failed to dismiss Wilson in May 1916, Wilson subsequently used his position as Chief of the Imperial General Staff to lobby for Haig's replacement. Tim Travers, “The Army and the Challenge of War, 1914-1918,” in *The Oxford History of the British Army*, 211-34; and Travers, “The Hidden Army: Structural Problems in the British Officers Corps, 1900-1918,” 523-44.

⁹³ Franklyn Johnson, *Defence by Ministry: The British Ministry of Defence, 1944-1974* (London: Duckworth, 1980), 32.

⁹⁴ William Philpott, “The Campaign for a Ministry of Defence, 1919-36,” *Government and the Armed Forces in Britain, 1856-1990*, 109-12.

⁹⁵ The three services recommended creating the Imperial Defence College as a means of avoiding the replacement of their own staff colleges by a joint institution. *Ibid.*, 126-36.

⁹⁶ Williamson Murray, “Collapse of Empire: British Strategy, 1919-1945,” *The Making of Modern Strategy: Rulers, States, and War* (London: Cambridge, 1994), 398-99.

⁹⁷ Philpott, 133.

⁹⁸ *Ibid.*, 149-54.

⁹⁹ Sean Greenwood, "Sir Thomas Inskip as Minister for the Co-ordination of Defence, 1936-39," *Government and the Armed Forces in Britain, 1856-1990*, 155-89.

¹⁰⁰ First Sea Lord, Admiral Roger Backhouse, cited in Greenwood, 189.

¹⁰¹ Williamson Murray, *The Change in the European Balance of Power, 1938-1939* (Princeton: Princeton University Press, 1984), 92.

¹⁰² Churchill was a military officer by training. However, it was as a war correspondent that he became a witness to several British conflicts of the Edwardian era, including Kitchener's Sudanese campaign, the Boer War and one of the British Army's numerous punishment expeditions on the Northwest Frontier in India. Serving as First Lord of the Admiralty (Secretary of the Navy) at the outbreak of the First World War, Churchill played an influential role in the abortive defense of Antwerp in 1914, the Gallipoli Campaign of 1915 and the development of the first tanks. Discredited by the British failure to take the Dardanelles, Churchill was ousted from government, whence he served as a divisional staff officer on the Western Front. Later in the First World War, Churchill returned to cabinet, where he became Minister of Munitions, in Lloyd George's government. During the inter-war period, Churchill served for a time as the Secretary of State responsible for both the Army and the RAF. When the question of the creation of a Ministry of Defence was discussed during the inter-war period, Churchill was thought by many to be the natural candidate to fill such a post, especially as he had already served as Secretary of State for each individual service.

¹⁰³ Ismay had served as Hankey's successor as Secretary of the CID before the war and Churchill's personal Chief of Staff during the war. Jacob was Chief Staff Officer on Ismay's staff during the war. Bridges was Secretary of the Cabinet and had previously served as head of the defense division of the Treasury. Johnson, 18.

¹⁰⁴ Johnson, 14-34.

¹⁰⁵ *Ibid.*, 41-44.

¹⁰⁶ *Ibid.*, 45-47.

¹⁰⁷ Strachan, 246.

¹⁰⁸ Healey did not believe that centralization produced good policy. He remarked that "Whitehall committees tended to smother disagreements in a soggy compromise" and that the chiefs of staff "were notorious for log-rolling – saying 'I'll support you on this if you support me on that.'" Denis Healey, *The Time of My Life* (London: Michael Joseph, 1989), 258-63.

¹⁰⁹ Strachan, 248-49.

¹¹⁰ Ibid., 256-57.

¹¹¹ Adrian Smith, "Michael Heseltine and the Reorganisaion of the Ministry of Defence," *Government and the Armed Forces in Britain, 1856-1990*, 265-310.

¹¹² Healey, 261.

¹¹³ In practice, it is difficult to classify actual civil-military incidents into Finer's typology. However, I have classified Napoleon's seizure of power and the abortive 1961 Generals' Putsch as attempts at "supplantation." The French occasions of "substitution" include Malet's attempted 1812 coup d'état, the Army's involvement in Louis Napoleon's 1851 coup d'état, the pressure tactics applied against Reynaud's government in 1940, and the armed forces' role in bringing de Gaulle to power in 1958. The one British example of substitution was the Munitions Scandal of 1915, where the Army brought down the Asquith Liberal Government. The French examples of "blackmail" include Foch's threatened resignation over the Rhineland clauses of the Versailles Treaty, Weygand's threatened resignation—leaked to the press—over French disarmament policy in 1932, and the humiliation of the government over manpower policy at the Superior War Council in 1933. The British example of "blackmail" is the Curragh Affair.

¹¹⁴ Although I make no effort to analyze the causes of civil-military problems, most theories lead to a prediction of civil-military harmony. Finer argued that military interventions in politics are a reflection of a political culture that does not recognize the legitimacy of a given regime. Although France formerly harbored significant monarchic, anti-republican, communist and fascist movements, which all contested the legitimacy of the republic, these groups have declined into irrelevance. Authors such as Ambler and Parret emphasized the role of colonial warfare in civil-military tensions. If this is the case, the end of France's colonial empire in the 1960s should mark the end of civil-military problems. Given Huntington's emphasis on professionalism, the open recruitment and un-politicized promotion of officers should shield France from civil-military crises.

¹¹⁵ Feaver argues that monitoring has a cost, but that it is preferable to permitting the armed forces to "shirk" in obeying civilian dictates. The amount of monitoring that is justifiable depends therefore on the armed forces' propensity to "work" or "shirk." Pollack concluded that culture has greater explanatory power in accounting for poor Arab military performance than civil-military problems, however civil-military factors are nonetheless judged as having a negative impact. Samuel Huntington, *The Soldier and the State: The Theory and Politics of Civil-Military Relations* (Cambridge, Massachusetts: Harvard, 1957); Feaver; and Ken Pollack, *The Influence of Arab Culture on Arab Military Effectiveness* (Cambridge, Massachusetts: Ph.D. Dissertation in Political Science, MIT, 1996).

¹¹⁶ Eliot Cohen, *Supreme Command: Soldiers, Statesmen and Leadership in Wartime* (New York: Free Press, 2002); and Barry Posen, *The Sources of Military Doctrine: France, Britain, and Germany Between the World Wars* (Ithaca: Cornell, 1984).

Chapter III:

French Military Doctrine (1958-1991)

I. Introduction

The purpose of this chapter is to test two hypotheses. The first hypothesis is that the stimulus for French military doctrine comes from political leaders' evolving perceptions of international relations. If this hypothesis proves correct, doctrinal changes should exhibit two characteristics. Doctrinal changes should originate from clear directives issued by elected leaders and should correspond to diplomatic imperatives rather than responding to perceived changes in the future character of war. Contingent on the first hypothesis, the second hypothesis tested in this chapter is that France's elected leaders shape the evolution of military doctrine through an institutional structure of defense policymaking that maximizes their ability to impose reforms. To test these propositions, this chapter will explore four distinct shifts in France's military doctrine that occurred between the establishment of the Fifth Republic in 1959 and the end of the Cold War thirty years later.

Studies have demonstrated that elected leaders are normally ill-placed to force armed forces to fundamentally change the way they plan to conduct military operations. As Stephen Rosen pointed out, a civilian command that the armed forces must change their tactics and organization is inherently difficult to enforce.¹ Because the armed forces themselves are a state's primary repository of expert knowledge on how to fight, the military high command of a state can normally obstruct reforms they oppose.

Elected leaders therefore need distinct capabilities to devise and implement doctrinal reforms. These include, the ability to publicize an unambiguous order for change,

possessing full knowledge of the options available, ensuring that the individuals charged with implementing the order control everything needed to carry it out, and being able to monitor the armed forces' execution of executive orders. If elected leaders lack these facilities, they will have trouble imposing changes on military organizations.

To overcome the difficulties that elected officials normally encounter, French leaders take advantage of France's institutional structure of defense policymaking and draw on a variety of specialized organizations that enhance their authority. As detailed in Chapter 2, the institutional structure and organizational components of French defense policymaking evolved over time as a direct response to civil-military crises. Concretely, France's institutional structure of defense policymaking empowers civilian leaders by: 1) endowing them with multiple independent sources of military advice, 2) providing them with forums whereby doctrinal changes can be publicly and unambiguously announced, and 3) enabling them to monitor and control the implementation of a reform.

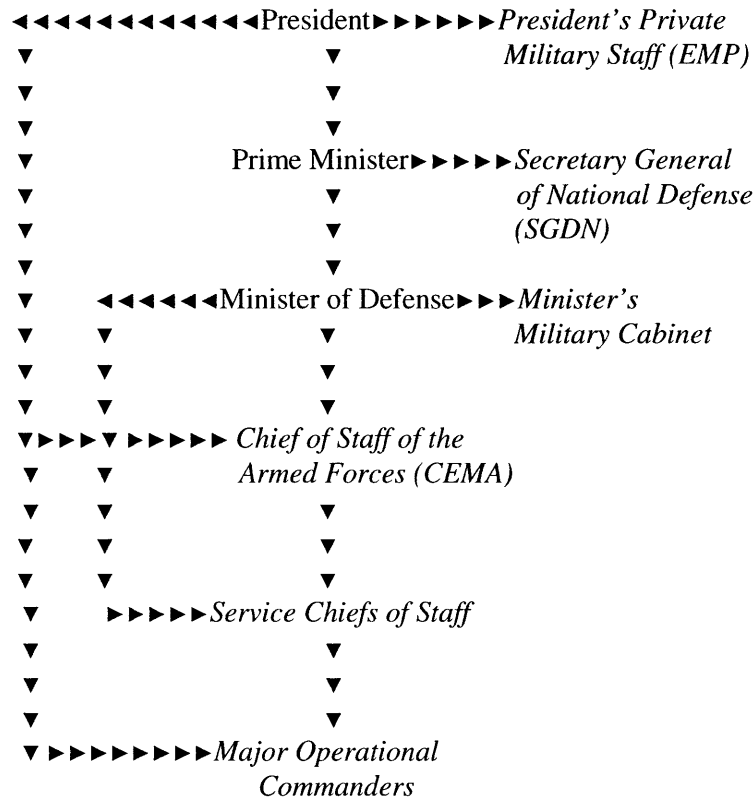
Because civilian leaders can only impose doctrinal reforms if they understand the range of options available, any civilian dominated model of doctrinal change must account for how elected officials are educated about potential changes or alternatives to an existing doctrine. If elected officials rely exclusively on an armed service to inform them about doctrinal alternatives, and if that armed service is represented solely by its commander-in-chief or a unitary general staff, civilian leaders will only be able to choose from the options the armed service chooses to present. France's institutional structure of defense policymaking addresses this problem in two ways: by giving elected leaders access to a wide variety of opinions from *within* the armed forces and providing them with *outside* expertise in the form of government-controlled think-tanks and study-groups.

To maximize the doctrinal options presented to elected officials, the institutional structure of defense policymaking ensures that French civilian leaders are never obliged to deal with a French armed service as a monolithic whole. The Chief of Staff of the Armed Forces (CEMA) is theoretically *the* government's advisor on military affairs and presides over the three service chiefs of staff, who technically control the administration of the Army, Navy and Air Force. However, unlike the United Kingdom, where the Chief of Defence Staff (CDS) and the three service chiefs are the government's sole interlocutors with the armed services, French elected leaders have direct access to and authority over a plethora of high-ranking military commanders, while many French generals and admirals lack hierarchic authority over one another.

The three most important governmental officials involved in defense policymaking—the president, the prime minister and the minister of defense—possess independent military staffs presided over by generals or admirals. In addition to these staffs, France's president has, since 1964, had the statutory authority to consult with and issue directives to the commanders of French nuclear forces, which included five major commands at the end of the Cold War.² Meanwhile, the Minister of Defense has the exclusive power to convoke and preside over the chiefs of staff committee, comprised of the chiefs of France's three armed services and the Chief of Staff of the Armed Forces (CEMA).

Taken as an ensemble, the French government (president, prime minister and minister of defense) has direct authority over and routinely interacts with 12 generals and admirals—the CEMA, the CEMP, the SGDN, the chief of staff of the Minister of Defense's military cabinet, the three service chiefs of staff, and five operational commanders of nuclear forces. Table I, below, graphically illustrates the alternative sources of military advice available to French civilian leaders:

Table I.
Sources of Military Advice to Civilian Leaders
in France



* Civilian leaders are represented in normal script, military officers and/or structures are in italics.

Because military officers differ from one another in terms of personal opinions and analyses of military developments, multiplying the number of high-level military officers that provide advice to political authorities increases the range of options presented to elected leaders. In the French context, armed services will be at a comparative disadvantage when it comes to advancing their corporate interests, while elected leaders will have greater facilities for promoting developments that respond to their perceived requirements.

Although access to a wide range of opinions guarantees that French civilian policymakers do not have to deal with the armed forces as a monolithic whole, in itself this did not ensure that they will be presented with comprehensive information on potential doctrines. Studies of bureaucratic politics have demonstrated that military professionals favor offensive doctrines over defensive or attritional ones, prefer clear commitments to use force massively, and struggle to perpetuate the basic force structure of armed services.³

To obtain advice at variance with the beliefs of high-ranking officers as a professional group, civilian leaders can draw on specialized think-tanks. Recourse to think-tanks broadens defense debates by drawing other professional groups, such as economists, scientists and political scientists, into doctrinal deliberations. To this end, French civilian leaders can call upon four sources of military expertise entirely outside the purview of the professional armed forces. Funded by and answering directly to the Minister of Defense, these four bodies consist of two dedicated think-tanks and two institutions (IHEDN and the CGA) that occasionally provide advice on doctrine and force structures.

The senior of the two dedicated think-tanks is the *Centre de Perspective et d'Évaluations* (CPE), which was renamed *Groupe d'Études et de Planification Stratégiques* (GROUPES) by the Mitterrand administration. Founded in 1965, the CPE was created with the specific mission of advising the French government on nuclear doctrine. Since its inception, the Minister of Defense has traditionally appointed armament engineers to preside over the CPE, ensuring that doctrinal questions were treated on their technical merits and that the structure remained aloof from the armed forces.

In 1972, a second think-tank was created. The *Fondation pour les Études de Défense Nationale* (FEDN) was established with the specific goals of “imposing a con-

sensus on strategy” and serving as “the bridge between military society and the academic world.”⁴ The FEDN has been managed by a combination of civilian defense intellectuals and retired iconoclastic military officers, including Lucien Poirier, who authored France’s first statement of nuclear doctrine, and Charles Fricaud-Chagnaud, who developed the concept of a rapid deployment force (the FAR) in 1981.

Besides these dedicated think-tanks, the Ministry of Defense possesses two other sources of alternative advice. Although the *Institut des Hautes Etudes de Défense Nationale* (IHEDN) primarily fulfills the educational role, the fact that its students include medium-ranking officers, armament engineers, defense intellectuals, elected officials and civil servants from other ministries means that the IHEDN can form ad hoc study groups. Every year, IHEDN study groups produce detailed studies on current doctrinal and procurement issues. These studies are then transmitted to the Minister of Defense, where they provide alternative and multidisciplinary analyses of doctrinal issues.⁵ Another organization that became involved in military doctrine despite its having an originally different mission was the *Contrôle Général des Armées* (CGA). Since its creation, the CGA has branched out from its original oversight mission and come to view itself as a “force of proposition” capable of proposing far ranging changes to force structure and doctrine.⁶

Logically, the better civilian leaders are at accessing a variety of independent sources of expertise on military doctrine, both within the armed services and outside them in the form of think-tanks and study groups, the greater will be their ability to elaborate alternatives to a given military doctrine. However, two other requirements exist for civilian leaders to be able to impose military doctrines—they must be able to publicize the new doctrine unambiguously and enforce its implementation by the armed forces.

In France, the process of signaling doctrinal change is extremely formal and controlled by the Minister of Defense. Although details of military planning are withheld, presidents, prime ministers and defense ministers announce significant doctrinal changes during their regularly scheduled speeches at the IHEDN. To ensure that the new doctrine is communicated to the French armed forces as well as concerned civil servants, important IHEDN speeches are published in the Ministry of Defense's journal *Défense Nationale*. As a corollary to political leaders controlling the means of diffusing ideas about doctrine, they can prevent active-duty military personnel from publishing counter-arguments.

Once a new doctrine has been elaborated and publicly announced, the final requirement for political leaders to impose it on the armed forces remains their ability to monitor its execution. In France, elected officials possess two distinct advantages in implementing changes to military doctrine. First of all, because of their access to multiple echelons of the armed forces' high command, they can empower the officers most sympathetic to their reform. For example, if political leaders want to impose a doctrinal reform concerning the French First Army, they have the choice of confiding the execution of the reform to either the Chief of Staff of the Armed Forces (CEMA), the Chief of Staff of Ground Forces (CEMAT) or the commander of the First Army himself. Secondly, once an explicit directive has been issued to adopt a new doctrine, the CGA can be tasked with monitoring and investigating its implementation. According to a knowledgeable observer, the mere possibility of an investigation plays a significant role in ensuring compliance with political dictates.⁷

In short, elected leaders need specific institutional tools if they are to formulate and impose military doctrines that meet their broader political needs. The institutional structure of French defense policymaking provides civilian leaders with critical capacities

for obtaining multiple independent sources of advice on doctrinal matters, publicly decreeing what French doctrine actually *is* supposed to be, and controlling the implementation of the new doctrine. This chapter examines the impact of French policymaking institutions on the elaboration of four military doctrines: 1) the creation of France's "two battles" doctrine of 1966; 2) the shift towards a single battle with tactical nuclear weapons in 1968; 3) the development of a doctrine of "enlarged sanctuarization" between 1974 and 1981; and 4) the creation of the Rapid Action Force (FAR) between 1981 and 1985.

II. The Evolution of a Commitment, 1944-1966

Events between 1944 and 1966 established the fundamental contours of France's participation in the defense of Western Europe. Because of how France participated in the victorious offensives of 1944, its preoccupation with colonial wars during NATO's first crucial decade and de Gaulle's policy of national independence, the French Army came to occupy a geographical position behind NATO's other armies on the Central Front. This meant that France, alone amongst the states committed to defending Western Europe, lacked a military presence on the border with the Warsaw Pact. Geographic distance dictated that the proper role of French forces was to serve as a strategic reserve for NATO's other forces. However, France remained torn between the necessity to support its allies and the temptation of withholding forces to defend national territory. Importantly, the geographic distribution of French forces, which were heavily concentrated in Alsace, Lorraine and Southwest Germany, left the French Army poorly prepared to meet the most dangerous Soviet threat -- an offensive across the North German Plain and into Northern France.

Although vanquished in 1940, France ended the Second World War as one of the victorious allied powers thanks to the tenacity of Brigadier-General Charles de Gaulle and the political calculations of British Prime Minister Winston Churchill. From August 1944, a French Army participated in France's liberation. Landing in Provence, participating in the bloody battles for the Colmar Pocket, and helping blunt the Third Reich's penultimate Nordwind offensive, the French First Army ended the war occupying large portions of Southwest Germany.⁸ This French occupation of German territory received the official sanction of France's allies at the international conferences ending the war. Unlike the analogous British and American dispositions in Germany, the French did not share a common border with the zones of Soviet occupation. Moreover, adjacent to national territory, French leaders viewed their zone as providing a buffer against a renewed threat from the east.

When the Korean War prompted Western European rearmament in 1950, Western leaders expected France to play the preponderant role in Europe's defense. With the United States and United Kingdom occupied overseas and European states understandably worried lest West Germany re-emerge as the continent's premier military power, most states looked to France to provide the forces and leadership necessary to defend Europe conventionally. At NATO's Lisbon Conference in 1952, France pledged to provide 15 to 20 divisions, versus 12 for West Germany and nine for the United Kingdom.⁹ Unfortunately, France's colonial wars soon consumed the forces needed for Europe's defense.¹⁰ From the 1950 defeats in Indochina until the peak of the Algerian War, one French unit after another redeployed from the Rhine to the colonies. By 1957, France had 450,000 soldiers in Algeria, but did not possess a single operational division in Eastern France or Southwest Germany between 1956 and 1961.

Physically absent, the French Army devoted little thought to Europe's defense until de Gaulle showed his determination to extricate France from Algeria. The first detailed French study of a Warsaw Pact attack, therefore, was not completed until 1959. In many respects, this study set the tone for most French analyses until the end of the Cold War. French planners anticipated that geographic factors would channel a Warsaw Pact offensive along three corridors: 1) from the North across the North German Plain, through Hanover, towards Liege, and then to Paris or the French channel ports; 2) in the Center, from East Germany to Paris via Lorraine, through two gaps in the Rhine highlands via Marburg-Koblenz-Luxembourg-Verdun-Paris starting at the Göttingen Corridor, and/or Fulda-Frankfurt-Nancy-Paris, beginning at the Fulda Gap; and 3) in the South, through the Bavarian Plain, crossing the Rhine between Karlsruhe and Strasbourg.¹¹ According to French analysts, enemy forces could either focus on a single invasion route or attempt to advance via all three.¹²

In 1960, French planners concluded that the main Soviet offensive was most likely to come via the Northern route, where the geography was most permissive and allied forces comparatively weak.¹³ Most later French analyses confirmed this supposition. A 1966 study arrived at identical conclusions and a Czech defector brought confirmatory information in 1970.¹⁴ Ultimately, much French military planning during the 1970s and 1980s focused on meeting an attack across the Northern Route. Only a lone French analysis, written by the Chief of Staff of the Armed Forces, General Charles Ailleret, concluded differently, that the main attack would come along the Southern route.¹⁵ Table II, below, details French analyses of the Soviet threat.

**Table II:
French Analyses of World War III**

	1960	1962	1966	1970
Invasion Route Predicted	Northern Route	Southern Route	Northern Route	Central and Northern Routes
Anticipated Soviet Nuclear Policy	No First Use	No First Use	Immediate Nuclear Use	Uncertain
Anticipated Outcome	Not Stated	Not Stated	Soviets Reach Atlantic Ocean in 10 to 12 days	Bridgehead over Rhine in 6 to 10 days
Enemy Forces in Main Thrust	10-14 divisions (first echelon)	Not Stated	Not Stated	10-15 divisions in N. 10 divisions in C. (first echelon)
Nature of Analysis	Analysis by HQ. of French Forces in Germany	Analysis by Chief of Staff of the French Armed Forces (Ailleret)	Analysis by French Military Intelligence	Information brought by Czech defector

While France was most vulnerable to an attack through Northern Germany, French forces in Southwest Germany and Eastern France were only capable of countering attacks via the central and southern invasion routes. Despite the growing recognition that France was particularly vulnerable to an attack in the North, neither domestic nor international politics favored a redistribution of France's defense effort. Although the de facto product of historic accidents, de Gaulle considered the French Army's distance from the Iron Curtain and presence in Southwest Germany to be geopolitical advantages. In de Gaulle's eyes, distance from the frontline would give France greater leverage in a crisis. In the event of war, de Gaulle hoped this same distance would translate into an option for non-belligerence.¹⁶ Because he feared being dragged into a conflict unconnected with French interests, de Gaulle argued that France should uphold its alliance obligations if the Warsaw Pact attacked Western Europe, but remain uncommitted should an extra-

European conflict or West German revanchism lead to war.¹⁷ Involvement in the forward defense of Western Europe would both reduce France's freedom of action and render non-belligerence impossible.

As France withdrew troops from Algeria, de Gaulle refused to allocate more forces to NATO or Germany.¹⁸ In 1963, he formally rebuffed a German request to allocate two divisions to NATO's frontline, in Staubing, Bavaria.¹⁹ Three years later, de Gaulle went further by withdrawing France from NATO's integrated force structure and expelling American forces from France.²⁰ Following this dramatic reassertion of national autonomy, de Gaulle bilaterally renegotiated France's strategic relationship with NATO and West Germany.²¹ French soldiers would remain in Southwest Germany, but their participation in a future conflict would depend on the French government's decision to subordinate its forces to NATO.

In sum, by the 1960s, France had a permanent military presence in Southwest German regions adjacent to France: Baden, the Saar and the Palatinate. Unlike other allied forces, the French did not occupy a section on NATO's forward defense-line and were not subordinate to a multinational NATO headquarters. This posture increased the options available to French political leaders, preserved French leverage over West Germany and permitted the French Army to serve as NATO's strategic reserve. However, French forces were poorly deployed to respond to the strategic threat French analysts viewed as most pressing--an attack through the North German Plain. In effect, France's vulnerable border with Belgium would remain bereft of forces until the late-1970s and would not have a strategic force contributing to the defense of the North German Plain until the 1980s. Thus, through a combination of historic accident and political calculation, the French armed forces came, by the 1960s, to occupy positions best adapted to

meeting the least urgent military threat, an attack in Southern Germany, and least capable of countering the urgent message of an offensive in Northern Germany.

III. Institutions and Military Doctrine under de Gaulle, 1958-1967

When de Gaulle assumed power in 1958, he was convinced that France's prestige and security depended on creating a nuclear deterrent, reconstituting France's mechanized forces and asserting France's independence vis-à-vis NATO.²² For a military establishment mired in colonial warfare and convinced about the necessity of Western unity, de Gaulle's vision called for a paradigm shift in French military doctrine. Unfortunately, most of the armed forces' leadership opposed de Gaulle's initiatives.²³ After decades of warfare against insurgents in Indochina and Algeria, many officers believed that Communist subversion posed a greater threat to the West than the Soviet Union's armored divisions or nuclear weapons.²⁴ Moreover, the prevailing spirit in the French Army was unscientific and anti-intellectual, leading many prominent commanders to dismiss the value of nuclear armaments and propose simplistic counters to their use.²⁵

During his administration, de Gaulle had recourse to three stratagems to overcome the armed forces' resistance and develop a doctrine reconciling France's alliance ambitions with national independence and nuclear deterrence.²⁶ De Gaulle: 1) promoted technically trained officers to critical posts and used France's parallel staff systems to marginalize less pliant commanders; 2) deprived the armed forces of their ability to shape procurement decisions with the creation of the DMA; and 3) broadened policy debates through the creation of a Ministry of Defense sponsored think-tank. Drawing on the multiple sources of advice at his disposal, de Gaulle revolutionized French military doctrine and force structures. By the end of 1966, French doctrine envisaged defending French

territory and interests with a combination of conventional and nuclear forces. France's alliance obligations would be upheld by exclusively conventional forces; a combination of conventional forces and tactical nuclear weapons would administer a "final warning" to enemy as they approached the French border; and, strategic nuclear weapons would remain in reserve as a final "anti-cities" deterrent, discouraging an enemy from crossing the French border.

Resistance from the officer corps both dismayed and upset de Gaulle, who realized that a proactive approach was necessary to convert the French armed forces to a strategy based on nuclear deterrence and national independence. De Gaulle's response to this problem was twofold. First of all, he promoted individuals associated with France's nuclear weapons program to key positions in the armed forces and ministry of defense. Later and more importantly, he created durable institutional structures designed to refine and implement the president's strategic vision.

De Gaulle's initial response to the armed forces' indifference was a pragmatic one – elevating individuals already associated with France's nuclear programs to the highest military and defense-policymaking posts. From personal experience, de Gaulle understood the necessity of protecting the careers of and promoting individuals with strategic concepts akin to his own. When briefed by Colonel (later General) Pierre Gallois in 1956 on the usefulness of nuclear weapons to a medium power, such as France, de Gaulle concluded the interview by telling Gallois, "it is late, go sleep, I'll look after your career."²⁷

Once in office, de Gaulle's first critical appointment was his nomination of Pierre Guillaumat, the civilian director of France's Commissariat d'Énergie Atomique (CEA or Commission for Atomic Energy), to the post of Minister of the Armies between 1958 and 1960.²⁸ Later, when de Gaulle created the Délégation Ministérielle pour l'Armement

(DMA) in 1961, he named General Gaston Lavaud, the former armaments advisor to Defense Minister Maurice Bourguès-Maunoury, to pilot the new structure. Importantly from de Gaulle's perspective, Lavaud was already deeply involved in France's ballistic missile programs.

When it came to choosing his military collaborators, de Gaulle began by appointing General Charles Ailleret (Army), the former head of the Armed Forces' *Commandement des Armes Spéciales* (CAE), a small structure dedicated to studying atomic weapons, to the position of Chief of Staff of the Armed Forces (CEMA) in 1962. Ailleret occupied this post throughout most of de Gaulle's administration, until he perished in a plane crash in 1968. In the same vein, de Gaulle appointed General Michel Fourquet (Air Force) as successively Secretary General of National Defense (1962-65), Chief of the President's Private Military Staff (CEMP 1965-68) and Chief of Staff of the Armed Forces (CEMA 1968-71).

Importantly from de Gaulle's point of view, Ailleret and Fourquet were atypical within the French military establishment. Rather than graduating from the service academies that produced most French officers, Ailleret and Fourquet were products of France's elite engineering school, *Ecole Polytechnique*. After receiving engineering degrees, Ailleret and Fourquet served in technically challenging branches, the artillery and air force respectively. De Gaulle could therefore count on these two technocrats to appreciate the value of nuclear weapons and help him impose them on France's armed forces.

The appointments of Guillaumat, Lavaud, Ailleret and Fourquet, and de Gaulle's subsequent nomination of political disciple Pierre Messmer to the Ministry of Defense ensured that de Gaulle's highest-level interlocutors at the Ministry of Defense and the

armed forces were broadly sympathetic to his policies. These steps were necessary, but they were not sufficient condition for developing and implementing a military doctrine consonant with de Gaulle's security policies.

To elaborate and codify military doctrine consonant with his security policy, de Gaulle also created a dynamic new "think tank" within the Ministry of Defense that was funded by and answerable directly to the minister. As Kimberly Zisk demonstrated in *Engaging the Enemy*, political leaders can enhance their influence over defense policy by broadening the policy debate. The *Centre de Perspective et d'Évaluations* (CPE or Center for Perspectives and Evaluations) filled this role by both advising de Gaulle on nuclear matters and translating his strategic concepts into arguments couched in the terms of military theory. Created in 1965 by Minister of Defense Pierre Messmer, with de Gaulle's approval, the CPE benefited from high-level patronage that enabled it to exert a greater weight in policy debates than the comparatively low ranks of its officers would normally permit. Originally put under the directorship of an armaments engineer, Hughes de l'Étoile, the twenty-odd members of the CPE were drawn from a variety of defense-related backgrounds, including officers from all three services, engineers and academics.²⁹

Because of its multidisciplinary and inter-service nature, and the fact that it was both independent of the armed forces high command, yet dependant on the Minister of Defense, the CPE was well suited to translating political directives into military doctrine. As a founding member, Lieutenant-Colonel (later General) Lucien Poirier observed, "The Centre de Perspective et d'Évaluations [CPE] filled the void in official military thought and gave conceptual and practical substance to the politico-strategic framework outlined by the government."³⁰ Another early participant, Captain (later Admiral) Pierre Lacoste

noted in a similar vein that, “In reality we only gave form and rendered applicable de Gaulle’s vision and thoughts.”³¹

Having surrounded himself with partisans of a French nuclear deterrent, de Gaulle drew on multiple sources of advice on how French nuclear forces should be constituted and integrated with conventional forces. Table III, below, illustrates the different concepts advanced by de Gaulle's theorists.

Table III: De Gaulle's Theorists and their Contributions	
Theorists	Theories
Charles Ailleret	Omni-directional (tous azimuts) deterrence; Conventional and tactical nuclear forces of little value; Need for ICBMs for global reach
Pierre-Marie Gallois	Extended deterrence not credible; Minimal (existential) deterrence possible; Conventional forces of no value; Tactical nuclear forces of some utility; Nuclear deterrence incompatible with the alliance
Michel Fourquet	Conventional forces necessary against limited aggression; Tactical nuclear weapons necessary if conventional forces are to remain credible

General Ailleret, for example, adhered to a vision combining strategic nuclear weapons with a dramatically independent foreign policy. To this end, he argued that France needed ICBMs capable of hitting targets anywhere on the planet. With this capacity, France could have a security policy aimed at deterring attacks truly coming from any direction. With respect to the doctrine finally adopted, Ailleret’s notion of *dissuasion tous azimuts* (all-direction deterrence) forecast a minor role for France’s conventional forces, even if equipped with tactical nuclear weapons, and a negligible role within the Atlantic Alliance.

In contrast to Ailleret's vision, de Gaulle's Private Military Chief of Staff (CEMP), General Michel Fourquet argued that tactical nuclear weapons were necessary if France's ground forces were to remain combat-capable and relevant. As already mentioned, he reasoned that a French army without tactical nuclear weapons would be valueless against a Soviet army equipped with such weapons.³² Accepting Fourquet's reasoning, de Gaulle decided, albeit reluctantly, to build tactical nuclear weapons in 1963. Initially de Gaulle viewed tactical nuclear weapons as a luxury. He confided to Peyrefitte that, "As to the tactical [nuclear] weapon, I'm not too attached to it. I do not think that it will reinforce deterrence because its existence presupposes that deterrence could fail.... But the tactical weapon is necessary for the morale of the Army."³³

After de Gaulle decided to build tactical nuclear weapons, the CPE set about elaborating a doctrine for combining the efforts of conventional, tactical nuclear and strategic nuclear forces into a coherent ensemble. The result of their theoretical labors, entitled *Etude logique d'un modèle stratégique concevable pour la France*, was addressed to de Gaulle and Minister of Defense Messmer on 15 March 1966.³⁴ The CPE assumed that France's strategic goal was to establish French national territory as a "sanctuary" that the Soviet Union would neither invade nor strike with nuclear weapons for fear of nuclear reprisals.

The study envisioned that a national strategy based entirely on strategic nuclear deterrence would be vulnerable to two forms of aggression. First of all, an invader (invariably the Warsaw Pact) could invade the rest of Western Europe, halting its advance just short of the French border, where strategic deterrence became credible. Although France would remain physically unharmed, a scenario that left the rest of Europe in Soviet hands was highly undesirable. Secondly, and more realistically from the point of

view of the CPE, the Warsaw Pact could exploit a crisis to launch limited, prudent, attacks interspersed with bargaining. The CPE feared that in such a scenario, “insidious and progressive operations would accumulate solid gains, but not one of them [the aggressive actions] would individually justify a massive nuclear riposte.”³⁵

Analyzing these two scenarios, the CPE determined that France needed a capacity to “test” the intentions of its adversary and send a “final warning” before initiating a strategic nuclear response against cities. According to the CPE, conventional and tactical nuclear forces were necessary for both of these missions.

They proposed that, if the Warsaw Pact invaded Western Europe, conventional forces, comprised of armored and mechanized divisions supported by tactical air power, would engage enemy land forces beyond, but near France’s borders. This engagement would theoretically oblige Warsaw Pact forces to either halt their offensive, sparing France from a land invasion, or commit sufficient forces to push France’s conventional forces aside, demonstrating a desire to occupy metropolitan France. For Poirier and the CPE, “Given the inequality of conventional forces, the [conventional] forces must not fight a prolonged defensive battle, but place the aggressor in a military situation where he cannot increase or modify the strength of his action without revealing his ultimate objectives and accepting the prohibitive risk [of strategic nuclear reprisals].”³⁶

The CPE argued that tactical nuclear weapons would augment the efficacy of this “test” of Warsaw Pact intentions. Because French tactical nuclear weapons would remain in France while French conventional forces engaged Warsaw Pact forces in Germany, any Warsaw Pact effort to preemptively destroy French tactical nuclear weapons would run the risk of pushing France to initiate strategic nuclear reprisals. Barring this, tactical nuclear weapons could also be employed as French conventional forces faltered to pro-

long and enhance the “test” of Warsaw Pact intentions, by forcing the Warsaw Pact to commit additional means and thereby reveal its strategic intentions.

In addition to improving the ability of French forces to “test” Warsaw Pact intentions, the CPE contended that tactical nuclear weapons would play another vital role in France’s defense by permitting French leaders to send a “final warning” to the Soviet High Command. As recounted by Poirier, “in the case of an aggression begun under the vital threshold [for strategic nuclear reprisals] and continuing to approach it, they [tactical nuclear weapons] give the supreme command the ability to demonstrate the imminence of retaliation against cities by a [tactical nuclear] warning shot against opposing military forces.”³⁷

The CPE’s twin notions of a “test” of enemy intentions and a tactical nuclear “warning shot” provided a blueprint for how French tactical nuclear weapons, strategic nuclear weapons and conventional forces could be integrated into a coherent whole, entitled the “national deterrence maneuver”. In this schema, conventional and tactical nuclear forces would prevent an enemy from “neutralizing” deterrence while, at the same time, providing French leaders with accurate information about enemy intentions.

Despite being logical and innovative, the CPE’s studies provoked opposition from within the armed forces. For organizations that prided themselves on fighting or preparing to fight, the CPE’s relegating the armed forces to sending elaborate diplomatic signals was seen as demeaning.³⁸ For example, in its own technocratic language, the CPE described the role of French conventional forces as “testing an adversary’s intentions” because France “refused a battle that it would certainly lose.” If an enemy’s intentions were judged hostile, tactical nuclear weapons would “materialize the threshold of critical aggression.”³⁹

Even General Ailleret, the Chief of Staff of the Armed Forces (CEMA), who was an ardent supporter of de Gaulle and a proponent of nuclear weapons, resented the CPE's effort to edify a national doctrine.⁴⁰ Ailleret attempted to marginalize the CPE and confine it to analyzing the strategic environment, leaving military doctrine to the high command.⁴¹ However, Messmer and de Gaulle protected the CPE and encouraged its continued development.

In 1966, de Gaulle used the CPE's conclusions as evidence for why France had to develop two varieties of tactical nuclear weapons—gravity bombs for fighter-bombers (in service 1972) and battlefield nuclear missiles for the army (in service 1974). After de Gaulle's 1969 resignation, the CPE's formula for the interactions of conventional forces and tactical nuclear forces was enshrined under President Georges Pompidou's administration in France's 1972 Defense White Paper.

In sum, de Gaulle both created and used the CPE to justify strategic decisions he had already made, namely to develop tactical nuclear weapons and maintain large armored maneuver forces. The CPE also dutifully elaborated a theoretical scheme integrating the three elements of the French armed forces whose main function was deterring and, if need be, combating a Warsaw Pact assault.

Although de Gaulle doubtlessly subscribed to many of the CPE's arguments and used them during internal and public policy debates, it would be mistaken to claim that the CPE's *Etude logique d'un modèle stratégique concevable pour la France* was the sole, or even dominant, influence on military doctrine, plans and force structure for confronting the Warsaw Pact. In addition to the primary strategic goal of transforming French territory into a strategic "sanctuary" in the event of war, de Gaulle had a strong secondary objective of contributing to the solidity of the Atlantic Alliance during both

peacetime and wartime. Moreover, for internal political reasons, de Gaulle chose to retain a mass conscript army, rather than the comparatively smaller force comprised entirely of armored and mechanized divisions that the CPE considered integral to the “national deterrence maneuver.”

De Gaulle’s desire to manifest solidarity with the Atlantic Alliance during either a crisis or war led him to envision employing French conventional forces to defend Germany. However, by employing some of France’s conventional forces further away from France’s borders than consonant with the concept of a conventional “test,” de Gaulle subtly altered the logic of the CPE’s model. Now, French conventional forces would effectively fight two battles in the event of a Third World War.

First, part of France’s conventional tank and mechanized forces would be subordinated to NATO’s operational control in the event of war. These forces would contribute to the defense of the Federal Republic of Germany by serving as a concentrated reserve to counterattack Warsaw Pact forces that had penetrated NATO’s forward defense.

If this “first battle” failed to stop a Warsaw Pact offensive and NATO’s forward defense crumbled, then France’s remaining tank and mechanized forces would conduct a “second battle” in German territory, but near the French border. During this “second battle” France would employ its tactical nuclear weapons to “test” and “warn” a Warsaw Pact invader.

To prepare for the first battle, de Gaulle entrusted General Ailleret, Chief of Staff of the Armed Forces, to negotiate the modalities for France’s participation in the collective defense of Germany in the event of a Warsaw Pact attack. To fulfill de Gaulle’s directive, Ailleret concluded a still-unpublished accord with NATO’s Supreme Commander of Allied Forces Europe (SACEUR), General Lemnitzer, in 1967. According to the Ail-

leret-Lemnitzer Accord, when a French President decided to participate in a NATO defense against the Warsaw Pact, the French 2nd Corps, located in Germany, would fall under the operational control of NATO's Central Army Group (CENTAG).⁴²

Following the conclusion of the Ailleret-Lemnitzer Accord, General Ailleret charged the commander of French Forces in Germany, General Jacques Massu, with developing contingency plans jointly with CENTAG for how the French 2nd Corps could be employed to counterattack a Soviet penetration of CENTAG's forward defense.⁴³ By all accounts, joint planning between CENTAG and the French 2nd Corps focused on Bavaria and the South German Plain—precisely the region where de Gaulle had refused a French role in forward defense back in 1963.

Given sufficient warning of an attack and a prompt decision by the French President, contingency plans allowed for the French 2nd Corps to be deployed virtually to Passau, near Bavaria's border with Czechoslovakia.⁴⁴ With less warning or a slower political decision, the French 2nd Corps would either be engaged as a mobile counterattack force further to the west or perhaps attempt to improvise a defense on the River Lech, the only natural obstacle running perpendicularly across the Bavarian Plain.

With the two divisions of the French 2nd Corps designated to participate in NATO's defense of Germany, the three divisions of the French 1st Corps, based in Metz in Eastern France, had the mission of cooperating with French tactical nuclear forces to “test” whether the Warsaw Pact intended to invade France and administer the tactical nuclear “warning shot” to deter them from doing so. De Gaulle hoped that France's use of tactical nuclear weapons would convince the Warsaw Pact to halt military operations for fear that France could use its strategic nuclear weapons against Soviet cities. This

“second battle” would be fought near the Franco-German border and would thereby entail France’s tactical nuclear weapons detonating in the Federal Republic of Germany.

Relative to de Gaulle’s doctrine, France faced, for the first time ever since universal military service was instituted following the Franco-Prussian War (1870), the problem of having more conscripts than the state could afford to equip to fight on a modern battlefield. For a variety of reasons—the increasing costs of conventional armaments, France’s baby boom generation reaching the age for military service and the diversion of financial resources to France’s nuclear deterrent—the French Army could only afford to equip 155,000 men (108,000 conscripts) with the heavy armaments and logistics support needed to fight the Warsaw Pact, while conscription furnished over 221,000 soldiers annually.⁴⁵ However, de Gaulle both believed in the heuristic value of military service in forming French citizens and thought it would be unfair on the annual classes who served up to three years during the Algerian War to entirely exempt the following annual classes from military service.

To accommodate the larger numbers of troops available, de Gaulle adopted a concept entitled “Defense Operationelle du Territoire” (DOT – Operational Territorial Defense). Drawing on concepts developed since 1947, the forces assigned to the DOT had the triple vocation of protecting critical French military and command installations, defeating attempts by Communist partisans and agents to attack the French home front and, in the event of a Soviet invasion, organizing a guerrilla war against the invader.⁴⁶ This last mission, especially, justified the large size of the DOT, comprising 53,000 soldiers (34,000 conscripts) in three brigades, four light armor regiments and 20 independent infantry regiments.⁴⁷ Equipped with lighter equipment and possessing fewer professional cadres, the DOT remained the poor relation within the French Army.

In sum, by supporting a pro-nuclear minority within the armed forces and creating a think-tank answerable directly to the Ministry of Defense, de Gaulle successfully overcame the armed forces' resistance to nuclear weapons. Moreover, by drawing on the diverging opinions of the Chief of Staff of the Armed Forces Committee (General Ailleret), the Chairman of the President's Private Military Staff (General Fourquet), the CPE and a military maverick (General Gallois), de Gaulle was able to construct a military doctrine and strategic policy that complemented his foreign policy objectives.

Having developed a military doctrine, de Gaulle and his followers relied on the Institut des Hautes Etudes de Défense Nationale (IHEDN - Institute for Higher National Defense Studies) to inculcate France's political, military and industrial elite as to its logic and merit. Several of the theoreticians who contributed to French nuclear doctrine played an active role in this process. Lucien Poirier, who joined the CPE as a lieutenant-colonel, ran the military section of IHEDN during the Pompidou Administration. Similarly, General Gallois also became a regular lecturer at IHEDN.

IV. The Ambiguities of Deterrence, 1968-1974

Although French military doctrine evolved rapidly and coherently under de Gaulle's presidency up till 1967, the following six years were a period of disjointed development in which two mutually exclusive strategic doctrines won simultaneous acceptance. The origins of the doctrinal confusion of this period lie in de Gaulle's changing strategic vision. During the last two years of his presidency (1968-69), de Gaulle's views on French military doctrine changed markedly. However, de Gaulle's new position was only partially diffused by the time he left office in 1969. De Gaulle's successor, President Georges Pompidou, lacked both the knowledge and desire to intervene personally in

decisions of military doctrine. Instead, he left such matters to subordinate levels of authority, including the Minister of Defense, the commanders of the French First Army and the theoreticians of the CPE. Unfortunately, the aggregate efforts of these different groups only perpetuated the doctrinal uncertainty.

While coherent and increasingly accepted by French political and military elites, de Gaulle's military doctrine quickly produced discontent. One of the first individuals to question the effectiveness of French doctrine, as enshrined in the decisions of 1966 and 1967, was, ironically enough, de Gaulle himself.

As a professional soldier, de Gaulle's mind revolted at the notion of French forces being engaged piecemeal in a Third World War. If sent into battle as stipulated, French land forces, comprising roughly 208,000 men in combat formations, would fight during three sequential phases of a conflict, divided into three components of more-or-less equal size.⁴⁸ General Fourquet, who had been Chief of de Gaulle's Private Military Staff from 1962 to 1968, and became the Chief of Staff of the Armed Forces upon Ailleret's death in 1968, confirmed de Gaulle's doubts about the CPE inspired doctrine and argued for the abandonment of the "two battles" doctrine [actually three counting the DOT].

Faced with this problem, de Gaulle decided in 1968, to commit all of France's heavy armored and mechanized forces as a single bloc. To this end, he decided to place both the French 1st Corps (in Eastern France) and the French 2nd Corps (in Germany) under a single command. The new unit, the French First Army, would have its headquarters in Strasbourg, on the French side of the Franco-German border. According to a commander of the French First Army, de Gaulle viewed the creation of a single maneuver force as critically important and personally "took the decision [to create the French First

Army], named its commander, chose the location of its headquarters and wrote the directives destined for its [the Army's] commander."⁴⁹

On 12 September 1968, de Gaulle personally informed the designated commander of the French First Army, "You have amongst your tasks to prepare for the engagement of our battle forces [corps de bataille]... you should keep in mind that our forces must act offensively [i.e. a counteroffensive], as a single bloc and with all of the conventional and tactical nuclear, land-based and aerial fire-support available."⁵⁰ This statement, arguing for a single battle supported by tactical nuclear weapons, ran contrary to the conclusions of the CPE.

Accompanying de Gaulle's new concept of operations came a new theory of nuclear deterrence. Now, rather than using tactical nuclear weapons to "test" and "warn" the Warsaw Pact, de Gaulle believed that French tactical nuclear weapons could be used to force the United States to either engage its own tactical nuclear weapons or threaten to use its strategic nuclear weapons. De Gaulle's logic ran as follows, if NATO needed the assistance of the five divisions of the French First Army, it would accept their right to use tactical nuclear weapons. If French forces launched tactical nuclear weapons as part of a NATO battle for Germany, Soviet retaliation would be directed at NATO forces, and not just the French. If the Soviets used tactical nuclear weapons against NATO forces, the United States would be obliged to respond. America's use of its large tactical nuclear stockpile would bring Warsaw Pact operations to a halt.

Viewed as a cycle of actions and reactions, de Gaulle believed that using tactical nuclear weapons in support of the French First Army would permit France's small tactical nuclear arsenal to serve as the "detonator" for the United States' far larger arsenal.⁵¹ Explaining himself to the commander of the French First Army, de Gaulle reasoned that,

From the moment that the First Army and the FATAC [Force d' Aviation Tactique] possess tactical atomic weapons, the Alliance will not be able to plan to use them conventionally alone. You must explain to them [NATO] that you plan to counter-attack with the support of our tactical nuclear weapons. Thus, if the [NATO] high command needs this unique strategic reserve [the First Army and FATAC] available in Europe, they will have to be ready to use their nuclear weapons before or at the same time as ours. Believe me, tactical nuclear weapons are an essential element of our defense.... If you must choose one day between strategic and tactical nuclear weapons, choose the latter, because its better to perfect what comes before the Apocalypse than the Apocalypse [itself].⁵²

De Gaulle hoped that the mere prospect of escalation would lead the Warsaw Pact to halt its offensive when it encountered the First Army. As General Valentine recalls, “French intervention would be a signal to the adversary saying ‘careful, you are running the risk of nuclear escalation.’”⁵³

While de Gaulle’s views on military doctrine evolved late in his administration, de Gaulle’s failed referendum and precipitate exit from politics on 28 April 1969 prevented him from adequately diffusing his new strategic vision.⁵⁴ As a result, two conflicting doctrines existed side-by-side within the French Ministry of Defense and government, the doctrine de Gaulle accepted in 1966-67 and the one he favored in 1968-69.

France’s new president, Georges Pompidou, was not personally interested in defense issues and ostensibly only sought to uphold de Gaulle’s strategic legacy. Unfortunately, because of the centrality of the President in the institutional process of French defense policymaking, Pompidou’s lack of personal involvement in defense policymaking perpetuated the contradictions created by de Gaulle’s last strategic initiatives. On the one hand, Minister of Defense Michel Debré and the theoreticians of the CPE produced a Defense White Paper that erected the notion of “two battles” into official doctrine. On the other hand, the leadership of the armed forces planned to engage French conventional and tactical nuclear forces as a single entity, as de Gaulle enunciated in 1968.

Drawing heavily on the CPE's work, Pompidou's defense minister, Michel Debré (who had served de Gaulle as Prime Minister and Foreign Minister) oversaw the writing of a Defense White Paper, that enshrined as official doctrine much of the conceptual framework developed by the CPE. According to the 1972 Defense White Paper, French security interests were divided into three circles of unequal value. The interior, and most valuable, circle consisted of France's national (metropolitan) territory. The second circle consisted of France's immediate approaches, including Western Europe and the Western Mediterranean. Finally, the exterior circle comprised France's overseas interests, mainly Francophone Africa.

The White Paper assigned a different category of military forces to defend each circle. Because of the difficulty involved in making a nuclear deterrent credible, France would only threaten to use nuclear weapons to halt an assault on the first circle.⁵⁵ French conventional forces could be used to defend the second circle. Finally, comparatively small elite forces, the 11th Parachute Division and the 9th Marine Brigade, would uphold French interests in the third circle.

Because tactical nuclear weapons could only be used in conjunction with conventional forces, whose defensive actions would force Warsaw Pact forces to render themselves vulnerable by massing for a breakthrough battle, substantial French conventional forces would have to be withheld from the battle in Germany for use near France's borders. As the White Paper explicitly states,

France must be able to participate, according to its capacities and alongside its allies, in the prevention or resolution of a crisis [in Europe]. It is normal that this [French] capacity for intervention will be limited in volume and in time, because it is necessary [that we do] not prematurely wear out the forces necessary for the defense of our borders and their approaches.⁵⁶

By drawing a stark distinction between operations near France's borders and further to the east, the French 1972 White Paper contravened de Gaulle's last pronouncements on military doctrine.

The White Paper's message that tactical nuclear weapons along with substantial conventional forces had to be shepherded for a unilateral deterrent maneuver near the French border owed much to Debré's skepticism about NATO. Writing years later, Debré tacitly admitted disagreeing with de Gaulle's later views on military doctrine. According to Debré, "When I became Minister [1969]... the 'First Army' had been created and a tactical air force [the FATAC] capable of carrying nuclear weapons was associated with it. This decision corresponded to a vision of combined action with our allies. I remember thinking about participating in a forward battle and being unsatisfied with what would come of it."⁵⁷ Debré therefore returned to the doctrine announced by the CPE in 1966.

To promote his vision of French doctrine, Debré had recourse to a version of the same tactics used by de Gaulle and Messmer in 1965, namely creating a new think tank to promote his chosen strategy. To complement the CPE, which produced doctrinal arguments, and the IHEDN, which exposed French elites to official strategic thought, Debré created an institution designed to shape defense policy debates amongst "defense intellectuals." He established the Fondation pour les Etudes de Défense Nationale (FEDN or Foundation for National Defense Studies) in 1972. According to Debré, "The Foundation had, in my mind, another goal: we lived and live in a time of strong political opposition. How can one impose a consensus on strategy, especially nuclear strategy, at the summit of the nation? That's what I saw as key."⁵⁸

While Debré struggled to implement his preferred doctrine, the Chief of Staff of the Armed Forces, General Fourquet, and the Commanders of the French First Army, Generals Hublot and Valentin, persevered in implementing de Gaulle's directive to prepare for a single battle employing conventional forces and tactical nuclear weapons.⁵⁹ At the practical level of war plans, Generals Hublot and Valentin developed a series of nine contingency plans in case the Warsaw Pact invaded West Germany. Importantly, all the plans anticipated the French First Army, comprising all five divisions (15 brigades) of armored and mechanized forces, being used as a single counterattack force.

What differentiated the plans from one another were both the geographic axis where the First Army would deploy and the depth into West Germany at which they would engage the enemy. Basically, three plans each corresponded to the three invasion corridors already mentioned. For each invasion corridor, there were forward, medium and rear hypotheses.⁶⁰

As per de Gaulle's directive, Generals Fourquet, Hublot and Valentin all argued for France's tactical nuclear weapons had to be used quickly and massively to complement the actions of the First Army. As Hublot wrote,

The First Army must not be considered to be a conventional military force equipped with several nuclear weapons, but as a land maneuver force with atomic capabilities, able to combine [atomic] fire and movement to strike the enemy a blow that will be both the strongest and most politically significant possible.... The nuclear [attack] will achieve its maximal effect because of the actions [by conventional forces] that preceded and prepared, as well as followed and exploited it.⁶¹

Thus, actual French war plans differed fundamentally from the White Paper by envisioning a single battle, which could occur near the inter-German border, involving both conventional forces and tactical nuclear weapons.

The contradictions between two incompatible military doctrines confused both French military officers and allies. Table IV, below, illustrates the two incompatible doctrines.

Table IV: De Gaulle's Conflicting Doctrines		
	Two Battles	Single Nuclear/Conventional Engagement
Textual Origins	CPE Study (1966); White Paper (1972)	De Gaulle's 1968 instructions; First Army War Plans
Conventional Battle	2 nd Corps participates in NATO's defense; 1 st Corps defends near French border	Both corps participate in single battle besides NATO or near French border (according to presidential decision)
Tactical Nuclear Use	2 nd Corps fights conventionally; 1 st Corps uses nuclear weapons from first engagement	Both corps use nuclear weapons immediately
Tactical Nuclear Theory	"Final Warning" threatens strategic escalation and persuades the Warsaw Pact to halt	"Detonator" French use provokes Soviet retaliation and American use

Puzzled over conflicting information emanating from French sources, NATO's Central Army Group's (CENTAG) contacted General Valentin, commander of the French First Army, in 1972 to query whether the French 2nd Corps or the entire First Army would be committed to battle in Germany. Regrettably, even General Valentin, commander of the First Army, was not entirely certain what French policy was on the matter.⁶²

If the commander of the French First Army was unclear how his forces would be employed in the event of war, the doctrinal confusion was widespread elsewhere in the armed forces. Writing in 1972, General Hublot candidly admitted, "We are facing significant problems in establishing a theory and a doctrine... A complication emerges [as

to] whether we should think in terms of bilateral deterrence, of one power against another, or of triangular deterrence, in which a medium nuclear power intervenes [in a quarrel concerning two superpowers].”⁶³ While Hublot preferred the latter conception of French strategy, the ultimate choice remained with the President.

Precisely what was President Pompidou’s strategic vision? Unfortunately, Pompidou never firmly declared in favor of either of the two competing strategic doctrines. Rather, his actions gave the appearance of favoring both, mutually incompatible though they were. By validating Debré’s 1972 White Paper, Pompidou appeared to favor the CPE’s conception of distinct engagements forward in Germany and near France’s border. However, in a 1973 National Defense Council, Pompidou reviewed and validated the contingency plans for employing the French First Army, which all envisioned the massed use of French conventional forces supported by tactical nuclear weapons. Later, in his secret “Strategic Testament” of 1 February 1974, he specified that, while France would probably fight alongside its NATO allies, its forces must employ their tactical nuclear weapons from the outset.⁶⁴

As a result, the evolution of French military doctrine during the Pompidou administration was confused. Key to this problem was de Gaulle’s changing strategic vision, which differed materially in 1968-69 from what it had been in 1966-67. De Gaulle’s earlier conception became the inspiration for France’s 1972 White Paper, while his later views were translated into France’s military contingency plans. Because of the President’s central role in the elaboration of French military doctrine, Pompidou’s lack of inclination and expertise in defense matters sustained the contradictions between France’s accepted doctrine and its military plans. Thankfully, the Warsaw Pact did not invade

Western Europe during the Pompidou administration (1969-74), when France did not possess a coherent theory of how to oppose them.⁶⁵

V. Giscard and Extended Sanctuarization, 1974-1981

Valéry Giscard d'Estaing's election to the French presidency in 1974 marked a new wave of doctrinal reform. Existing French doctrine damaged Franco-West German relations because of the French Army's limited participation in the defense of West Germany and intention to use tactical nuclear weapons on German territory. Combined with the political deficiencies of French doctrine, the technical problems inherent in French plans for delivering a single tactical nuclear salvo and the lack of forces capable of countering an attack into northern France motivated a comprehensive revision of French military doctrine and force structures. With the assistance of a small number of trusted military collaborators, especially Generals Guy Méry, Claude Vanbremeersch and Jean Lagarde, Giscard promulgated a series of reforms between 1974 and 1980 that can be collectively termed a shift to "enlarged sanctuarization." Giscard's measures included: 1) plans to deploy the Army forward into West Germany in the event of a crisis; 2) a decision to fight conventionally as long as possible before resorting to tactical nuclear weapons; 3) the doctrinal shift from a single "warning" salvo to a period of tactical nuclear warfare; 4) a change in nuclear targeting plans, dedicating France's silo-based Intermediate Range Ballistic Missiles (IRBMs) to strikes on Soviet command-and-control facilities; and 5) a revision in force structure to create a third Army corps to defend France against an attack via the North German Plain. With comparative rapidity, Giscard challenged many of the strategic canons erected by de Gaulle. However, the centrality of political concerns in military reform led France's military doctrine to become a partisan

political issue in the lead-up to the 1981 elections, prompting Giscard to abandon further reforms towards the end of his election.

At the heart of Giscard's military reforms was his recognition that France's existing military doctrines harmed Franco-West German relations. As created by de Gaulle, French doctrine envisaged only the commitment of limited forces (one-third of French ground troops under the "two-battles" doctrine) to defend only a small portion of West German territory. With maximum geographic limits drawn at Munich in the south and Dortmund in the northeast, French forces would not begin fighting until over half of West Germany had already been abandoned.

Worse, France's nuclear doctrine dictated that West Germany be subjected to a devastating French nuclear salvo, should NATO's military front collapse.⁶⁶ As exemplified in the CPE's 1966 study and the 1972 White Paper, French doctrine called for the near simultaneous use of all France's tactical nuclear weapons to send a "final warning" to the Soviet Union when its forces approached the French border. Because France's only tactical nuclear missile, the Pluton, had a maximum range of 120 kilometers (70 miles) they would necessarily land in West German territory. Comparatively inaccurate and equipped with powerful 10- or 25- kiloton warheads, the Plutons could hardly fail to kill large numbers of German civilians.⁶⁷ Thus, given the size of the French arsenal, France's nuclear doctrine amounted, in West German eyes, to a decision to bombard heavily populated areas with 100 Hiroshima-size nuclear warheads.⁶⁸

In addition to being politically contentious, France's military doctrine was also ineffective. The doctrinal emphasis on launching a coordinated tactical nuclear salvo and then exploiting it with conventional forces placed a heavy technical requirement on detecting enemy forces beyond visual range, collating and diffusing a single target list, and

launching weapons before enemy forces had shifted positions. Given the state of electronics in the 1970s, such performance and integration between reconnaissance and strike platforms was probably impossible.⁶⁹

When tested, the French system failed in one exercise after another. After estimating that the optimal depth for nuclear strikes was 10 to 20 kilometers in front of French lines, French reconnaissance assets failed to detect more than eight to ten percent of enemy units at this depth.⁷⁰ Even assuming perfect intelligence, French command-and-control systems proved incapable of collating available information and finalizing a nuclear fire plan.⁷¹ Whereas operational analyses indicated that the whole cycle could not be allowed to exceed several minutes, it took several hours during the *Exel/Terre* exercise of 1974.⁷² During another exercise, command-and-control broke down completely, with 500 unexamined telegrams accumulating over two days and urgent messages taking 24 hours to receive attention.⁷³

Without better reconnaissance or command-and-control systems, France's tactical nuclear doctrine of a concentrated "warning shot," was physically unworkable.⁷⁴ In all likelihood, Warsaw Pact tanks would have moved by the time French missiles arrived, leaving German civilians the primary victims of French nuclear attacks.⁷⁵ In his own denunciation of French doctrine, the former Vice Chief of Staff of the French Air Force protested, "The doctrine of the 'final warning' must be rejected.... existing [French] tactical nuclear weapons are very capable of killing [German] civilians, but incapable of killing [Soviet] soldiers."⁷⁶

Very soon after assuming office, German Chancellor Helmut Schmidt confronted Giscard over French military doctrine.⁷⁷ For Schmidt, French doctrine provided an additional argument for the West German far left, which wanted to extricate West Germany

from NATO and hindered progress toward European economic integration.⁷⁸ Worse, the potential use of French nuclear weapons on German territory would, in the event of war, probably catalyze NATO's collapse. Schmidt emphasized this point, warning:

The minute that a nuclear weapon lands on German soil we will raise the white flag. The minute! Whatever our obligations, we will stop fighting! I am telling you this so that you never forget it in your calculations [about tactical nuclear weapons].... One has to be stupid to think that we will stand by to see Germany destroyed by atomic bombs, whether our enemies or our allies launch them, and continue fighting!⁷⁹

Thus, Schmidt dramatically confronted Giscard about the negative political ramifications of France's military doctrine shortly after the beginning of Giscard's regime.

Soon after his encounter with Schmidt, Giscard encountered domestic critics of French military doctrine. At a lunch in July 1974, Giscard solicited advice from the Chief of his Private Military Staff General (CEMP) Guy Méry, retired Generals André Beaufre and Pierre-Marie Gallois, political scientist Raymond Aron, and defense commentators Jacques Isnard (*le Monde*) and Jean-Pierre Mithois (*Figaro*).⁸⁰ After impassioned debate between the partisans and detractors of de Gaulle's military doctrine, Giscard felt more dissatisfied than ever with France's military posture. French military doctrine seemed precariously balanced between pledges of alliance solidarity and policies tantamount to neutralism. More concretely, Giscard had personal trouble understanding when, during a conflict, he would be asked to authorize the use of nuclear weapons.⁸¹

Giscard's dissatisfaction with existing French military doctrine led him to search for alternatives. Giscard's principle desiderata were developing a doctrine that would contribute more directly to West Germany's defense and delay France's use of tactical nuclear weapons without actually reintegrating French forces into NATO's integrated

force structure. Giscard quickly focused on General Méry, the Chief of his Private Military Staff (CEMP), as the person most capable of helping him elaborate such reforms.⁸²

Appointed under Pompidou, Méry shared many of Giscard's worries about French doctrine. Méry felt that de Gaulle's attempt to distinguish France's defense from the rest of Western Europe's was fundamentally wrong.⁸³ France could not maintain any real degree of sovereignty if the rest of Western Europe had been overrun and a French threat to use tactical nuclear weapons would appear hollow if NATO had already been vanquished.⁸⁴ Therefore, Méry argued the necessity of French forces participating further forward in NATO's conventional defense. Should conventional defense fail, Méry believed France needed nuclear plans that could compel the United States to use its own nuclear weapons.⁸⁵

Once Giscard came to appreciate Méry's views, he promoted him to Armed Forces Chief of Staff (CEMA). To support Méry's efforts, Giscard elevated two colleagues, recommended by Méry, to the key positions of Chief of Staff of the President's Private Military Staff (CEMP) and Army Chief of Staff (CEMAT). General Vanbremeersch, a class-mate and friend of Méry from St. Cyr's class of 1939 succeeded Méry as CEMP when Méry was promoted, while another one of Méry's classmates, General Lagarde, enjoyed a fruitful and long (1975 to 1980) period as CEMAT thanks to Méry's influence and Giscard's patronage.⁸⁶

The first step in step in Giscard's defense reforms was the development of flexible options for how France would respond to an international crisis. Because of the risk that any conflict would escalate into a mutually suicidal nuclear exchange between the superpowers, neither Giscard nor Méry believed that a war between NATO and the Warsaw Pact could begin with a rationale political decision.⁸⁷ They therefore concluded that the

greatest threat came from crisis situations when miscalculation, mistakes and local initiatives could create an escalatory climate.⁸⁸

Faced with the unpredictable and accidental character of crises, Giscard and Méry felt that France's doctrine of immediate tactical nuclear use and homeland defense would only add to instability. A French decision to keep a significant quantity of forces near the French border, as called for by the two-battles doctrine, could embolden an adversary hesitating whether or not to attack. Conversely, if France responded to its first significant encounter with enemy forces with an enormous tactical nuclear salvo, the Soviets could retaliate massively against targets throughout Europe. Therefore, to respond flexibly to crisis situations, France needed a military doctrine capable of exercising a de-escalatory effect, reassuring friends, warning adversaries and buying time for statesmen to conclude a ceasefire. Giscard himself reasoned, "France can find itself in complex situations.... if France can only speak in terms of 'all-or-nothing' its gestures will lack credibility."⁸⁹

In terms of a future conflict in Central Europe, the doctrine Méry developed and Giscard approved comprised three distinct elements. First, French forces would be engaged as far forward in West Germany as possible once the French president decided to assist France's NATO allies. Second, French forces would fight conventionally as long as possible, until their military position became untenable. Third, once this occurred, they would use tactical nuclear weapons on a large scale, not merely to "warn" the Warsaw Pact, but to inflict as much damage on their forces as possible and oblige the United States to use its own tactical nuclear weapons.

The principle of France forward deploying its forces and engaging wholeheartedly in the defense of Europe lay at the core of Giscard's reforms. In the event of a crisis, Giscard planned to reassure allies and deter opponents by shifting forces into West Germany.

Conducted before the advent of hostilities, such a move would permit French forces to participate in NATO's main battle near the Iron Curtain, where their forces would be most useful. According to Giscard, "Conventional forces, by their variety and the flexibility of their use, are suited to the very diverse crisis situations that characterize our era.... In case of a crisis in Europe... their deployment permits the government to signal its willingness to intervene."⁹⁰ Emphasizing the military rationale behind forward deployment, Méry added, "When they [Warsaw Pact forces] arrive at the [French] border the situation is already fruitless, because NATO's collective defense will already have collapsed."⁹¹ Thus, politically and militarily, French interests would be best served by forward deploying French forces during a crisis, but before hostilities had actually broken out.

New operational plans were therefore drawn, permitting French forces to deploy further eastwards than previously envisaged. France's internal elaboration of the new doctrine was accompanied by the negotiation of two military accords with NATO, resolving the practical problems associated with France's changing role. Signed in December 1978, the Biard (commander of the French First Army) - Schultz (the NATO Central Army Group Commander) laid the groundwork for France to assist NATO in case of a crisis or limited war. In a scenario of this genre, the French 2nd Corps would be committed early to the forward defense of the Federal Republic of Germany, while the remainder of the First Army remained in reserve, ready to intervene when fighting broke out of the situation degenerated.⁹²

Part and parcel to Giscard's willingness to deploy French forces further forward was a different view of how conventional and tactical nuclear weapons should be combined. Whereas French doctrine previously envisioned the massive use of tactical nuclear

weapons at the moment when the bulk of French forces encountered powerful enemy units, Giscard wanted French forces to fight conventionally as long as possible. If war had begun as a result of miscalculation, a period of conventional warfare would give statesmen an opportunity to agree on a ceasefire, before escalation acquired a dynamic of its own. Giscard wrote, "Conventional forces... by their engagement... waging battle, show an adversary that France is willing to oppose any aggression with all of the means it possesses."⁹³ Méry added, "[France] must be able, if need be to intervene to wage a battle that, in certain cases, will be entirely conventional."⁹⁴

When further conventional resistance became impossible, Giscard intended for his forces to use tactical nuclear weapons while still deep inside West Germany. By advocating the use of tactical nuclear weapons by forces participating in NATO's main defensive battle, Giscard rejected the CPE's finding that French tactical nuclear weapons and the threat of escalation would only be credible if used near France's national borders. Giscard also abandoned the doctrinaire notion that tactical nuclear weapons should only serve to "warn" the Soviet Union of France's imminent escalation to strategic nuclear warfare. Instead, tactical nuclear weapons would be used flexibly, rather than in a single salvo, to inflict damage on Warsaw Pact forces and buy time to negotiate a ceasefire. According to Giscard, "A defense institution must be organized to give battle.... tactical nuclear weapons... are not only an instrument of deterrence, but also an instrument of battle."⁹⁵

The decision to use tactical nuclear weapons as part of NATO's main defensive battle was announced by Giscard at the Defense Council's meeting of 20 January 1975. Public hints of the change in French tactical nuclear doctrine were then given in several

of Giscard's speeches and the preamble to the Five Year Military Planning Law, adopted in 1976.

Because France would participate in NATO's main battle, Giscard and Méry anticipated the French would cross the tactical nuclear threshold at approximately the same time as the United States. Either French use of tactical nuclear weapons would provoke Soviet retaliation, obliging the United States to use its own tactical nuclear weapons, or an American decision to use tactical nuclear weapons would compel the French to follow suite. In both cases, Giscard and Méry anticipated that the use of tactical nuclear weapons by any allied contingent would result in the Soviet Union retaliating in kind against NATO as a whole. To prepare for such eventualities, Giscard deputized Méry to discuss tactical nuclear warfare with SACEUR Alexander Haig beginning in 1975.

Although Giscard insisted on France's independence to decide when and where it would use tactical nuclear weapons, Méry and Haig developed procedures for consultation, liaison and joint planning. In theory, France and the United States would exchange information about their respective tactical nuclear intentions, providing forewarning should either partner choose to go nuclear. If both used tactical nuclear weapons, the liaison procedures elaborated by Méry and Haig were designed to permit France and the United States to share targeting intelligence and harmonize their efforts so as not to waste nuclear munitions on the same targets or impede each others' actions with nuclear fratricide. A 1977 accord on aerial cooperation further smoothed the way for French tactical nuclear use by enabling French tactical aviation to operate in NATO airspace.⁹⁶

Along with their revision of French tactical nuclear doctrine, Giscard and Méry also re-examined strategic nuclear plans, which hitherto consisted of a single annihilating strike against Soviet population centers. Innovating on French doctrine, Méry envisioned

an intermediate stage in nuclear escalation between tactical nuclear weapons and strikes against Soviet cities. Rather than immediately launch nuclear reprisals against Soviet cities if Warsaw Pact forces failed to halt after France's use of tactical nuclear weapons, French leaders would now have the option of launching a limited nuclear strike against command-and-control targets in the Soviet Union. By retargeting France's 18 silo-based intermediate-range ballistic missiles (IRBM) located on the Plateau of Albion, near Grenoble, from Soviet cities to critical military targets, Méry reasoned that France could inflict a strategically crippling blow on the Soviet Union.⁹⁷ Explaining his logic, Méry recounted that, "In the first years of France's nuclear deterrent [the *force de frappe*] we had relatively limited strike plans that targeted several large cities. But later on we modified our strike plans.... We made plans designed to inflict significant disorganization in the Soviet Union, practically not attacking cities, but [rather] command posts, sites of strategic policymaking if you like."⁹⁸

By striking Soviet command-and-control targets with its silo-based MRBMs, while maintaining its submarine-launched ballistic missiles in reserve, Méry reasoned that France could deter Soviet nuclear reprisals against French cities. In the meantime, the disruption inflicted on Soviet strategic command-and-control would leave the Soviet Union vulnerable to American initiatives, whether political or military. In explaining the effects of French strikes against Soviet command-and-control facilities, Méry maintained that, "We would have produced a period of [strategic] disorganization that the Americans would not have failed to exploit." Elsewhere, Méry reiterated the same theme, stating that, "[Since the end of the Cold War] I have had the occasion to speak to several Soviets [former Soviet military leaders] openly who recognized that what we would have done would have put them in a very difficult position vis-à-vis the United States."⁹⁹

Having revised France's deployment arrangements, tactical nuclear doctrine and strategic nuclear plans, Giscard and Méry considered it necessary to revisit the organization of French ground forces. In this context, Méry delegated authority to his friend and St. Cyr classmate, General Lagarde, who served as Army Chief of Staff from 1975 to 1980. With an exceptional degree of authority and a long tenure in office, Lagarde presided over sweeping changes within the Army. Lagarde's reforms included: 1) a significant increase in the resources dedicated to the Army; 2) the creation of a third army corps to protect against an attack across the North German Plain; and 3) the reorganization of territorial regiments and brigades into multipurpose divisions capable of meeting secondary threats.

Because of their scope, the Lagarde reforms are best understood with the assistance of Table V below:¹⁰⁰

Table V: Before and After the Lagarde Reforms (1975-1980)	
Before the Lagarde Reform	After the Lagarde Reform
<p>Battle Forces 2 Army Corps (light organic elements) - 5 mechanized divisions (16000 men)</p>	<p>Battle Forces 3 Army Corps (heavier organic elements) - 8 armored divisions (7500 men) - 2 motorized infantry divisions</p>
<p>Territorial Forces (DOT) 2 alpine brigades 20 infantry regiments 4 light armored regiments 6 engineer regiments</p>	<p>Multi-Purpose Forces 3 infantry divisions (1 alpine) 1 demi-brigade</p>
<p>Intervention Forces 1 paratroop division 1 marine infantry brigade</p>	<p>Intervention Forces 1 paratroop division 1 marine infantry division</p>
<p>Reserve Forces 77 infantry regiments (mobilized) 14 regiments formed from school</p>	<p>Reserve Forces 10 infantry divisions (formed by derivation) 4 divisions formed from schools</p>

With de Gaulle's pursuit of a powerful nuclear deterrent, French ground forces had been starved of resources prior to Giscard's presidency, receiving only 15 to 16 percent of defense expenditures between 1960 and 1970.¹⁰¹ As a result of this budgetary penury, numerous procurement programs were cancelled or deferred, and five brigades were equipped with cheaper wheeled vehicles rather than the more effective tracked vehicles originally planned.¹⁰² To make matters worse, the 1973 oil crisis precipitated a 20 percent reduction in training activities.¹⁰³ While the Army's equipment and training suffered economically, it still remained ill-deployed to counter an attack via the North German Plain.¹⁰⁴

By the time Giscard assumed power, the French Army's plight had become sufficiently grave for the West German Chancellor to highlight the French conventional weakness at one of their first meetings.¹⁰⁵ To both French and outside observers, the Army was ill-prepared to fight conventionally.¹⁰⁶ Internally, the Army's poverty resulted in conscripts protesting and the formation of soldier's committees.¹⁰⁷

To rectify problems with equipment and morale, Giscard consecrated a larger part of the defense budget to ground forces, which benefited from pay increases and a greater numbers of procurement programs (15 out of 36 in the 1977 Defense Planning Law).¹⁰⁸ Lagarde then reorganized France's least motivated troops, the territorial defense forces (DOT), into five multipurpose divisions, rather than detached regiments and brigades.¹⁰⁹ To give the new multipurpose forces a sense of utility and improve their combat readiness, Lagarde exercised them in a series of mammoth exercises held in the French countryside.¹¹⁰

As part of his overall mandate, Lagarde next tackled the problem of defending France from an attack across the North German Plain.¹¹¹ By restructuring French mecha-

nized forces into smaller divisions, Lagarde reduced the French Second Corps, in Germany, by 5,000 personnel.¹¹² With these troops, Lagarde formed an armored division for service in Northern France, which Lagarde subsequently partnered with two motorized divisions formed from his reorganization of French territorial forces.¹¹³ Subordinating these three divisions to a headquarters near Paris, Lagarde created France's 3rd Army Corps in 1979. Table VI, below, details Lagarde's reform of French battle forces.

Table VI: French Battle Forces	
1969 Organization	Lagarde Reorganization
<p>First Army (HQ Strasbourg)</p> <ul style="list-style-type: none"> - 1st Corps (HQ Nancy) <ul style="list-style-type: none"> ▪ 3 mechanized divisions (67) - 2nd Corps (HQ Baden) <ul style="list-style-type: none"> ▪ 2 mechanized divisions (67) 	<p>First Army (HQ Strasbourg)</p> <ul style="list-style-type: none"> - 1st Corps (HQ Metz) <ul style="list-style-type: none"> ▪ 4 armored divisions (77) - 2nd Corps (HQ Baden) <ul style="list-style-type: none"> ▪ 3 armored divisions (77) <p style="text-align: center;">Third Corps (HQ Saint-Germain-en-Laye)</p> <ul style="list-style-type: none"> ▪ 1 armored division (77) ▪ 2 infantry divisions (motorized – 77)

Weaker than the two existing corps, the 3rd Corps was destined to advance into Belgium, delaying Soviet forces that had broken through the North German Plain. If the 3rd Corps proved insufficient, Lagarde examined having the 1st Corps counterattack westwards against an adversary that had broken into Northern France.¹¹⁴ However inadequate, Lagarde's reforms represent the French Fifth Republic's first attempt to counter an attack from the North.

Taken as an ensemble, Giscard's measures represent a comprehensive revision of French military doctrine. From deployment arrangements, to battle plans, force structure and nuclear release procedures, Giscard transformed how the French armed forces

planned and prepared to fight. Table VII, below, illustrates the magnitude of Giscard's reforms by comparing his doctrine with that which preceded it:

Table VII: Giscard's and de Gaulle's Doctrines Compared		
	de Gaulle's Doctrines	Giscard's Doctrine
Deployment in Germany	To begin after debut of a conflict; Large forces potentially retained for France's defense	To begin during a crisis or period of tension, before fighting erupts
Conventional Battle	Very brief; Tactical nuclear weapons to be used as soon as French forces make contact with large Soviet forces	As long as possible; Tactical nuclear weapons to only be used when conventional battle no longer possible
Tactical Nuclear Use [How]	Concentrated in time; Preferably in a single salvo	Tactical nuclear battle of a [slightly] longer duration
Tactical Nuclear Use [Where]	As Soviet forces reach French border	When French forces can no longer hold deep in Germany
Strategic Nuclear Transition	Anti-city strikes by all French delivery means	Selective strikes against Soviet command-and- control and military targets with silo-based IRBMs; Submarine launched missiles kept in reserve as ultimate anti-city deterrent

Giscard decided the broad contours of his reforms after his initial encounters with allied leaders and French defense intellectuals. The detailed elaboration of Giscard's reforms owed much to the compatibility of his views with those of his CEMP, General Méry. Giscard's collaboration with Méry illustrates the impact of France's institutional structures of defense policymaking. Having access to multiple sources of advice, Giscard found and used a military commander whose strategic analyses coincided with his own. Once they agreed on principles, Giscard promoted Méry to CEMA, approved Méry's choice to succeed him as CEMP and supported Lagarde's efforts as CEMAT.

In total, it took about 18 months to elaborate a comprehensive program of doctrinal reforms. Once completed, these reforms were enacted despite the loquacious critiques of many of the theorists who had developed de Gaulle's strategic doctrine and occupied positions in the CPE. Certain matters, such as strategic nuclear re-targeting and negotiations with the Americans, were shrouded in the greatest secrecy. Other matters, including the overall thrust of Giscard's reforms, were publicized for all in the French defense policymaking community to understand.¹¹⁵ Using habitual instruments, such as IHEDN and the official journal *Défense Nationale*, Giscard, Méry and Prime Minister Jacques Chirac exposed policymaking elites to new French doctrine in a series of articles and speeches.¹¹⁶ The culminating point in this process came in March 1976, when Méry declared that Giscard's new doctrine was "enlarged sanctuarization," meaning that French nuclear power would contribute to Western Europe's security as a whole.¹¹⁷

Politically, Giscard's doctrinal reforms had the diplomatic impact he intended. Schmidt warmly greeted Giscard's reforms, especially the commitment of forces to Germany's forward defense and the strengthening of French conventional forces. Thereafter, Schmidt and Giscard collaborated wholeheartedly on Giscard's project of furthering European integration, laying the bases of eventual European monetary union. In terms of transatlantic relations, Henry Kissinger admits that Giscard's defense policies contributed to a climate of Franco-American entente unknown for decades.¹¹⁸ When the Euromissile Crisis debuted in 1977, Giscard capitalized on his privileged relations to invite American, British and West German leaders to the French island of Guadeloupe, where Giscard helped negotiate NATO's "double decision" policy.¹¹⁹

While motivated by foreign policy concerns, Giscard's doctrinal reforms had distinct military advantages. French forces could contribute substantially to NATO's de-

fense by operating further forward, the new tactical nuclear doctrine promised to give diplomats more time to conclude a ceasefire, and the creation of a third army corps permitted France to resist an attack in the North. If all else failed, the new strategic nuclear plan might bring hostilities to an end without sparking mutually ruinous nuclear strikes on cities.

The only difficulties in enacting the new doctrine occurred when Giscard vacillated as to what policy to pursue. From 1976 onwards, the Gaullist RPR Party attacked Giscard's strategic policy by accusing him of abandoning the national independence asserted by de Gaulle. Although incapable of preventing Giscard from promulgating his reforms, the RPR attacks led him to drop "enlarged sanctuarization" and "forward defense" from the administration's official rhetoric. More problematic from a policy perspective, Giscard entertained fresh doubts about French doctrine towards the end of his term in office. In 1980, during a large scale command post exercise, Giscard refused to pre-delegate authority to use tactical nuclear weapons when conventional resistance became impossible.¹²⁰ According to Méry, Giscard thereby violated the premises of his own doctrine and "with this single act demolished all our nuclear theories."¹²¹

Thus, empowered by France's defense policymaking institutions, Giscard masterminded far reaching reforms of military doctrine in a remarkably short time and despite his own absence of prior personal experience with defense policymaking. The only limit to Giscard's ability to craft doctrine was his flagging will and certitude in enacting changes.

VI. Mitterrand, Hernu and the Rapid Action Force, 1981-1990

François Mitterrand's election to the French presidency in 1981 created a need for a further revision of military doctrine. As leader of France's socialists, Mitterrand had opposed Giscard's moves towards "enlarged sanctuarization," "forward deployment," and "tactical nuclear battle."¹²² Once in power, Mitterrand now had to formulate an alternative to Giscard's doctrine that fulfilled the same political need of reassuring West German leaders and demonstrating France's commitment to Europe's collective defense. Drawing on the institutional tools at his disposal, Defense Minister Charles Hernu created a five-division Force d'Action Rapide (FAR, which translates as Rapid Action Force) destined for rapid projection toward NATO's borders. In theory, the FAR would intervene before France's mechanized forces and would fight without the support of tactical nuclear weapons, which were again relegated to the role of delivering the "final warning" before nuclear escalation. For technical and bureaucratic reasons, much of the Army's hierarchy opposed Hernu's reforms and repeatedly attempted to sabotage them. Using the parallel staff structures and multiple sources of advice at his disposal, Hernu neutralized his opponents. By 1984, the FAR was a reality. Conceived for diplomatic reasons, the FAR accomplished its political mission of facilitating Franco-German and Franco-American relations, while maintaining France's strategic independence. Unfortunately, many of the military critiques of the FAR appear founded and the doctrine's military effectiveness remains doubtful.

In the years preceding Mitterrand's election, the French Socialist Party repeatedly criticized Giscard's defense policies.¹²³ When the Socialists adopted their defense platform in 1978, the Party's acceptance of nuclear deterrence was predicated on France remaining autonomous from NATO's force structure and reserving its nuclear weapons for the defense of French territory.¹²⁴ The Communists, who were coalition partners with the

Socialists, accusing Giscard of compromising France's independence and secretly preparing to rejoin NATO. Having taken a public stand against Giscard's reforms, Mitterrand would appear hypocritical if he pursued the same policies as his predecessors.

While Mitterrand could not continue along the same trajectory as Giscard, his doctrine had to address the same underlying concerns. Maintaining a close political relationship with West Germany was still considered France's chief foreign policy objective.¹²⁵ With the West German government assailed by an influential peace movement, feeling menaced by Soviet intermediate range nuclear weapons (INF) and Franco-German entente critical for European integration, Mitterrand could not afford to abandon Giscard's vigorous commitment to West Germany's defense.¹²⁶ Similarly, after the heightening of Cold War tensions in the late-1970s, Mitterrand did not want to take any actions that could be interpreted as "going soft" on the Soviet Union or abandoning France's NATO allies.

Thus, the dilemma facing the Mitterrand administration when it assumed office was to find a means of reassuring West Germany and other NATO allies that France would contribute effectively to Western Europe's defense while, at the same time, abandoning Giscard's pledges to forward deploy French forces and use nuclear weapons in defense of West Germany.¹²⁷ Rather than immerse himself personally in the details of military doctrine, as de Gaulle and Giscard had done, Mitterrand delegated responsibility for shaping French doctrine to his Minister of Defense, Hernu.¹²⁸ Having led the Socialist Party's Defense Commission since 1972 and masterminded the Party's acceptance of nuclear deterrence in 1978, Hernu was the Socialist leader most familiar with defense policy and deserves much credit for the Party's adoption of a defense platform palatable to the majority of French voters.¹²⁹ As such, it was natural for Mitterrand to entrust

Hernu with the delicate new task of developing a military doctrine that satisfied both foreign powers and domestic audiences.¹³⁰

At the beginning of the Mitterrand administration, Hernu lacked clear ideas about how to accomplish his objective.¹³¹ However, he informed collaborators that their goal was to find a means for "allowing France to participate in the opening stages of a war in Central Europe," but that they had to "work along lines of a slightly different inspiration" from "enlarged sanctuarization."¹³² To find a doctrine capable of meeting their requirements, Hernu and his collaborators canvassed different sources of military advice.

In October 1981, Hernu enjoyed his first breakthrough in the quest for a new military doctrine. During a lunch, General Georges Fricaud-Chagnaud, France's representative to NATO's Allied Forces Central Europe (AFCENT), suggested to Hernu that French military helicopters should be grouped into single division, forming a "very mobile and powerful anti-tank force." According to Fricaud-Chagnaud, such a division could intervene at long distances and short notice, permitting France to participate in NATO's forward battle without forward deploying prior to hostilities. Politically, Fricaud-Chagnaud ventured that his proposal would permit France to satisfy its NATO allies while retaining its mechanized forces and tactical nuclear weapons for the defense of France's immediate approaches.¹³³ Concluding his argument, Fricaud-Chagnaud presented Hernu with a well-crafted memorandum that he had dissimulated from his military colleagues for fear of their opposing it.¹³⁴

For Hernu, Fricaud-Chagnaud's idea of forming units that could be rapidly deployed from French territory to NATO's front line resolved the dilemma of participating in NATO's main battle without moving forces in peacetime. However, a single division would be inadequate in the eyes of France's NATO allies and too insignificant to capture

the attention of France's NATO allies. Moreover, both Hernu and Fricaud-Chagnaud knew that Fricaud-Chagnaud's proposal would be resisted by the Army, which preferred to use its helicopter assets to support French mechanized corps.¹³⁵

To give a rapid deployment force the political and military dimensions considered necessary, Hernu's staff began examining what other military forces could be combined with a helicopter division in a fast-moving ensemble.¹³⁶ Given the French Army's limited helicopter resources, creating a single helicopter division would deprive the rest of the Army of 40 percent of their helicopters and 70 percent of its anti-tank helicopters.¹³⁷ Sufficient resources simply did not exist to create two helicopter divisions. Therefore, the remaining divisions associated with a rapid deployment force would have to be composed differently. However, in order to operate in conjunction with a fast-moving helicopter division, they would have to be light and highly mobile.

One idea that quickly gained support was the creation of light armored divisions. During the past several years, France had introduced a new generation of wheeled armored vehicles, including the AMX-10RC wheeled gun system and the VAB armored personnel carrier.¹³⁸ Although much lighter a main battle tank (10 tons versus 32), the AMX-10RC possessed a large 105mm gun capable of destroying most Warsaw Pact tanks at ranges up to 1,200 meters.¹³⁹ Both the AMX-10RC and the VAB required less logistics support than classic armored forces and could therefore advance over comparatively long distances. Until Mitterrand's administration, these wheeled vehicles had been fractioned among many small units.

Now Hernu's collaborators proposed concentrating a critical mass of wheeled armored vehicles to create two light armored divisions. By equipping the 9th Marine Division with light armored divisions and expanding the 31st Motorized Brigade to divisional

size, Hernu could transform two existing formations, habituated to small-scale operations in Africa, into combat units capable of defending Western Europe. Table VIII, below, illustrates the forces structure of the light armored divisions:

Table VIII: France's Light Armored Divisions	
Motorized Infantry	= 2 to 3 regiments
Light Armored	= 2 regiments
Artillery	= 1 regiment
Engineers	= 2 companies or 1 regiment

The cost of creating light armored divisions was depriving French mechanized corps of vehicles they used for armored reconnaissance. Table IX, below, illustrates the redistribution of light armored regiments within the Army.

Table IX: French Light Armored Forces	
<u>Pre-FAR</u>	<u>Post-FAR</u>
Corps Reconnaissance Assets: 3 Corps x 2 regiments = 6 regiments	Corps Reconnaissance Assets 3 Corps x 1 regiment = 3 regiments
Light Infantry Divisions 6 Divisions x 1 regiment = 6 regiments	Infantry Divisions 4 Divisions x 1 regiment = 4 regiments
	Light Armored Divisions 2 Divisions x 2 regiments = 4 regiments
<hr/> Total	<hr/> = 11 regiments
	= 12 regiments

Besides the light armored divisions, Hernu's staff decided to attach France's paratroop division (the 11th Parachute Division) to the rapid deployment force. Historically used for interventions in Africa, France's paratroops were an elite that could be rapidly

flown to NATO's front line. Experiments and thought had been given to their use in Central Europe under the Giscard administration, but the insufficient mobility and firepower of paratroopers once on the ground stymied efforts to employ them.¹⁴⁰ Now Hernu's decision to create a rapid deployment force led the government to consider paratroopers apt to combat Soviet tanks for the first time ever.

To further increase the size of Hernu's new force, his staff also included France's mountain division (the 27th Alpine Division) in the rapid deployment force. Based in Central France and equipped with modest numbers of vehicles, the mountain division could only, with great difficulty, be deployed to Central Europe. Moreover, the mountain division's meager supply of anti-tank weaponry meant that it would be exceptionally vulnerable to Soviet armor.¹⁴¹ Despite these deficiencies, Hernu insisted on including the mountain division to increase the putative mass of France's projection force.¹⁴² However, it appears likely that the mountain division was never actually slated to operate in Central Europe alongside the other four rapidly deployable divisions, but would remain in Central France to guard ballistic missile silos against enemy special forces.

Thus, Hernu expanded Fricaud-Chagnaud's vision of a fast moving force capable of intervening in Central Europe from one division to five. Table X, below, illustrates the rapid deployment force as articulated by Hernu.

**Table X:
The Force d'Action Rapide**

One Helicopter Division (4^{ième} Division Aéromobile)

5,100 personnel
241 helicopters

One Light Armored Division (6^{ième} Division Légère Blindée)

7,400 personnel
77 AMX-10RC (wheeled cannon vehicles)

One Marine Division (9^{ième} Division d'Infanterie de Marine)

8,500 personnel
77 AMX-10RC (wheeled cannon vehicles)

One Paratroop Division (11^{ième} Division Parachutiste)

13,500 personnel

One Mountain Division (27^{ième} Division Alpine)

9,100 personnel

Total = 47,000 personnel (including corps headquarters)

The reasons behind creating a large force, of five divisions, were overwhelmingly political. Only a sizeable military force, of at least corps size, would convince friends and enemies alike that France would play a major role in NATO's forward battle. Once the concept had been finalized, Hernu named France's rapid deployment force the Force d'Action Rapide (Rapid Action Force), which soon became known for its acronym, the FAR.

While Hernu, his private staff and a few collaborators sufficed to develop a blueprint for reform, actually changing French doctrine and force structures proved more difficult. When they became aware of Hernu's plans, most of the Army's high command

opposed the FAR. Military officers advanced four broad arguments against Hernu's project, including: 1) the military high command was insufficiently consulted in elaborating the reform; 2) creating the FAR could deprive France's mechanized corps of helicopters and armored reconnaissance assets; 3) the FAR would divert motivated career soldiers away from the rest of the Army; and 4) the light divisions of the FAR would not be able to stand up to the Soviet Union's armored forces. From March 1982 until November 1983, Hernu and his colleagues contended with the Army's efforts to sabotage the FAR. However, using the institutional tools at his disposal, Hernu prevailed over the high command.

From the outset, Hernu's cabinet anticipated the Army's resistance to their reforms. The Army had broadly approved of Giscard's doctrinal changes and was unlikely to welcome further reforms that it had little role in developing. Table XI, below, illustrates the Army's attempts to oppose Hernu's reforms.

Table XI: The Force d'Action Rapide	
November 1981:	Unenthusiastic appraisal of helicopter division concept by Hernu's military cabinet
October 1982:	The Army's Chief of Staff, General Delaunay, wrote letter critical of Hernu to General Lacaze. Letter leaked to newspaper.
January 1983:	Armed Forces Chief of Staff's letter to Hernu urging Hernu to rely on service chiefs is published in the armed forces information bulletin.
March 1983:	Violent confrontation between Hernu and Army Chief of Staff. Army Chief of Staff, Delaunay, obliged to retire.
June 1983:	Experimental helicopter force fails after exercise's organizers "sabotage" trial.

Fricaud-Chagnaud was so certain that his hierarchy would oppose his proposal for a helicopter division that he hid it from his military superiors and brought it to the direct attention of the Minister of Defense.

Anticipating resistance from the military high command, Hernu excluded the Army from the initial stages of elaborating a new doctrine and confided Fricaud-Chagnaud's dossier to his personal military cabinet, which answered directly to the Minister of Defense. However, contrary to Hernu's expectations, the military cabinet responded to Fricaud-Chagnaud's memorandum in November 1981 with a lukewarm appraisal. The military cabinet's paper stated that Fricaud-Chagnaud's judgement about the relative value of helicopters and tanks "seemed somewhat premature" and that his proposal to confine the First Army to a more rearward role "raised a psychological problem that cannot be ignored."¹⁴³ After these cautionary notes, the military cabinet suggested that no immediate action should be taken and Fricaud-Chagnaud's proposal be studied further.

Undaunted by the tepid response from his military cabinet, Hernu confided the next stages in elaborating a new doctrine to bodies entirely beholden to him. On 10 March 1982, he tasked the CPE's successor, the Groupe d'Etudes et de Planification Stratégiques (GROUPES), with studying Fricaud-Chagnaud's proposal with an eye to assessing its operational validity and examining its financial and doctrinal implications.¹⁴⁴ By entrusting the further elaboration of Fricaud-Chagnaud's proposal to a think-tank managed by an armament engineer, Hernu ensured that the proposal would receive both the positive evaluation and the detailed elaboration necessary for its implementation.

Barely two months after the think-tank was charged with studying Fricaud-Chagnaud's proposal, GROUPES presented Hernu with an analysis supporting the heli-

copter division and providing arguments for pushing the idea further. The GROUPES study asserted that Fricaud-Chagnaud's proposal "complements without difficulty our doctrine of deterrence and would permit [France] to materialize its contribution earlier to the defense of Europe by offering our allies significant support."¹⁴⁵ With the GROUPES study in hand, Hernu and his civilian entourage decided that the next step in developing an airmobile intervention force would be the creation of a provisional helicopter unit and experimentation with it during full-scale exercises.

Only after GROUPES had produced its study and Hernu's cabinet had elaborated a detailed project of reform did Hernu decide to inform the Army's leadership of his plans to create the FAR. On 24 November 1982, at a meeting of the Superior Council for Ground Forces, Hernu told the Army's assembled leadership that he intended to create a rapid deployment command with the mission of "engaging an expeditionary force in support of allied forces in Europe wherever they need assistance and from the beginnings of a crisis."¹⁴⁶ Shortly after Hernu's speech, the Minister of Defense's cabinet set in motion the creation of an experimental helicopter unit, the *force éclair* (literally "lightning force") as a precursor to Fricaud-Chagnaud's helicopter division.¹⁴⁷

Unfortunately, Hernu's efforts to delay military opposition miscarried when information about the FAR leaked to the Army's high command in October 1982, before Hernu announced the reform to the Army's leadership. Having unofficially heard snippets about the FAR, the Army's Chief of Staff, General Delaunay, wrote the Armed Forces' Chief of Staff, General Jeannou Lacaze, a letter condemning it. Although originally composed as a confidential letter in October, Delaunay's text was published in a Parisian paper on 6 December.¹⁴⁸ Delaunay was angered in equal measures by the reduc-

tion of the Army's size, the creation of a "two tiered" force and the elaboration of major changes without him, the head of the French Army, being consulted.¹⁴⁹

Sensitive to Delaunay's complaint that the Army's leadership was being excluded from the reform process, Lacaze attempted to persuade Hernu that military doctrine should not be formulated in isolation from the armed forces' professional leadership. In January 1983, Lacaze wrote Hernu to protest how the FAR was elaborated and urge Hernu to include service chiefs in all future deliberations. According to Lacaze,

In view of the reforms already begun, it is indispensable to associate military experience with the reflections of those advancing new doctrines. In this respect, Mr. Minister, it is normal for you to be able to rely entirely on the service chiefs, whose experience should naturally make them privileged partners when discussing necessary reforms.¹⁵⁰

To pressure Hernu into taking his message seriously, Lacaze arranged for it to be published in the armed forces information bulletin, where officers and journalists would have access to it. Meanwhile, Lacaze also urged Delaunay to forgive Hernu's past behavior and collaborate on the next stages of the reform process.

Ultimately, Lacaze's message had little impact on Hernu or Delaunay. Hernu continued to circumvent the Army's high command and dealt directly with subordinate officer, particularly the commander of the First Army, General Jacques de Barry. Meanwhile, Delaunay did what he could to block the government's initiatives. By March 1983 Delaunay and Hernu were in open conflict. According to a source close to Hernu, "The general [Delaunay] lacked the slightest sense of diplomacy and Charles Hernu wanted to force him to recognize that the political authorities would have the final word."¹⁵¹ During one explosive meeting, Hernu and Delaunay resorted to shouting at one another. By the time it was over, Hernu had torn the cables from his phone in anger and Delaunay had showered the floor with 18th century stucco, detached from the ceiling by the force of his

slamming the door. After this explosive meeting, Hernu retired Delaunay, replacing him with a more pliant officer.¹⁵²

Despite Delaunay's ouster, the Army continued to resist Hernu's reforms. When it came time to test the helicopter division idea in June 1983, the corps commander tasked with organizing the exercise attempted to sabotage the concept. By issuing an unrealistic requirement for helicopters to "demonstrate a good capacity to control a geographic sector by remaining above it and repelling the enemy" General Bernard de Montaudouin created a scenario whereby the experimental helicopter force was bound to fail.¹⁵³ With numerous journalists assembled for the exercise, de Montaudouin acerbically commented on the government's initiatives. After subordinate officers explained that the experimental helicopter force had been defeated, de Montaudouin quipped, "In the Army we do things thoroughly.... We are sceptical of theoretical or enthusiastic chatter emanating from Parisian [government] offices."¹⁵⁴

Hernu's immediate response to the failure of his doctrine during the June 1983 exercise was to replace the responsible officers and organize a new trial. De Montaudouin, the "saboteur" of the June exercise was retired, the commander of the experimental helicopter unit was replaced, and the new exercise was placed under the direct auspices of a general known for his support of the FAR.¹⁵⁵ To make sure that nothing went wrong, Hernu's staff controlled every detail of the exercise's elaboration. Not surprisingly, the *Moselle 83* exercise of September 1983 was judged a complete success, "confirming" the validity of the government's plans. After the exercise, it was assessed that 60 attack helicopters could stop an enemy armored division over 600 kilometers from the helicopters' peacetime bases.

With the FAR's principal opponents neutralized, a detailed plan for reforms elaborated and the validity of the concept demonstrated by an exercise, Hernu could proceed with the implementation of reform. In November 1983, Hernu officially announced the government's new doctrine and the FAR's imminent creation.¹⁵⁶ The FAR's central command structures and new light armored division (the 6th Light Armored Division) were created and declared operational in 1984. The FAR's three existing divisions were then transferred to the new structure. Finally, in June 1985, the FAR's most novel component, the helicopter division, was declared operational. Thus, within four years of Fricaud-Chagnaud presenting his proposal, Hernu succeeded in creating a rapid deployment force of 47,000 men, including two types of entirely new divisions.¹⁵⁷

From a political point of view, the FAR fulfilled the requirements originally laid out for it. West Germany greeted the FAR's creation with considerable enthusiasm and General Frido von Senger und Etterlin hailed it as a significant military development. France's adoption of a military doctrine amenable to the Germans paved the way for broader security cooperation, culminating in the reactivation of the Western European Union (WEU) in 1984, the adoption of a common European security platform in 1987, the establishment of a Franco-German brigade in 1987 and, ultimately, the creation of the Eurocorps in 1992. Viewed retrospectively, a former Hernu collaborator reflected that the FAR was critical to Franco-German relations and that "Getting the Franco-German relationship right was one of the keys to winning the Cold War." Besides West Germany, France's other allies also supported the FAR, with the United States' Army's Chief of Staff, General Edward Meyer, a particular enthusiast.

Unlike Giscard's doctrinal reforms, the FAR proved domestically uncontroversial as well. Combined with Mitterrand's abandonment of "forward deployment" and "tactical

nuclear battle" the creation of the FAR even found support from doctrinaire Gaullists. One of the CPE's former theorists and an avid critic of Giscard, General Poirier, wrote several articles defending the Gaullist foundations of Socialist defense policy. In an ultimate homage to the FAR, the Soviets listed it as one of the primary elements changing the correlation of forces in Europe. As early as 1984, Soviet military intelligence evaluated the FAR as contributing the equivalent of three additional divisions to NATO's defense, constituting half of the land forces that NATO had added in six years.

While foreign and domestic audiences appreciated the FAR, France's own armed forces remained sceptical of its value and suspected that the FAR's existence weakened the Army as a whole. The creation of the FAR had entailed a significant diminution in the combat power of France's mechanized forces. Creating the light armored divisions consumed half of corps reconnaissance assets, and developing the helicopter division diverted 70 percent of the Army's combat helicopters and 40 percent of its total helicopters. To enable the FAR's infantry to combat Soviet tanks, the FAR received 38 percent of the Army's Milan anti-tank missiles (450 of 1,200).¹⁵⁸ Besides consuming large amounts of specialized equipment, the force also required a high percentage of volunteer soldiers and career non-commissioned officers, which could only be obtained by poaching high quality manpower from the rest of the Army to fulfil the complex missions assigned to the FAR. Thus, in the words of General Delaunay,

The Minister [Hernu] wanted to create two armies, the FAR for difficult operations and the rest to serve as armed valets.... The Army's best units have always had a tendency to cream off the best junior officers as they exit St. Cyr. This became worse with the creation of the FAR. The FAR also called for volunteers. This meant that the bravest and most highly motivated men were concentrated in this one formation, leaving the rest worse off.¹⁵⁹

Many French officers feared that depriving France's three mechanized corps of helicopters, anti-tank missiles, wheeled armored vehicles and high quality manpower was a poor trade off, crippling the ability of the 155,000 men of the First Army to fight in order to create a rapid deployment force of 47,000.¹⁶⁰

Besides their general opposition to providing the FAR with resources at the expense of the rest of the Army, many French officers doubted whether its light forces would succeed at their mission. Using divisions of helicopters, light armor and paratroops to confront the Soviet Union's armored and mechanized forces was a bold endeavor, and little evidence existed to suggest that the French would succeed with their mission. French helicopters required significant logistics support and were vulnerable to enemy aircraft and air defenses, wheeled armored vehicles lacked the protection and off-road mobility of tracked vehicles, and paratroops possessed no artillery and were unprotected against chemical or nuclear warfare. Exercises in 1981 and 1983 had already demonstrated the shortcomings of paratroop and heliborne forces against enemy armor. Because of these deficiencies, many officers feared the FAR would fail the test of battle.

Although the FAR never saw action in its original mission, the greatest test of the FAR, the *Kecker-Spatz* (Strong Sparrow) exercise of 1987, yielded equivocal results. Involving 20,000 French troops and 55,000 West German soldiers, the Franco-German *Kecker-Spatz* exercise examined a scenario whereby the FAR would deploy to Southern Germany to halt Soviet armored forces until the French 2nd Corps arrived to reestablish a defense line in conjunction with German forces. With both France's President Mitterrand and West Germany's Chancellor Helmut Kohl in attendance, *Kecker-Spatz* had a public relations function in addition to its military purpose.

For observers, certain aspects of the FAR concept worked remarkably well, while others revealed disturbing defects. Logistically, *Kecker-Spatz* was a success, with the FAR arriving within 48 hours from bases as far away as Southern France. The helicopter division was also judged to have accomplished its mission, destroying over 100 simulated "Soviet" tanks. However, the counterattack by a French light armored division against a "Soviet" tank division proved a fiasco. French wheeled vehicles bogged down once off road and the simulated "Soviet" armor handily outmaneuvered and overpowered them. According to General François Gerin-Rose,

We wanted to have the light armored elements of the FAR counterattack a 'Soviet' armored division. The Germans laughed at us and they were right to do so.... The German Army was very critical of our performance during *Kecker-Spatz*. The commander of the West German 2nd Corps did not stifle his criticisms, and he was right.¹⁶¹

After the exercise, doubts also emerged as to whether France possessed enough logistics resources to employ both the FAR and the First Army at the same time. Insofar as the FAR was ever subjected to a rigorous test, it failed on more counts than it succeeded. However, in the eyes of the national leaders watching the exercise, the FAR was a symbol of Franco-German strategic partnership and the in-dissociable nature of the two states.

In sum, the FAR represents a successful attempt by political leaders to impose unwanted change on the armed forces. Using the institutional tools at his disposal, Hernu marginalized elements of the armed forces who opposed his reforms. Instead, pliant bodies and favorable officers were used to articulate reform under the overall guidance of Hernu's staff. Because Hernu's concerns were political in nature, fulfilled political criteria, such as demonstrating France's commitment to West Germany's defense and its retention of its own strategic independence. Unfortunately, significant elements of the FAR

concept were militarily unviable. Professional soldiers suspected and argued this from the doctrine's inception, but were powerless in their efforts to change the government's objectives.

VII. Conclusion

Between 1958 and 1989, French military doctrine underwent four distinct changes. Prior to 1962, involvement in colonial wars hindered France's developing a doctrine for the defense of Western Europe. After coming to power, de Gaulle gradually imposed a strategic policy based on national independence, nuclear defense and selective engagement with the Atlantic Alliance. By 1966 de Gaulle imposed the "two battles" concept, based on participating conventionally in NATO's defense with a single army corps and withholding another army corps, tactical nuclear weapons and territorial forces to deter an attack on France itself. Within two years of approving the "two battles" doctrine, de Gaulle had second thoughts and instructed the military high command to prepare for a single engagement, employing all of France's mechanized and tactical nuclear forces. This single engagement could potentially take place alongside other NATO forces, in which case France aimed to compel the United States to use its tactical nuclear weapons in Europe's defense. During Giscard's administration (1974-81), "enlarged sanctuarization" was embraced and French forces prepared to fight a longer conventional battle, further forward and, if need be, with a more calculated and gradual transition to nuclear warfare. Discarding most of Giscard's developments, the Mitterrand administration (1981-95) created a Rapid Action Force (FAR) designed to enable France to participate conventionally in the opening stages of a war in Europe without pre-deploying forces. Table XII, summarizes France's doctrinal developments.

**Table XII:
Major Changes in French Doctrine, 1958-1990**

	Two Battles	Single Conventional/ Nuclear Battle	Extended Sanctuarization	Force d'Action Rapide (FAR)
Date of Introduction	1966	1968	1975-76	1983
Conventional Employment	2 nd Corps to fight with NATO; 1 st Corps reserved for national defense	Both corps fight together either with NATO or for national defense	President can forward deploy units during a crisis; French defense indivisible from NATO's	FAR to participate in NATO's forward battle; First Army to serve as reserve
Nuclear Threshold	2 nd Corps to fight conventionally; 1 st Corps to use tactical nuclear weapons immediately	Practically immediate	When conventional defense becomes impossible	FAR and First Army to fight conventionally; tactical nuclear weapons relegated to symbolic "final warning"
Developments in Force Structure	Reestablishment of army corps after Algeria	Creation of the French First Army	Development of 3 rd Corps to protect North	Creation of FAR with five divisions, weakening mechanized corps
Major Actors	President de Gaulle CPE General Ailleret General Fourquet General Gallois	President de Gaulle General Valentin General Hublot	President Giscard General Méry Gen. Vanbremeersch General Lagarde	President Mitterrand Def. Min. Hernu GROUPES Hernu's Staff G. Fricaud-Chagnaud Gen. de Barry
Foreign Policy Considerations	Affirm France's strategic independence while contributing to NATO's defense	Compelling a reluctant United States to invoke its nuclear deterrent on behalf of Europe	Reassure West Germany and other NATO allies	Reassure West Germany of French support while reaffirming French strategic autonomy

The major impetus for these changes was political leaders' perceptions of France's diplomatic environment. The key issues that motivated their forays into military doctrine were questions of how to guarantee France's strategic autonomy, contribute to Europe's

collective defense and reassure critical allies of French support. Each administration perceived these questions in a slightly different light and technology shaped the military options available to them. With the "two battles" doctrine, de Gaulle's aim was to distinguish France's defense, which was guaranteed by nuclear weapons, from France's contribution to Europe's overall security, which remained conventional. This military doctrine can only be appreciated as the military manifestation of de Gaulle's foreign policy of autonomy from the United States, détente with the Soviet Union and cooperation with West Germany. When de Gaulle revised this doctrine in 1968, he hoped to increase France's contribution to Europe's collective defense while ensuring that the United States would use or credibly threaten to use its nuclear forces on behalf of Europe.

The negative diplomatic ramifications of de Gaulle's doctrines, which became evident with Chancellor Schmidt's complaints in 1974, prompted Giscard to revise French doctrine and force structure. West German criticisms of French doctrine weighed heavily on Giscard because the new French government hoped to advance European integration and feared that *ostpolitik* could culminate in neutralism. Giscard's focus on "enlarged sanctuarization" embodied this effort to render France's defense indissociable from Western Europe's security. Second order reforms, such as the Army's preparations for conventional conflict, its new tactical nuclear doctrine, the possible forward deployment of conventional forces and the creation of a third army corps were all designed to convince France's allies that it would play a significant role in NATO's collective defense and would not prematurely destroy West Germany with tactical nuclear weapons.

Accepting Giscard's political objectives, but dissatisfied with his rapprochement with NATO, Mitterrand sought a means of demonstrating France's committing to pre-war forward deployment or French forces fighting a tactical nuclear battle alongside allies.

Taking advantage of recent military reflections on the value of helicopters and the increasing lethality of anti-tank missiles, the FAR fulfilled the same political functions as "enlarged sanctuarization" without equivalent political costs. With a rapidly projection force, France could participate, at short notice, in NATO's primary battle.

Thus, the different political outlooks of successive French administrations and changes in the international environment proved the most frequent factors motivating changes in French doctrine. Given the political components to France's defense policy, each doctrine bore the mark of the head of state's personality. Not coincidentally, four successive French presidents (Giscard, Mitterrand, Jacques Chirac and Nicolas Sarkozy) announced major military reforms within 18 months of being elected, demonstrating the correlation of election cycles with new military doctrines.

Because political factors and actors predominated in the creation of French doctrine, military doctrine emphasized France's overall security, rather than purely military performance or the pursuit of "victory." In practical terms, this meant that each French doctrine was designed to reinforce the credibility of nuclear deterrence. Concepts such as the "national sanctuary," massive retaliation, a conventional "test" of enemy intentions, a "tactical nuclear warning," "enlarged sanctuarization," and fighting a "tactical nuclear battle" were all manifestations of French leaders' efforts to render their nuclear posture both dissuasive and useable. Besides improving nuclear deterrence, the other priority of political leaders was strengthening France's alliance relationships within a broader framework of national strategic autonomy.

Next to the primacy of political factors, changes in military technology played a minor role in French doctrinal developments. In de Gaulle's "two battles" doctrine, tactical and strategic nuclear weapons played an enabling role. Amongst Giscard's many doc-

trinal reforms, technology was only critical to the change in strategic nuclear war plans. The accuracy of French silo-based IRBMs and the invulnerability of its ballistic missile submarines made it possible for France to adopt a strategy of first targeting Soviet command-and-control facilities in any escalation to strategic nuclear warfare. Finally, helicopters and anti-tank missiles played an important role in the FAR concept under the Mitterrand administration.

If military doctrines exploited technological developments in the above cases, French leaders persisted in supporting military doctrines despite significant technical obstacles to their functioning properly. With the exception of Giscard's administration, French leaders accepted the technically unworkable notions of a tactical nuclear "warning shot" and "single salvo." Likewise, Mitterrand and Henu foisted the FAR on the armed forces despite strong military reservations concerning the ability of helicopter forces, light armor and paratroopers to face Soviet tanks and artillery. With both tactical nuclear weapons and the FAR, the failure of French doctrines during military exercises did not convince political leaders to revise them. Thus, although political leaders were willing to instrumentalize military technology when it served their diplomatic purposes, they were also prone to ignore inconvenient technological realities. While technology had an ambivalent impact, sometimes contributing to change and often being disregarded, changing perceptions of enemy capabilities rarely had any influence on French doctrine.

Although political leaders dominated the French doctrinal process, professional officers played a critical role in formulating alternatives and implementing changes. Almost every French doctrine was connected with one or more high ranking officers. However, the ability of military professionals to enact change was determined by the support they received from political leaders. Using France's parallel staffs and chains of com-

mand, political leaders empowered military commanders whose ideas they appreciated to serve as agents of change. By way of contrast, political leaders circumvented and marginalized military commanders they disagreed with. Thus, the military officers associated with a new doctrine are not necessarily those the most logically placed in the hierarchy. Under Giscard it was initially the head of the President's Military Staff (Méry) rather than the Chief of Staff of the Armed Forces (François Morin) who spearheaded the reform process. Even worse, the military officers most closely associated with Mitterrand's reforms, Generals Fricaud-Chagnaud and de Berry, held important commands, but were not institutionally well placed to support reform. In sum, political primacy and military participation in the French doctrinal process are reconciled by political leaders' ability to choose their military interlocutors from a broad range of potential candidates.

When political leaders were unsatisfied with the analyses advanced by their military advisors, they had recourse to think-tanks to evaluate ideas and articulate reform. During the de Gaulle administration, the CPE played a critical role in developing France's "two battles" doctrine. Later, GROUPES played an important advisory function during the early phases of the FAR's elaboration. Although discreet, the CGA also contributed to reform through the constant threat of monitoring and an audit that it exercised on military commanders.

The downside of the political control of French military doctrine is that the resultant doctrines frequently embodied controversial tactical, operational and technological suppositions. The "two battles" doctrine fractioned France's limited ground forces into two battle forces, rather than concentrating them for greater military efficiency. Both the "two battles" doctrine and its successor also embodied the militarily dubious concept of the tactical nuclear "warning shot" condensed into a single salvo. Later, Mitterrand's

FAR was based on the dangerous premise that light armored, helicopter and airborne forces could halt Soviet tank and motorized rifle divisions.

In sum, the institutional structures of French defense policymaking empowered political leaders to craft doctrines that advanced their foreign policy objectives. With multiple options at their disposal, political decision-makers empowered selected military staffs and think-tanks to implement their desiderata. Political leaders used these institutions to develop doctrines that strengthened the credibility of French nuclear deterrence and demonstrated its commitment to European allies. The downside of this process was that political leaders lacked adequate understanding of technical military realities and frequently approved doctrines that failed to take them into account. French doctrine was, therefore, a faithful translation of the state's foreign policy into military plans and procedures. However, it remains questionable how well French doctrine would performed in the event of war.

End Notes

¹ Stephen Rosen, *Winning the Next War: Innovation and the Modern Military* (Ithaca: Cornell, 1991), 11.

² The commands included: the Aerial Strategic Force (FAS) equipped with long-range nuclear bombers and silo-based missiles; the Tactical Air Forces (FATAC), which possessed tactical nuclear weapons; the First Army, which possessed battlefield nuclear missiles; the Oceanic Strategic Force (FOST) that employed France's ballistic missile submarines; and the Naval Air Group (GAN) whose carrier borne aircraft could drop tactical nuclear weapons. The FAS was eliminated after the end of the Cold War and the French Army's nuclear missiles have been retired. *De Gaulle et ses premiers ministres, 1959-1969* (Paris: Plon, 1990), 218-19.

³ For examples of the large extant literature on bureaucratic politics and military organizations, see: Richard Betts, *Soldiers, Statesmen and Cold War Crises* (New York: Columbia, 1991); Jack Snyder, *The Ideology of the Offensive: Military Decision Making and the Disasters of 1914* (Ithaca: Cornell, 1984); and Graham Allison and Philip Zeilikow, *Essence of Decision: Explaining the Cuban Missile Crisis, Second Edition* (New York: Longman, 1999).

⁴ Michel Debré, *Combattre toujours: Mémoires vol. 5, 1969-1993* (Paris: Albin Michel, 1994), 60-61.

⁵ Capitain de Vaisseau Lepotier, "Un an à l'Institut des Hautes Etudes de Défense Nationale," *Revue de défense nationale* (July 1950): 74-84; Contre-Amiral Lepotier, "La cinquième session de l'Institut des Hautes Etudes de Défense Nationale," *Revue de défense nationale* (January 1953): 76-83; and Louis Quinio, "Le cinquantième des Hautes Etudes de Défense Nationale," *Défense Nationale* (December 1986): 7-10.

⁶ Jean Fleury, *Faire Face: Mémoires d'un chef d'état-major* (Paris: Jean Picollec, 1997), 166-70, 213-28; Samy Cohen, *La défaite des généraux: Le pouvoir politique et l'armée sous la Ve République* (Paris: Fayard, 1994), 61-63.

⁷ Cohen, 63.

⁸ At British insistence, France had received a zone of occupation in Germany; however, Joseph Stalin's opposition to a French zone resulted in it being formed from territories originally assigned to Americans and British zones that bordered France: the Saar and Baden. Unhappy about not being consulted over the allocation of zones of occupation, de Gaulle ordered the French First Army to occupy Stuttgart, in the American zone of occupation, in April 1945. François Kersaudy, *De Gaulle et Churchill* (Paris: Tempus, 2003), 412-19.

⁹ Andreas Wenger, "The Politics of Military Planning: Evolution of NATO's Strategy," *War Plans and Alliances in the Cold War: Threat Perceptions in the East and West* (London: Routledge, 2005), 168-170.

¹⁰ Until 1950, the Atlantic Alliance envisioned stopping a Warsaw Pact offensive on the line of the Rhine River. In this context, French forces would fight on their own national border. Thierry Sarmat and Benjamin Mercier, "La guerre qui n'a par eu lieu, vision stratégique et plans d'opérations français dans l'hypothèse d'une invasion soviétique, 1945-1969," *Revue historique des armées* no. 227 (June 2002): 114-115.

From 1946 to 1962 France became embroiled in large-scale counterinsurgency operations in Indochina and Algeria. In 1953-54, at the peak of French military involvement in Indochina, the conflict absorbed 183,000 soldiers at any given time. Briefly towards the closing stages of the Indochina War, French political and military leaders anticipated that economic growth and disengagement from Indochina would permit France to eventually field 14 divisions in Germany.

The Algerian War erupted in December 1954, barely five months after the signing of the Geneva Treaty ending France's Indochina War, and from 1956 onwards, Algeria absorbed upwards of 400,000 men on a continuous basis. Even without the outbreak of the Algerian War, it is unlikely that France would have attained anything like its conventional forces goals. On 11 September 1954, 50 days after the signing of the Geneva Accords, President of the Council of Ministers Pierre Mendès France announced a "budgetary pause," equivalent to a 20% reduction in the defense budget. This entailed either reducing personnel by 12% or transforming four active divisions into reserve divisions, available after 30 days notice. François David, "Deux theatres, un même conflit? Le poids de l'Union française sur l'intégration atlantique, 1952-1956," *Revue historique des armées* no. 236 (2004): 26.

The French government defaulted in 1955 on rearmament obligations it had accepted at NATO's Lisbon Conference three years earlier. The French refused to allocate funds for a minimal military presence in Europe while combating Algerian rebels. Through "*plan jaune*" (1954) and "*plan orange*" (1955), they proposed putting France's contribution to the forward defense of Europe into a state of hibernation, while constituting a manpower reserve with "a minimum of means on a permanent basis." *Ibid.*, 25-32.

¹¹ The northern itinerary had the fewest natural obstacles between East Germany and France. Besides the German invasion of 1914, Spain attacked France via this vulnerable northern frontier in 1636. King Bernadotte's Swedish Army did likewise in 1814, as did the armies of the British Duke of Wellington and Prussian Field Marshal Blücher in 1815.

In the South, the Vosges mountains constituted a substantial obstacle to enemy forces that had crossed the Rhine. The German Third Army crossed the Northern Vosges in eight columns in 1870, albeit against little opposition, having already beaten the opposing French forces on the Alsacian Plain, at Woerth.

Another drawback to the southern-most route are the distance between the NATO-Warsaw Pact border and the Atlantic, and the limitation of two geographic corridors that permit an invader to avoid the Bohemian Forest to access the Bavarian Plain. To the north of this route, the "Hof Corridor," astride the East German-Czechoslovak

border, is about 20 km wide, only half as wide as the Fulda Gap. Otherwise, an invader must violate Austrian neutrality to send troops via Vienna and Munich, further elongating their itinerary. Although a priori less threatening than the other two invasion routes, the German Third Army nevertheless invaded France in 1870 via the southern route. French armies attacked along the same route, in reverse, during the Revolutionary and Napoleonic Campaigns of 1796, 1800, 1805 and 1809.

For descriptions of West Germany's military geography, see: Auguste Marmont, *De l'esprit des institutions militaires* (Paris: Economica, 2001), 185; Barry Posen, *Inadvertent Escalation* (Ithaca: Cornell, 1991), 70; and Lieutenant-Colonel Noix, *Géographie militaire, vol. 3: Allemagne, Hollande, Danemark* (Paris: Librairie Militaire de L. Bau-doin, 1885), 81-96.

¹² Having examined the terrain from east-to-west, an invader attacking from Eastern Europe must contend with four series of geographic obstacles. These obstacle belts include; 1) mountains and forested highlands near the inter-German border and West Germany's border with Czechoslovakia; 2) the low-lying mountain ranges on either side of the Rhine; 3) the Rhine River itself; and 4) the cuesta ridgelines and lesser rivers marking the boundaries of the Parisian Basin.

The first set of obstacles Warsaw Pact armies had to contend with were, from north to south, the Harz Mountains, the Thuringian Forest and the Bohemian Forest. Having overcome or circumvented these obstacles, Warsaw Pact forces next had to contend with a series of low mountain ranges on both sides of the Rhine, including the Schwarzwald (Black Forest), Vosges, Hunsrück, Eifel, Westerwald, Taunus and Ardennes slate mountains. All produced by the convergence that formed the continent of Pangaea, the intensely deformed rock structures of these highlands are serious impediments to the movement of armies and generally canalize them into the gaps between them.

Nestled below and amidst these highlands lies the Rhine, the largest river in Western Europe. Flowing northwards from the Alps to the North Sea, the Rhine is unfordable north of Switzerland and, therefore forms a continuous barrier, requiring substantial military engineering resources to cross. During the Second World War, the Rhine granted a reprieve to exhausted German forces during the Fall and Winter of 1944 and 1945. Because of the Rhine's length and breadth, NATO planned to anchor its defense of Western Europe on the Rhine until 1963, when German rearmament made forward defense a political necessity.

Once beyond the Rhine and the mountains immediately west of it, an invader would have passed the most formidable obstacles between the inter-German and German-Czech borders and Paris. Nevertheless, a combination of low ridges, known as cuestas, and rivers at the edges of the comparatively flat Paris basin provide terrain features that are tactically advantageous to a defender. Cuestas are formed at the edges of a geologic basin by a combination of the downward sloping of rock strata, towards the center of the basin, and the erosion effects of streams and rivers. In Lorraine, this process has produced a series of five parallel north-south ridgelines, where the eastwards facing slope is always more abrupt than the westwards slope. In the regions of Lorraine, the Marne and the Somme, alternating cuestas and rivers played a prominent role in many First World War battles. However, unlike more formidable terrain obstacles such as the Rhine

and its neighboring mountains, these cuesta landscapes must be defended in strength, failing which an opponent can blitz through them, as the Germans did through the so-called Wegand Line on the Somme in 1940.

See Harold Winters et al. *Battling the Elements: Weather and Terrain in the Conduct of War* (Baltimore: Johns Hopkins, 1998), 134-45

¹³ With apparently few intelligence sources on Warsaw Pact intentions, French planners looked at Soviet options deductively, concluding in 1959 that four contingencies were possible. In 1960, they concluded that the Warsaw Pact would not have enough forces to launch attacks along all three-invasion corridors and so would concentrate on the northern one, massing 10 to 14 first echelon divisions along any one of the three invasion corridors. Subsidiary attacks or holding actions would be conducted in areas unsuitable for major assaults, such as Schleswig-Holstein, and along the axes not employed for the primary assault. Sarmat and Mercier, “La guerre qui n’a par eu lieu, vision stratégique et plans d’opérations français dans l’hypothèse d’une invasion soviétique, 1945-1969,” 114.

¹⁴ After Soviet First Deputy Minister of Defense Field Marshal Vasiliï Sokolovskii in 1962 published *Military Strategy*, in which he elaborated a new Soviet military doctrine wherein tactical nuclear weapons would “sweep away everything in their way that might offer resistance” while tank and mechanized forces advanced to seize strategic objectives in enemy territory, French planners reexamined a possible attack. According the 1966 French analysis: “[Focusing on the northern invasion corridor, they believed the] principal direction of the attack will be that aimed at the [French] Atlantic Coast from the mouth of the Loire to that of the Seine It has as its axis in Northern Germany the autobahn from Magdebourg to Dusseldorf, reaching the Rhine between Wessel and Cologne, and passing to the west of Paris, to reach Brittany.”

From the French sources cited, it is unclear who the Czechoslovak source was and to which country he defected. It is clear that he defected in 1970 and briefed Western intelligence personnel on Warsaw Pact war plans valid between 1961 and 1969. The French document first attesting to the lessons learned from this defector is dated December 1972. It therefore appears that the Czechoslovak officer defected to another Western state and that intelligence was then shared with the French.

It is clear from the French notes on the findings gleaned from the Czechoslovak defector that a Western use of tactical nuclear weapons against military targets would result in a retaliatory Warsaw Pact use against political targets, including Frankfurt, Munich and Strasbourg, while logistics facilities would also be targeted at the operational level. It is unclear whether tactical nuclear weapons would be used against Western political centers [Paris, London, Amsterdam and Brussels] and it is unclear whether the use of tactical nuclear weapons would, from a Soviet perspective, also necessitate strategic escalation. See Sarmat and Mercier, “La guerre qui n’a pas eu lieu, vision stratégique et plans d’opérations français dans l’hypothèse d’une invasion soviétique, 1945-1969,” 118-119.

The main thrust of the Warsaw Pact assault would be delivered along the northern and central invasion axes. This force, referred to as either the “Western Front” or the “Berlin Front,” would send 10 to 15 divisions via Hanover and Liege [i.e. the Schlieffen

Plan] and 10 via Luxembourg [i.e. 1940]. While the main thrusts would be delivered in the north and center of the German battlefield, a large subsidiary attack would be launched in the south, and 12 Czech and Soviet divisions of the “Southwestern Front” would cross the Rhine between Strasbourg and Karlsruhe eight to 10 days after the start of hostilities.

Matthias Uhl, “Storming on to Paris: The 1961 *Burja* exercise and the planned solution of the Berlin Crisis,” *War Plans and Alliances in the Cold War* (Routledge: London, 2006), 49-53; Sarmat and Mercier, “La guerre qui n’a par eu lieu, vision stratégique et plans d’opérations français dans l’hypothèse d’une invasion soviétique, 1945-1969,” 116-17; and Thierry Sarmat, “Une hypothèse d’invasion soviétique: ‘Plans opérativo-stratégiques en Europe centrale et méridionale,’” *Revue historique des armées* no. 236 (Winter 2004): 47-48.

¹⁵ In 1962, the head of the Chiefs of Staff, General Charles Ailleret presented the Minister of Defense and assembled chiefs of staff with a different analysis. Fearing a breakthrough in Southern Germany, he believed that a Soviet offensive in Northern or Central Germany would trigger nuclear retaliation from American or British forces. Because, he continued, tactical nuclear weapons would render a large scale conventional offensive impossible, even if the Soviet forces prevailed, the Soviets would gamble on an assault through Southern Germany against German and French troops who lacked tactical nuclear weapons. General Ailleret concluded that, “as soon as [tactical] nuclear exchanges become important, it is likely that [conventional] battle forces will be cut off from their logistics and therefore deprived of the ability to maneuver... and that they will thereafter be limited to an immobile and powerless posture.” Unfortunately, Ailleret’s analysis was fatally flawed because he projected his own rational view of the effects of tactical nuclear weapons on conventional warfare onto Soviet planners. The Soviet high command believed, however, that tactical nuclear weapons facilitated the advance of armored and mechanized forces. See Charles Ailleret, “Unité fondamentale des armements nucléaires et conventionnels,” *Revue de défense nationale* (April 1964): 571; and Sarmat and Mercier, “La guerre qui n’a par eu lieu, vision stratégique et plans d’opérations françaises dans l’hypothèse d’une invasion soviétique, 1945-1969,” 126.

¹⁶ As de Gaulle confided in his Personal Secret Instruction of 24 January 1967, “A future conflict could originate anywhere and in any region of the globe, and could [escalate to] reach any country, as the [existing] vectors of destruction are capable of reaching anywhere on this planet.” De Gaulle, Instruction personnel et secrète, 24 January 1967, cited in Georges-Henri Soutou, “La menace stratégique sur la France à l’ère nucléaire: les instructions personnelles et secrètes de 1967 et 1974,” *Revue historique des armées* no. 236 (2004): 6-7.

That same year, General Ailleret, Chief of Staff of the Armed Forces, echoed de Gaulle’s fears that a peripheral conflict could escalate into a general conflagration. In a public article, Ailleret declared, “in such a world, continually shaken by developments whose effects are unpredictable, we can fear that a conflict could occur anywhere. . . which will escalate quickly to touch the majority of the planet.” Charles Ailleret, “Défense ‘dirigée’ ou défense ‘tous azimuts,’” *Revue de défense nationale* (December 1967): 1929.

¹⁷ In 1966, de Gaulle referred to the possibility of a conflict between the United States and North Vietnam, North Korea or China escalating into World War. He probably also feared that West German efforts to reunite Germany could one-day precipitate a conflict, but never explicitly said so. However, a later defense minister and member of the parliamentary opposition, Charles Hernu, specifically stated that France should not become enmeshed in a conflict provoked by West Germany to reunite Germany. An American National Security Council analysis of 1963 postulated yet a third scenario –a war triggered by an American decision to help the Italian government suppress a self-proclaimed Communist “peoples’ republic” in Northern Italy.

U.S. National Security Council, Net Evaluation Subcommittee, “The Management and Termination of War with the Soviet Union,” 15 November 1963, available via the National Security Archive, www.gwu.edu/~nsarchiv/NSAEBB.

¹⁸ De Gaulle wanted to allow NATO to address security issues outside Europe, allowing it to enlarge its domain to extra-European regions and creating a tripartite Anglo-Franco-American directorate. Besides de Gaulle’s failure to reform NATO the way he wanted to, de Gaulle possessed other motives for not reintegrating French forces into NATO. After the attempted generals’ putsch of 1961, de Gaulle concluded that integration necessarily entailed a decline in the national allegiance of the French officer corps. De Gaulle also regarded the Kennedy Administration’s push for increased conventional forces in Europe as a prelude to their renouncing the use of nuclear weapons in defense of Europe. See Maurice Vaïsse, *La grandeur: Politique étrangère du général de Gaulle, 1958-1969* (Paris: Fayard, 1998), 111-161, 363-412.

¹⁹ Stephen Kocs, *Autonomy or Power?: The Franco-German Relationship and Europe’s Strategic Choices, 1955-1995* (Westport, Connecticut: Praeger, 1995), 50-54.

²⁰ De Gaulle withdrew French personnel from NATO’s integrated commands, evicted allied forces from French territory and refused to put French forces at NATO’s disposition. Vaïsse, 385.

²¹ With the end of the Allied “military occupation” of Germany in 1954, NATO justified the continuing presence of French military units on German soil. Henceforth, failure to either rejoin NATO’s integrated command or establish a new legal basis for the presence of French forces on German soil were cause for expulsion. The result of difficult negotiations was an agreement that French forces could remain in Germany, without being required to “automatically” participate in Germany’s defense, as long as the Federal Republic’s government accepted their presence, but that the French government could withdraw their troops at any time.

These negotiations neither cemented a French “right” to maintain forces in Germany nor a requirement for those forces to “automatically” participate in Germany’s defense. Franco-German negotiations proved particularly difficult. The German government assumed that the French would give in to their demands because the presence of French troops in Germany was the visible symbol of France’s role as one of the “victors” of the Second World War. The French, contrarily, assumed that the Germans would ac-

cept their continued presence as an added contribution to the defense of the Federal Republic.

Writing in 1969, three years after the provisional Franco-German accord, West German Minister of Defense Helmut Schmidt wrote that, "The presence of French troops on the soil of the Federal Republic, for practical purposes unsanctioned by any treaty, not only serves in French eyes the purpose of common defense But the military presence and the Berlin role *could* [author's italics] be used as a lever if Franco-German relations were to develop in a way that did not satisfy Paris." In Helmut Schmidt, *The Balance of Power* (London: William Kimber, 1971), 135; and Vaïsse, 579-82.

²² In 1945, shortly after constituting France's first post-liberation government, convinced that "France must acquire several plutonium bombs as quickly as possible," de Gaulle created France's Commissariat for Atomic Energy. When de Gaulle returned to power in 1958, persuaded that nuclear weapons were the sine qua non of both national defense and great power status, he led the way in decreasing the value of armored/mechanized formations. This is ironic for someone who was amongst the first to recognize the potential of large armored formations in the 1930s.

In 1963, after hearing about German armored maneuvers in Hanover, de Gaulle declared: "Their [the German] armored force permitted them to defeat Poland and, rapidly, France, to race to the Caucasus and to amble about Africa for two years. It's the eternal historical pattern: will what worked once suffice the again? . . . Today, atomic weapons exist What is an army worth without them? We will have atomic weapons. That does not prevent us from having the rest. But they [atomic weapons] are our principal objective."

While enthusiastic about nuclear weapons, de Gaulle doubted the viability of extended deterrence. As he graphically told his entourage on one occasion, "Today atomic warfare renders doubtful all engagements [alliances]. Can you imagine an American President taking the risk to condemn tens of millions of Americans for an Alliance? How can you ask an American President to push the button if the destiny of the American people is not directly threatened." Philippe de Gaulle, *De Gaulle, Mon Père, vol. 2* (Paris: Plon, 2004), 209. and De Gaulle at Council of Ministers, 25 June 1963, Alain Peyrefitte, *C'était de Gaulle, vol. 2* (Paris: Fayard, 1994), 153.

²³ Finally, many French officers doubted that France possessed the means to maintain adequate nuclear forces. And, if France persevered in that direction, they feared the budgetary consequences that French nuclear programs would have on conventional forces. As General Jouhaud argued, "It is the business of the 'Giants,' not us. . . . Do you understand the reductions in force that a national nuclear force implies?" Jouhaud, quoted in Pierre Gallois, *Le sablier du siècle* (Paris: l'Age d'Homme, 1999), 367.

²⁴ Having repeatedly fought national liberation movements in French colonies, the bulk of the French Army's officer corps viewed the moral and psychological struggle between communism and the west as primordial. French officers developed a pervasive fear of subversion, including the worry that Europe could be "outflanked" by communist activism in the third world. For a late articulation of this theory, see Roger Trinquier, *La Guerre* (Paris: Albin Michel, 1980). The last commander of French forces in Algeria

lamented that, “The theory [revolutionary warfare or *guerre révolutionnaire*] was so well presented at the time and seemed so correct that, except for a few skeptics, the great majority of French officers enthusiastically embraced it.” Charles Ailleret, *Général du contingent: En Algérie 1960-1962* (Paris: Grasset, 1998), 386.

²⁵ Although French military exercises incorporated simulated tactical nuclear “strikes” from the mid-1950s onwards, the new weapons were not allowed to disturb the interactions of the old. As one observer remarked, “The designers of the exercise arranged for the impact of atomic weapons to be slight so as not to disturb the use of more traditional arms That atomic bombs could assist the customary maneuvers of tanks, infantry and artillery was acceptable, but that they could modify the nature of operations and force us to rethink the art of war was both regretted and denied.” Exemplary of the lack of understanding by French officers of the impact of tactical nuclear weapons is a scheme promoted by a four-star general. Because the blast radius of a 20-kiloton bomb is 1,000 meters, this general argued that units could negate the effect of enemy nuclear weapons by adopting circular formations, with interior radii of 1,000 meters. He reasoned that when the enemy discovered the position, they would drop their bombs into the center, leaving French troops safely outside the blast radius. Charles Ailleret, *Aventure atomique française* (Paris: Grasset, 1968), 196-207.

²⁶ Even though de Gaulle’s strategic and foreign policy rationale for retaining large French conventional forces and developing tactical nuclear weapons was the fruit of long reflection, he initially neglected the issue of how these forces would be organized and employed. As Admiral Marcel Duval observed, “The General [de Gaulle] did not preoccupy himself in the slightest with it [the strategic finality of the weapons], because his strategy was one of ‘means’ For him, it was the development of these [nuclear] means in the shortest timeframe that counted above all.” Marcel Duval, “Les décisions concernant l’armement nucléaire: pourquoi, comment et quand?” *Armement et Ve République: Fin des années 1950 – Fin des années 1960*, 296.

²⁷ Many have credited Air Force General Pierre Gallois with convincing de Gaulle of the feasibility of a small nuclear power deterring a much larger one. Maurice Duval, “L’arme nucléaire française: passé et avenir,” *La France et l’atome: études d’histoire nucléaire* (Brussels: Bruylant, 1994), 260; and Gallois, *Le sablier du siècle*, 373.

²⁸ At the beginning of his presidency, de Gaulle reserved the title of Minister of Defense for himself, while he appointed Guillaumat to “administer” the armed forces. Lorenza Sebasta, “Choix techniques, choix politiques: les origines des missiles sol-sol balistiques stratégiques (SSBS) dans le contexte international,” *Deux siècles d’histoire de l’armement en France*, 191.

²⁹ Pierre Lacoste, *Un amiral au secret* (Paris: Flammarion, 1997), 85-86.

³⁰ Lucien Poirier, *Des stratégies nucléaires* (Paris: Complexe, 1977), 316.

³¹ Lacoste, 88.

³² Summarizing de Gaulle's thinking at this stage, General Paul Bonnet, a professional engineer, stated that de Gaulle believed that, "An army without tactical nuclear warheads cannot do anything against an army equipped with them. If unwilling to grant the army them [tactical nuclear weapons,], they [the government] should pursue their logic to its conclusion and abolish the many." Paul Bonnet, "Débat," *Armement et Ve République: Fin des années 1950-Fin des années 1960* (Paris: CNRS, 2002), 320.

Peyrefitte recounts that de Gaulle was initially only moderately enthusiastic about building a minimum number of tactical nuclear weapons. However, the Chief of his Private Military Staff convinced him to invest more heavily in tactical nuclear weapons. See De Gaulle, Conseil de Défense, 10 November 1966, in Peyrefitte, *C'était de Gaulle*, vol 3., 164-65.

³³ De Gaulle at the Salon dorée, 5 December 1966, Peyrefitte, *C'était de Gaulle*, vol 3., 168.

³⁴ Poirier, *Des stratégies nucléaires*, 318.

³⁵ *Ibid.*, 322-323.

³⁶ *Ibid.*, 325.

³⁷ *Ibid.*

³⁸ Not incidentally, the CPE attentively studied the doctrinal and organizational reforms introduced by United States Secretary of Defense Robert MacNamara and the Office of the Secretary of Defense during his period. See Lacoste, 87.

³⁹ This analysis was made by General Michel Forget, who commanded the French tactical aviation (the FATAC) between 1979 and 1983. See Michel Forget, *Notre défense dans un monde en crise: de 1960 à nos jours* (Paris: Economica, 2006), 34.

⁴⁰ Samy Cohen, *La défit des généraux: Le pouvoir politique et l'armée sous la Ve République* (Paris: Fayard, 1994), 94.

⁴¹ Admiral Lacoste reports that the army and air force refused to promote officers who had served in the CPE. The Navy was apparently more encouraging. Lacoste was encouraged to join the CPE by the commandant of the War College, Admiral Marcel Duval. See Lacoste, 86-87.

⁴² Since French tactical nuclear weapons would not be employed in the battle for Germany, the Ailleret-Lemnitzer Accord stipulated that CENTAG would not leave the French 2nd Corps bereft of nuclear support. At a very minimum, CENTAG would detach some of its organic Honest John short-range nuclear missile units to assist 2nd Corps. Should NATO choose to use tactical nuclear weapons, these weapons would be launching

in support of 2nd Corps operations. SHAT 3 K 2 General François Valentin, Entretien Réalisé le 10 Juin 1996 au Domicile Parisien du Général.

⁴³ Ibid.

⁴⁴ Interview with General Yves le Chatelier, December 5, 2004.

⁴⁵ de Lespinois, *L'Armée de terre français: de la défense à la projection*, vol. 1, 125-36.

⁴⁶ On 31 January 1947, General Jean de Lattre de Tassigny announced at the France's War College (Ecole de Guerre) that the "defense of [French] territory must be viewed as no longer involving only the periphery, but the nation's entire surface." De Lattre envisioned the French Army as being divided into two distinct entities, a battle force and forces designed to organize (quadrillage) national territory. The battle force would participate in the conventional defense of Western Europe alongside France's allies. In the event of defeat, the surface defense (territorial forces) would organize a guerrilla war against the invader. The defense of the surface (defense en surface) was officially created in 1950. In 1952, its name was changed to Défense Intérieur du Territoire (DIT or internal territorial defense). Along with the new name, the primary mission of French territorial forces changed from organizing a guerrilla war to fighting communist subversion (titled "troubles intérieurs" in official documents). In 1962, the name changed for a third time to Defense Operationelle du Territoire. The DOT's mission was now defined as being two-fold. Initially, DOT forces would resist an invader militarily. Later, they would transition to guerrilla warfare. The DOT received the additional role of defending France's nuclear deterrent from enemy attack (by special forces, saboteurs or paratroops) once France's first nuclear capable Mirage IV bombers entered service in 1964. The 1972 Defense White Paper defined the roles of the DOT as protecting France's strategic nuclear forces, combating any attack on French soil by "infiltration, parachute or amphibious landing" and organizing "popular resistance" to an invader. The threat of an organized guerrilla war against an invader was officially sanctioned in the White Paper as "popular deterrence." See Sarmat and Mercier, "La guerre qui n'a par eu lieu, vision stratégique et plans d'opérations français dans l'hypothèse d'une invasion soviétique, 1945-1969," 122-23; and Ministère de la Défense, "Livre Blanc sur la Défense Nationale," 1972, in *La politique de défense de la France: textes et documents* (Paris: Fondation pour les Etudes de la Défense Nationale, 1989), 55-56.

⁴⁷ These figures are from 1973. de Lespinois, *L'Armée de terre français: de la défense à la projection*, vol. 1, 137-38.

⁴⁸ Equal size numerically, not in terms of combat power. The two corps of the French First Army possessed considerable more combat power than the DOT. This analysis does not count France's 11 Parachute Division, which was dedicated to overseas interventions.

⁴⁹ François Valentin, *Une politique de défense pour la France* (Paris: Calmann-Lévy, 1980), 92.

⁵⁰ SHAT 3 K 2 General François Valentin, Entretien Réalisé le 10 Juin 1996 au Domicile Parisien du Général.

⁵¹ The theory that France's small nuclear arsenal could serve as the "detonator" to force a reluctant United States to use its larger arsenal was suggested by General André Beaufre, the onetime commander of the French land force during the Suez Campaign of 1956. It is highly likely, but uncertain whether Beaufre had a direct influence on de Gaulle's nuclear thought. André Beaufre, *Introduction à la stratégie* (Paris: Pluriel, 1998, originally 1963), 99-143.

⁵² De Gaulle included this statement in his oral 1968 directive to the commander of the French First Army. It was quoted by Defense Minister André Giraud in 1987. See Jacques Chevallier, "La genèse de la force de dissuasion nucléaire française," *Armement et Ve République: Fin des années 1950 – Fin des années 1960*, 284.

⁵³ SHAT 3 K 2 General François Valentin, Entretien Réalisé le 10 Juin 1996 au Domicile Parisien du Général.

⁵⁴ An alternative hypothesis would be that de Gaulle deliberately refused to publicly defend a doctrine whereby French nuclear forces would serve as a "detonator" for American nuclear forces. Given the political importance de Gaulle attached to the independence of France's nuclear deterrent, he was probably loath to admit that he viewed France's nuclear forces as a lever to force the United States to use their own forces.

⁵⁵ Because the authors of the 1972 White Paper accepted the CPE's logic that the credibility of a French nuclear threat increased as Soviet forces approached the French border, they reserved tactical nuclear weapons for use near France's borders. Announcing a concept termed the "Government deterrent maneuver," the White Paper echoed the CPE's twin goals of "forcing an adversary by the vigor of our resistance to attack with an intensity justifying... recourse to a [tactical] nuclear riposte" and "signaling [with tactical nuclear weapons] to the adversary that continuing pressure will be answered with strategic nuclear weapons." Ministère de la Défense, "Livre Blanc sur la Défense Nationale," 1972, 58-59.

⁵⁶ *Ibid.*, 59-60.

⁵⁷ Consciously portraying himself as a Gaullist, Debré never attributes the decision to create the First Army and partner it with nuclear capable aircraft to de Gaulle. In fact, in his memoirs he consciously portrays himself as the guardian of de Gaulle's strategic thought. The reasons Debré gave for his rejection of de Gaulle's later strategic thought was that, "Deep down, I did not believe in the value of a European [collective] defense. I was equally skeptical of the idea of a forward battle [bataille d'avant-garde] to

the East.” Michel Debré, *Combattre toujours: Mémoires vol. 5, 1969-1993* (Paris: Albin Michel, 1994), 49-50.

⁵⁸ Debré specified that the Foundation had the missions of publishing and diffusing writings on military doctrine and strategy, teaching and organizing seminars and colloquia. Debré referred to the FEDN as “the bridge between military society and the academic world.” *Ibid.*, 60-61.

⁵⁹ In an interview, General Valentin told Sten Rynning that the 1972 Defense White Paper was not widely read or popular among officers. See Sten Rynning, *Changing Military Doctrine: Presidents and Military Power in Fifth Republic France, 1958-2000* (Westport, Connecticut: Praeger, 2002), 75.

⁶⁰ Forward hypotheses envisioned French forces engaging as far forward as their logistics permitted. Rear hypotheses consisted of the defense of the French border and its immediate approaches. Middle hypotheses, naturally, provided for French forces engaging the enemy somewhere between these extremes. SHAT 3 K 2 General François Valentin, Entretien Réalisé le 10 Juin 1996 au Domicile Parisien du Général.

⁶¹ General Hublot, “Rôle des forces terrestres de manoeuvre,” *Forces armées françaises* (July 1972): 11.

⁶² SHAT 3 K 2 General François Valentin, Entretien Réalisé le 10 Juin 1996 au Domicile Parisien du Général.

⁶³ Hublot, 11.

⁶⁴ Soutou, “La menace stratégique sur la France à l’ère nucléaire: les instructions personnelles et secrètes de 1967 et 1974,” 15.

⁶⁵ If Western Europe had been attacked during the Pompidou administration, the French president would have faced a stark choice between sending the First Army along with its supporting air and tactical nuclear forces into Germany to participate in the ensuing NATO battle, or reserving these forces for a “national deterrent maneuver” near the French border.

⁶⁶ French conventional and tactical nuclear forces were to accomplish these missions through an integrated and choreographed “national deterrence maneuver.” French plans called for the conventional forces of the French First Army to deploy along the line of an adversary’s further advance. Because of the considerable combat power of the First Army, the Warsaw Pact would have to deploy a massive defense to breach the French position, in which case the First Army and the Tactical Air Command (Force d’Aviation Tactique or FATAC) would preemptively use France’s tactical nuclear weapons against the Warsaw Pact forces. France’s tactical nuclear arsenal would be expended quickly, potentially in a single coordinated salvo.

In principle, France's massed use of tactical nuclear weapons would warn the Soviet leadership that further assault on France would be countered by a strategic nuclear riposte. France possessed twice as many Pluton missiles as launchers, hence a single reload of Pluton launchers was possible if all missiles survived until they were fired. However France doctrinal writings frequently mention a single non-renewable tactical nuclear strike.

Ideally, the combined effects of French tactical nuclear weapons, the First Army and the FATAAC would obliterate an echelon of Warsaw Pact forces, comprising perhaps four or five divisions. Given their position to the rear of NATO's forward defense, most French projections envisaged French forces initially facing forces that had already lost men and materiel. One estimate sized up the initial danger as 10 to 12 divisions advancing along a single invasion corridor. Within this force, four or five divisions would constitute a first echelon, with the remainder constituting a second echelon. Soviet and Warsaw Pact forces would deploy in echelons to limit both route congestion and vulnerability to enemy nuclear weapons. See Guy Brossollet, *Essai sur la non-bataille* (Paris: Belin, 1975), 62.

⁶⁷ France's tactical nuclear force consisted of five Pluton regiments (activated between 1974 and 1977) with 44 launchers, of which 35 were in service at a given time, and two squadrons of Mirage IIIE fighters (30 aircraft). France maintained Pluton missile stockpiles sufficient to provide each launcher with two missiles, however French doctrine emphasized a single non-renewable strike. The Pluton warhead (AN 51) and the standard tactical nuclear gravity bomb (AN 52) had identical explosive mechanisms, each producing a variable yield of 10 to 25 kilotons. The American atomic bombs that destroyed Hiroshima and Nagasaki were both approximately 20 kiloton weapons. See Robert Norris et al. *Nuclear Weapons Databook, Volume V: British, French and Chinese Nuclear Weapons* (Connecticut: Westview, 1994), 260-70.

⁶⁸ During the 1960s, the West German government secured a measure of influence over American and British tactical nuclear weapons that resulted in the adoption of restrictions designed to limit civilian casualties and environmental damage.⁶⁸ With the creation of NATO's Nuclear Planning Group (NPG) in 1967, West Germany also obtained a voice in nuclear planning. For example, NATO would not employ tactical nuclear weapons with yields over 10 kilotons and would not use weapons with yields over 5 kilotons within 5 kilometers of urban areas (of at least 25,000 inhabitants. See Georges-Henri Soutou, *L'alliance incertaine: les rapports politico-stratégiques franco-allemands, 1954-1996* (Paris: Fayard, 1996), 331.

⁶⁹ Beginning in 1970, the French Army's General Staff investigated the development of an electronic data management system to centralize intelligence information and tactical nuclear planning at the army corps level. By 1974, experiments were conducted with a prototype data management and command system, named SYCAMORE. These early experiments suffered from frequent mechanical failures. Nevertheless, the need to render France's tactical nuclear doctrine practical was such that General Lagarde supported efforts to develop a more capable and reliable electronic data management and command system, named SYSIC. Michel Defarge, "SERPEL, SYCOMORE, SACRA,

SYSIC: 1962-1980,” *Les systèmes d’information et de commandement, 1955-1975: Actes du colloque organisé le 29 mars 2001 à l’Ecole militaire* (Paris: Lavauzelle, 2002), 50-57.

⁷⁰ General A. Peretié estimated the optimal depth of tactical nuclear strikes to be between 10 and 20 kilometers in front of French lines. Exercises showed that French forces could generally detect only 10 to 15 percent of enemy units 5 to 15 kilometers forward of the French front line. Deeper behind enemy lines, the number of enemy targets identified dropped to eight percent between 15 and 20 kilometers, and only two to three percent between 20 and 30 kilometers. Brossolet; and A. Peretié, “Les nouveaux pantalons rouges,” *Défense nationale* (July 1975): 83.

⁷¹ To complement its efforts to improve data processing, the French Army also struggled to create unmanned aerial vehicles (UAVs) to identify potential targets behind enemy lines. Michel de Lombarès et al. *Histoire de l’artillerie française* (Paris: Charles-Lavauzelle, 1984), 363-64.

⁷² This involved coordinating 50+ nearly simultaneous tactical nuclear strikes from France’s five Pluton regiments [35 launchers] and two dedicated tactical nuclear aircraft squadrons [30 aircraft]. The weakness was demonstrated repeatedly in exercises. During the EXREL/Terre exercise of 5 May 1974, it took several hours to run the simulated cycle from reconnaissance operations to tactical nuclear strikes. Peretié, 84.

Although identified as early as 1974, the complex data management problems involved in compiling a single tactical nuclear strike plan remained unsolved until the end of the Cold War. Writing ten years after the EXREL/Terre exercise, General Etienne Copel still bemoaned the fact that, “Between the acquisition of intelligence and action [i.e. weapons delivery] we can wait several seconds, or at the most several minutes, but surely not more. Afterwards the adversary will have moved. Unfortunately, to establish a strike plan, get it approved and execute it, it does not take seconds or minutes, but it takes hours.” Copel, 130.

⁷³ During an exercise in the early 1970s, information overload swamped a corps’ battle management capacity. Five hundred unexamined telegrams accumulated over two days and it took 24 hours for an urgent [“flash”] message to reach its destination. Brossolet, 45-46

⁷⁴ To make matters worse, the “national deterrent maneuver” also suffered from the need for presidential approval, not only to use tactical nuclear weapons, but also to strike each individual target. The protocol involved the commander of the French First Army transmitting a request to use nuclear weapons, with a complete list of the targets. The president would then use his personal nuclear codes to alert the gendarmes guarding the weapons stockpiles to allow Pluton regiments and air force squadrons to access the warheads. The French president was supposed to agree to, or reject a target list in its entirety. Approving individual targets was rightly viewed as too time consuming. Cohen, 114-15.

⁷⁵ Considering that the center of gravity of a tank unit moving at 20 kilometers/hour changes 1000 meters every three minutes, the slow French tactical nuclear target processing cycle meant that most French tactical nuclear weapons would be wasted. By the time French missiles and bombs arrived on their targets, Warsaw Pact units would have long since moved from the positions where they had been spotted by French reconnaissance assets. Given these technical limitations, the Commander of the French 2nd Military Region lamented that a French tactical nuclear salvo would be “practically blind and as ineffectual as ambitious.” Peretić, 84.

⁷⁶ Copel, 132.

⁷⁷ During one of their first meetings, German Chancellor Helmut Schmidt ramméd the point home to Giscard. In Bonn on 8 and 9 July 1974, Schmidt remonstrated Giscard that future progress towards European integration must include steps towards a common defense policy. Schmidt expressed his further hope that a common European defense policy would exist by 1980. Maurice Vaïsse, “Valéry Giscard d’Estaing: de la défense de l’Europe à la défense européenne” (n.d. unpublished manuscript), 7.

⁷⁸ As West German protest movements grew in the 1970’s against nuclear weapons, NATO and militarism, West Germany’s foreign policy of *ostpolitik* emphasized closer relations with the East Germany and the Soviet Union. Ostpolitik (literally “eastern policy”) was both a symptom and a contributing factor towards east-west détente during the 1970s. Under ostpolitik, West German Chancellor Willy Brandt recognized the borders that the Soviet Union imposed in Central Europe following the Second World War, including most notably East Germany’s border on the Oder and Niesse Rivers. In effect, this meant accepting Stalin’s annexation of significant Polish territories to the Soviet Union, along with his compensation of the Poles by offering them substantial historically-German territories. Besides accepting the Oder-Niesse border, Brandt also recognized the de facto existence of the German Democratic Republic.

Part of the West German Social Democratic Party (the SPD) was militating in favor of West Germany’s withdrawal from NATO. French officials feared that West Germany would be “finlandized,” i.e. made dependent on the Soviet Union for its military security while retaining democratic political institutions. Soutou, *L’alliance incertaine: Les rapports politico-stratégiques franco-allemands, 1954-1996*, 367.

⁷⁹ Valéry Giscard d’Estaing, *Le pouvoir et la vie* (Paris: Compagnie 12, 1991), 518-19. Giscard’s memoirs were originally published in two volumes, however they were later combined in a single volume. This quote comes from what was originally volume 2.

⁸⁰ According to the only account of the lunch, Aron pointed out that there was tension in French defense policy between a national military doctrine based on nuclear self-sufficiency and participation in the Atlantic Alliance. Gallois’ rejoinder that nuclear weapons were only credible if used to defend exclusively national interests struck Giscard as doctrinaire and unconvincing. Aron is the only participant in the lunch who left a full account. However, his affirmations are consistent with Giscard’s subsequent behav-

ior. Gallois, on the other hand, merely noted in his own memoirs that Giscard's week of reflection on security issues left him none the wiser. In an interview with Rynning, Gallois went into greater depth, recounting that the meeting was chaotic and that Giscard would address Aron and get one opinion and then pose a question to Gallois, receiving a diametrically different response. Soutou, *L'alliance incertaine: Les rapports politico-stratégiques franco-allemands*, 359-60; Gallois, 403; and Rynning, 94.

⁸¹ De Lespinois, *L'Armée de terre français: de la défense à la projection*, vol. 1, 190.

⁸² Although appointed at approximately the same time Giscard had been elected, Méry had been chosen for the position of Pompidou's Chief of the President's Private Military Staff and had had no prior contact with Giscard or his political party. However, Méry quickly became Giscard's privileged interlocutor on defense, more so than his Chief of Staff of the Armed Forces, General Maurin.

⁸³ Méry reasoned that French ground forces, along with nuclear weapons, would have to be engaged as far forward as possible, short of integrating them during peacetime in NATO's forward defense. He argued, "When they [Warsaw Pact forces] arrive at the border the situation is already fruitless, because the NATO's force structure will have already collapsed." SHAT 3 K 4 Entretien avec le Général Guy Méry, November 1996.

⁸⁴ Proclaiming that France's defense was inseparable from that of its neighbors, and that all of its means, including the threat of nuclear reprisals, would be used in defense of Western Europe, Méry directly attacked the 1972 Defense White Paper's dogma of exclusively national deterrence. According to Méry, "I doubt, for my part, that we would retain the national will to inflict massive destruction [on an aggressor] in the hope of assuring our survival in the extreme case where all of Europe has already collapsed around us." Guy Méry, "Une armée: Pourquoi faire et comment?" *Défense nationale* (June 1976): 14.

⁸⁵ If NATO's conventional defense failed, Méry reasoned, France should employ its tactical nuclear weapons to force the United States to do likewise. Because Soviet military doctrine during the 1970s declared that the Soviet forces would respond to *any* use of nuclear weapons against it by massively employing its own tactical nuclear weapons against *all* NATO military targets, France's use of tactical nuclear weapons would entail Soviet reprisals against American forces, which in turn would use their own tactical nuclear weapons. France's limited nuclear forces would thus serve as the "detonator" forcing the United States to engage its far larger tactical nuclear forces. In an interview years later, Méry left an original and explicit description of the "detonator" theory. Méry wrote, "It was funny the argument that we will inflict pain on the USSR, but we will suffer more. This came from a vision [of deterrence] exclusively France – USSR. This, I repeat, was far from reality of the times, which was a [deterrence] relationship France—USA—USSR. For my part, I am ready to bet anything that the Russians would have thought twice before destroying France because they could have certain of one thing, the American reaction. The Americans were much stronger at that time in strategic nuclear

weapons. This is what I did not succeed in explaining to a number of important politicians. It was a phenomenon of three-way deterrence.” SHAT 3 K 4 Entretien avec le Général Guy Méry, November 1996.

⁸⁶ Méry, ascendancy confirmed, was appointed by Giscard to serve as Chief of Staff of the Armed Forces (CEMA) and a friend and collaborator of Méry, General Claude Vanbremeersch, was appointed to Méry’s former post of Chief of the President’s Private Military Staff. (CEMP Generals Méry and Vanbremeersch were both army officers who had graduated from the St. Cyr military academy’s class of 1939 (*le métier Franco-Britannique*). Rynning, 72.

⁸⁷ Consonant with the 1970s spirit of Cold War détente, Méry also believed that an unprovoked Soviet attack on Western Europe was unlikely and that if war came, it would probably be due to miscalculation. Analyzing the international situation, Méry concluded that, “The probability of a major global conflict is relatively small.” However, this did not “exclude the likelihood of conflicts limited in time and space, which has contrarily led to—despite the efforts to improve détente—to an ambiance of latent crisis.” Guy Méry, “Réflexions sur le concept d’emploi des forces,” *Défense nationale* (November 1975): 19.

⁸⁸ Commenting on international relations, Méry entreated his audience to “think first of the extreme *variety* [author’s emphasis] of crises, some of which will appear and evolve with astonishing rapidity; others will remain in a ‘larval’ state; some will become superficially calm after a violent eruption, leaving open the possibility of further developments, like a momentarily dormant volcano.” Méry, “Réflexions sur le concept d’emploi des forces,” 19.

⁸⁹ Valéry Giscard d’Estaing, “Discours devant l’Institut des Hautes Etudes de Défense Nationale,” 1 June 1976, rpt. in *La politique de défense de la France: textes et documents*, 239.

⁹⁰ “Rapport sur la programmation des dépenses militaires et des équipements des forces armées pour la période 1977-1982,” rpt. in *La politique de défense de la France: textes et documents*, 194-95.

⁹¹ SHAT 3 K 4 Entretien avec le Général Guy Méry, November 1996.

⁹² Signed in December 1978, the Biard – Schulze Accords (named for the commander of the French First Army and the NATO Central Europe commander respectively) aimed at improving practical collaboration between France and NATO. Several months later, the Brassart (commander of the French 2nd Corps) – Blanchard (the NATO CENTAG commander) laid the groundwork for France to assist NATO in the case of a crisis or limited war. In such a scenario, the French 2nd Corps could be committed early to the forward defense of the Federal Republic of Germany to intervene conventionally, while the remainder of the First Army along with the French tactical nuclear weapons would remain in France to await developments.

At first glance, the Brassart-Blanchard Accord (1979) may resemble the Lemnitzer-Ailleret Accord of 1967 in that both provided for the French 2nd Corps to intervene in West Germany while the remainder of the First Army remained behind in France with France's tactical nuclear weapons. However, the major difference between the two accords lies in the fact that the Brassart-Blanchard accords were designed to allow France to participate in forward defense during a crisis or limited conflict, while the Lemnitzer-Ailleret Accord provided for a full-scale war. The entire French First Army would have met a full-scale Warsaw Pact invasion of Western Europe. See Vaïsse, "Valéry Giscard d'Estaing: de la défense de l'Europe à la défense européenne," 20.

⁹³ "Rapport sur la programmation des dépenses militaires et des équipements des forces armées pour la période 1977-1982," rpt. in *La politique de défense de la France: textes et documents*, 194-95.

⁹⁴ Méry, "Réflexions sur le concept d'emploi des forces," 21.

⁹⁵ Valéry Giscard d'Estaing, "Discours devant l'Institut des Hautes Etudes de Défense Nationale," 1 June 1976, rpt. in *La politique de défense de la France: textes et documents*, 240-41.

⁹⁶ Frédéric Bozo, *La France et l'OTAN: De la guerre froide au nouvel ordre européen* (Paris: Masson, 1991), 120-21.

⁹⁷ Part of the following analysis of the change in French strategic nuclear targeting is conjectural. It is known that part of the French strategic arsenal was retargeted from Soviet cities to command-and-control targets. However, it is my supposition that France's silo-based intermediate-range ballistic missiles (IRBM) were retargeted to command-and-control targets, while the submarine-launched ballistic missiles remained targeted on Soviet cities. My analysis is based on two factors: 1) survivability; and 2) accuracy. With their location known to Soviet planners, France's silo-based IRBMs were vulnerable to a preemptive strike, while the stealthy nature of French ballistic missile submarines meant that they were less vulnerable to preemption. Therefore, it made logical sense for France to first use its silo-based missiles, while keeping its submarine launched missiles as a secure second-strike. Deduction based on concerns of survivability is backed up by an analysis of the accuracy problem. A nuclear missile has to be significantly more accurate to destroy a comparatively small, hardened [i.e. a concrete bunker or located under ground], command post than a large vulnerable metropolis. France's submarine based missiles were less accurate than its silo-based missiles because of the computational problems involved in guiding a moving missile, launched from a moving platform [a submarine], towards a stationary target. For the land-based missile, the problem of inertial guidance was simpler, involving only the dispatch of a missile from one stationary site to another. Moreover, it is known that French silo-based missiles were comparatively accurate. French inertial guidance systems were produced by SAGEM, which acquired the license in the early 1960s to produce the American inertial guidance system used in the United States' Minuteman Intercontinental Ballistic Missiles, which was designed by the Massachusetts Institute of Technology's Instrumentation Laboratory

(today the Charles Stark Draper Laboratory) and manufactured by Kearfott. Because accuracy degrades with range, the guidance systems that gave the Minuteman I and Minuteman II missiles accuracies (in terms of circular-error probable or CEP) of 1.1 and 0.26 nautical miles respectively at a range of 10,000 kilometers, the French SSBS S2 of S3 missiles should have been substantially more accurate using the same guidance systems at ranges of 3,000 kilometers. Furthermore, if as David Yost asserts, American exchanges of ballistic missile guidance technology continued with France after 1966, French silo-based missile could have been quite accurate by the mid-1970s. See Donald MacKenzie, *Inventing Accuracy: A Historical Sociology of Nuclear Missile Guidance* (Cambridge, Massachusetts: MIT, 1993); Lorenza Sebesta, "Les rapports franco-américains dans le domaine des vecteurs au début des années 1960," *Armement et Ve République: Fin des années 1950 – Fin des années 1960*, 347-73; *Nuclear Weapons Data-book, Volume V: British, French and Chinese Nuclear Weapons*.

⁹⁸ SHAT 3 K 4 Entretien avec le Général Guy Méry, November 1996.

⁹⁹ SHAT 3 K 4 Entretien avec le Général Guy Méry, November 1996.

¹⁰⁰ The distinctions between different types of forces were retained both for reasons of ease and of comprehension. The Lagarde reform aimed at eliminating the distinction of French ground forces into three distinct components (battle forces, territorial forces and intervention forces), formalized in the 1972 Defense White Paper. See Forget, 57-61; de Lespinois, *L'Armée de terre français: de la défense à la projection*, vol. 1, 211-45; and Alain de Boissieu, "Entretien avec le général de Boissieu," *Défense nationale* 31 (July 1975): 17-20.

¹⁰¹ Commenting on international relations, Méry entreated his audience to "think first of the extreme *variety* [author's emphasis] of crises, some of which will appear and evolve with astonishing rapidity; others will remain in a 'larval' state; some will become superficially calm after a violent eruption, leaving open the possibility of further developments, like a momentarily dormant volcano." Méry, "Réflexions sur le concept d'emploi des forces," 19.

¹⁰² This decision followed a reduction in France's order for tracked armored personnel carriers from 4,800 AMX 10Ps to 2,400. In the long term, it was planned to equip the motorized brigades with wheeled armored personnel carriers that would have the environmental protection if not mobility of their tracked counterparts. Design studies began on wheeled armored personnel carriers in 1969, but the resultant Vehicule d'Avant Blindée (VAB) did not enter service until 1978. See R.M. Ogorkiewicz, "Renault Wheeled Armoured Vehicles," *International Defense Review* 5 (1980): 723-27; and de Lespinois, 109, 128-32.

¹⁰³ Worse, after being raised in 1972, conscripts still received a monthly salary of only 37.5 francs, which was well below the French minimum wage. If they renounced their tobacco ration, soldiers received 41.2 francs per month. See de Lespinois, 122.

¹⁰⁴ According to French analyses, NATO's weakness in Northern Germany was growing in relative terms. In a 1974 article, written just after he retired as commander of the French First Army, General Valentin stated that Western Europe required enough forces that the Warsaw Pact could not "without fighting a veritable battle, advance forwards [through NATO's defenses] as through a sieve." Valentin pleaded that the French Army "needs more 30-ton [medium] tanks and to accelerate the modernization of equipment, which has been too slow."

In Valentin's overall analysis, he viewed the West Germans as well armed and organized, the Dutch and Belgians as irresponsibly weakening their military forces, and the British as maintaining adequate, but unmaneuverable forces. On the other hand, Valentin viewed the Warsaw Pact's military preparedness as rising. See François Valentin, "l'Europe de l'Ouest et la défense," *Défense nationale* 30 (August – September 1974): 35.

¹⁰⁵ Vaïsse, "Valéry Giscard d'Estaing: de la défense de l'Europe à la défense européenne," 7.

¹⁰⁶ General Jean Callet, a recent (1972-74) director of IHEDN, observed, "Without employing tactical nuclear weapons almost immediately, our battle force [the armored and mechanized units] cannot fight conventionally for any duration without suffering attrition such that it will be unable to counterattack, when they will finally be able to use tactical nuclear weapons.... The present head of state [Giscard] has stated unequivocally that in making this later decision [to use tactical nuclear weapons] he will take into consideration political factors related to crisis management rather than punctual military imperatives. It follows that our battle force, actually prepared for the immediate exploitation of atomic strikes, must be seriously reinforced with infantry, artillery and combat engineers, if we want to give it the capacity to fight for as long as necessary." Jean Callet, *Légitime défense* (Paris: Lavauzelle, 1976), 109.

¹⁰⁷ The creation of soldiers' committees was the culminating point of the French Army's crisis in morale. The French Army's crisis during the early 1970s was a complex phenomenon. Poor conditions within the army and the arrival of conscripts who had participated in or were sympathetic to the student protests of May 1968 led to protests and disobedience. Giscard's government responded to the crisis with a variety of measures, including wage increases, guaranteed leave periods once a month (along with train tickets for conscripts to return home) and a new command style developed by sociologists (Process des Missions Globales or PMG). Retired General Marcel Bigeard, of Indochina and Algeria fame, was appointed Secretary of State for Defense with the specific mandate of combating the morale crisis. For a complete treatment of the morale crisis, see de Lespinois, *L'Armée de terre français: de la défense à la projection*, vol. 1.

¹⁰⁸ The Law raised the amount devoted to ground forces from 15-16 percent between 1960-1979 to 23-26 percent of defense procurement expenditures in 1976. Because the defense budget itself expanded at an annual rate of approximately 2.7 percent (in terms of real expenditures adjusted for inflation), the Army's equipment situation improved dramatically. French ground forces benefited from 15 of a total of 36 acquisition

programs. This augmentation of the French defense budget occurred within an overall transatlantic context. NATO's Defense Planning Committee recommended in May 1977 that member states should augment their real (inflation adjusted) defense expenditures by 3 percent annually until 1984. French figures reveal annual average increases of 3.3 percent. However, British General Hugh Beach estimated French augmentations for 1975-83 at 2.3 percent per year (compared with 6 percent for the United States, 2.2 percent for the United Kingdom, and less than 2 percent for West Germany, Denmark and Belgium. The acquisition programs ground forces benefited from included: AMX-30B2 tanks, AMX-10RC armored cars, VAB APCs, Milan and HOT anti-tank missiles, Roland anti-aircraft missiles, the RITA communications system, Gazelle helicopters, towed and self-propelled 155mm artillery systems, 120mm mortars, FAMAS assault rifles and a host of wheeled vehicles (trucks and jeeps). de Lespinois, *L'Armée de terre français: de la défense à la projection*, vol. 1, 258-72.

¹⁰⁹ The DOT's mission was unclear and its human and material resources derisory. Reservists were 70 percent of the DOT, versus 30 percent for the First Army. Because of the minor importance accorded their mission and of budgetary austerity, France's territorial forces came to be viewed as increasingly irrelevant. According to General Callet, "the DOT's officers and non-commissioned officers have the painful impression of being relegated to a second-class army – the 'territorial' – whose utility, if not its value, is contested."

The Chief of Staff of the Armies, General François Maurin (Méry's predecessor), argued publicly in 1974 that the DOT's mission was counterproductive. According to Maurin, "If an aggressor is willing to accept the risk of a strategic [nuclear] riposte and invade [French] national territory, he will have to also weigh the costs of a potentially stubborn [guerrilla] resistance. But this factor will weigh little in his calculations compared to the nuclear risk that he has already accepted."

By renaming the DOT, Lagarde hoped to eliminate the stigma attached to them. By way of a public explanation for his semantic reform, Lagarde stated that "It was necessary to render our forces more homogenous by ending the distinction between different categories of forces, so that all of them can, in any circumstances, stand up to any threat, without any prior change than to their level of equipment." Jean Lagarde, "Armée de terre: ses missions," *Armées d'aujourd'hui* (June 1976): 9; Callet, 110; and Maurin, "Entretien avec le général Maurin," *Défense nationale* (July 1974): 12-13.

¹¹⁰ One variant of this scenario consisted of Warsaw Pact armored forces entering France's Massif Central after violating Austrian and Swiss neutrality. Exercise Gentiane 23 of 1978 saw the 27th Alpine Divisions practice destroying an enemy force parachuted into the Maurienne Valley. Exercise Allier of 1979 involved 9,000 men and 2,000 vehicles with the mission of defeating enemy paratroops and commandos. Exercise Extentia, also of 1979, was the largest military exercise conducted in France since 1945. It involved 17,300 men, 2,600 vehicles and 19 warships in a simulated counteroffensive against Soviet marines landed in the Vendée (in the Bay of Biscay). The next year, Exercise Kemmel saw the 14th Infantry Division simulate a counteroffensive in a mountainous region against enemy armor and paratroops.

Although the Soviet Union had seven paratroop divisions, it lacked the transport aircraft to use all these forces and Central France was an unlikely objective for them. Soviet airborne forces suffered from the perennial handicap of airborne forces, namely that they had poor mobility and relatively little firepower once they would have landed. In the context of landing in Central France, a Soviet airborne force would quickly find itself stranded, unless it was dropped on a priority objective, such as France's IRBM field on the Plateau of Albion. In the 1970s, the Soviet Union possessed only enough transport aircraft – civil and military combined – to drop a single airborne division with all of its equipment. Many more likely objectives existed for this limited airlift force than installations in the French interior.

Amphibious landings and armored thrusts through Austria and Switzerland were even less likely, owing to NATO's maritime superiority in the former case and mountainous geography in the latter case. As General Forget observed, "These exercises certainly provided excellent training.... We must wonder however whether such exercises corresponded to realistic hypotheses." See de Lespinois, 315-17; Steven Zaloga, *Inside the Blue Berets: A Combat History of Soviet and Russian Airborne Forces* (Novato, California: Presidio, 1995), 153-171; David Isby, *Ten Million Bayonets: Inside the Armies of the Soviet Union* (London: Arms and Armour, 1988), 56; and Forget, *Notre défense dans un monde en crise: de 1960 à nos jours*, 63.

¹¹¹ If the Warsaw Pact attacked by surprise, without mobilizing beforehand, there was a good chance they could rupture NORTHAG's front with little difficulty. Surprise attack became a particular theme during the 1970s. The 1973 Arab-Israeli War proved that military surprise was possible against even a first-rate army possessing an excellent intelligence service. In 1975, the British Military Liaison Mission (BRIXMIS) witnessed the Soviet Guards 25th Tank Division scramble, exit its peacetime barracks and reach its designated wartime deployment zone in 12 hours. For this exercise, the Soviets used telephone lines only, and therefore produced none of the tell-tale radio traffic that would warn NATO of a Soviet offensive. This incident increased fears of surprise attack. Although little is known of classified French threat analyses after 1970, it is known that a French 1984 study highlighted the danger of a surprise attack without mobilization. A book a Belgian general wrote in 1977 alerted French defense policymakers to precisely this danger, warning that the Soviet Army could reach the Rhine in 48 hours. See Yves le Chatelier, "La surprise du Yom Kippour," *Forces armées françaises* (May 1974): 15-19; Richard Aldrich, "Intelligence within NATO," (unpublished manuscript, 2007); Maurice Faivre, "Le renseignement militaire français (1970-1985) dans le cadre de l'OTAN," 43-45; and General Close, *Europe sans défense?* (Brussels: Arts et Voyages, 1977).

¹¹² Ibid.

¹¹³ These were the 14th and 15th infantry divisions and the 27th alpine division. Only one exercise conducted during this period showed any intention to prepare for the use of these three comparatively weak divisions to fight the heavy tank and motorized rifle divisions of the Warsaw Pact. In 1980, the 99th Infantry Regiment of the 14th Infantry Division advanced from Central France to Bavaria to participate in exercise Black Falcon alongside the West German Army. Lacking modern weaponry, the remaining

three divisions remained equipped with light or obsolete weapons, with one infantry division lacking any artillery whatsoever. de Lespinois, *L'Armée de terre français: de la défense à la projection*, vol. 1, 244, 313.

¹¹⁴ One exercise, Exercise *Meuse 81* (1st Corps), evaluated a novel scenario – the French 1st Corps counterattacking westwards against Warsaw Pact forces that had infiltrated North-East France, westwards of the 1st Corps bases. While the scenarios of most large-scale maneuvers remained simple, that of *Meuse 81* was fairly complex and is the only manifestation, to my knowledge, of the 1st Corps being given a mission to attack westwards. de Lespinois, *L'Armée de terre français: de la défense à la projection*, vol. 1, 308-10.

¹¹⁵ Typically, the Prime Minister (i.e. the Head of Government) will open the annual session of IHEDN and the President (i.e. the Head of State) will close it.

¹¹⁶ Chirac told his audience that, “We cannot content ourselves with ‘sanctuarizing’ our own territory, [for security] we have to look beyond our borders.” Méry followed Chirac’s speech up with one of his own, to the Center for Higher Military Studies (CHEM) in September 1975, where he expressed the view that “the geographic sphere that influences us most directly and in which nothing can occur that leaves us indifferent is Europe and its immediate approaches, notably the Mediterranean basin.” Guy Méry, “Reflexions sur le concept d’emploi des forces,” *Défense nationale*, 20; and Jacques Chirac, “Au sujet des armes nucléaires tactiques françaises,” *Défense nationale* (May 1975): 11-15.

¹¹⁷ Guy Méry, “Une armée: Pourquoi faire et comment?” *Défense nationale* (June 1976): 14.

¹¹⁸ In his memoirs, United States Secretary of State Henry Kissinger recognized Giscard’s accomplishment in transforming Franco-American relations from near confrontation to “a close approximation of genuine partnership.” Rynning, 89.

¹¹⁹ Giscard’s increased influence vis-à-vis the United States and West Germany became important when the Euromissile Crisis debuted in 1977 with the deployment of extremely accurate Soviet SS-20 nuclear missiles to Eastern Europe. To forge a common position, he invited the leaders of the United States, West Germany and the United Kingdom to the French Island of Guadeloupe for a summit, where he influenced the United States and West Germany to adopt a compromise position. The resultant policy, the so-called “double decision,” whereby American Pershing II and ground-launched cruise missiles (GLCMs) would be deployed to Western Europe if the Soviet Union did not withdraw its SS-20 missiles by a specific date, remained the basis of NATO’s response to the Euromissile Crisis until its final resolution in 1987. The SS-20 constituted both a major strategic and political problem for NATO because of its unique characteristics in terms of mobility, accuracy and range. Carried and launched from a truck chassis, the SS-20 was difficult to destroy before it could be launched. Because of its accuracy, the SS-20 was also capable of destroying a wide-range of NATO military targets. Finally,

the fact that the SS-20s range permitted it to strike targets throughout Europe, but not the continental United States, raised the diplomatic problem of maintaining alliance solidarity under circumstances where Western Europe became more vulnerable due to the SS-20, while the United States became more secure thanks to the SALT treaties. In the vocabulary of the time, the SS-20 threat was described in terms of either giving the Soviet Union “escalation dominance” during a war or crisis or “de-coupling” the security of the United States and its NATO allies. The initial West German response was two-fold. First of all, the West Germans demanded that the United States modernize its own intermediate-range nuclear forces in Europe in order to maintain a “Eurostrategic balance”. Secondly, West Germany pressured the United States to render the SALT II Treaty conditional on the Soviet Union’s removal of SS-20s from Europe. United States President Jimmy Carter viewed the SALT II Treaty as an end in itself. Moreover, American officials were generally hostile to intermediate-range nuclear weapons, preferring instead to use short-range nuclear weapons for strikes of a limited geographic depth if NATO’s conventional battle collapsed, while also claiming that, if necessary, American strategic forces could be used to strike targets in Eastern Europe. Giscard’s proposed compromise involved de-coupling any relationship between Soviet SS-20s and the SALT II negotiations, however extracting an American commitment to produce and deploy Pershing II missiles and GLCMs should the Soviet Union not withdraw/dismantle its SS-20s. See Giscard, *Le pouvoir et la vie*, 662-82; and Christoph Bluth, *Britain, Germany and Western Nuclear Strategy* (Oxford: Clarendon, 1995), 201-37.

¹²⁰ Giscard d’Estaing, *Le pouvoir et la vie*, 527.

¹²¹ SHAT 3 K 4 Entretien avec le Général Guy Méry, November 1996.

¹²² Under these circumstances, the French PS’s pre-election rhetoric on security matters, condemning “enlarged sanctuarization” and emphasizing a strictly national nuclear deterrent, aggravated Chancellor Schmidt’s problems.

When questioned prior to PS’s victory about what he thought of working with Mitterrand, Schmidt tersely replied, “François Mitterrand elected? Don’t talk to me about such a misfortune.” Hubert Védrine, *Les mondes de François Mitterrand: A l’Elysée, 1981-1995* (Paris: Fayard, 1996), 128.

¹²³ Charles Hernu, Mitterrand’s future Defense Minister, vocally criticized Giscard’s “military Atlanticism,” opposed the development of ERWs (“neutron bombs”) and intimated that France should not participate in NATO’s forward battle. Another leading socialist and future defense minister, Jean-Pierre Chevenement, mocked Giscard for wanting to make France “NATO’s teacher’s pet.” David Yost, “The French Defense Debate,” *Survival* (Vol. XXIII, No. 1, January/February 1981): 22; and Philippe Engammaré, “Les parties politiques français face à la bombe atomique: de la clandestinité au consensus,” *Défense nationale* (February 1987): 49.

¹²⁴ Burdened with a strong pacifist wing, Mitterrand viewed the PS as suffering from a credibility gap when it came to defense policy. The last clear articulation of a distinct socialist defense policy remained Jean Jaures’ *L’Armée nouvelle* of 1910 (whose

basic arguments were echoed by the PS's defense commission in 1975) and the Party's defense policy suffered from its anti-nuclear positions. Faced with these problems, Mitterrand tasked the Party's defense expert Charles Hernu with "ridding him of the defense [political] problem before we make our bid for power." Hernu, for his part, undertook a long-term effort to convince the PS of the value of nuclear deterrence. This effort bore fruit in 1978 when the PS officially approved of nuclear deterrence. From 1978 until Mitterrand's 1981 election, the PS's defense rhetoric was essentially Gaullist. However, the Socialists scrupulously avoided crediting de Gaulle or taking sides in the ongoing security debate opposing Giscard's UDR and Jacques Chirac's Gaullist RPR. See Jean Guisnel, *Charles Hernu: ou la République au couer* (Paris: Fayard, 1993), 397-425.

¹²⁵ Mitterrand, like Giscard, viewed positive Franco-West German bilateral relations as crucial to European integration and the security of Western Europe. According to long-time collaborator Roland Dumas, Mitterrand believed that "the future of Europe demands that the ties binding France and Germany together must be tightened" and frequently cited Victor Hugo's remark that "the Union of France and Germany will bring peace to the world." Roland Dumas, *Affaires étrangères, I: 1981-1988* (Paris: Fayard, 2007), 143.

¹²⁶ Mitterrand's foreign and security advisors are unanimous in pointing to the Euromissile Crisis as the most pressing foreign policy challenge facing Mitterrand upon his election. The Euromissile Crisis crystallized a series of tense dynamics, between West Germany and the United States within NATO, between the United States and the Soviet Union on the international arena, between Atlanticists and a growing peace movement within West Germany, and between the France and West Germany. See Védrine, 93-130; and Dumas.

¹²⁷ West Germany's Social Democratic Party (SPD) broke with West Germany's Chancellor Helmut Schmidt, himself a social democrat, over the planned deployment of Pershing IIs and GLCMs. The shift of West Germany's dominant political party to a position of open hostility to new nuclear deployments and increasing diffidence vis-à-vis the United States raised the specter of West Germany's gradual shift to neutralism. Under these circumstances, the French PS's pre-election rhetoric on security matters, condemning "enlarged sanctuarization" and emphasizing a strictly national nuclear deterrent, aggravated Chancellor Schmidt's problems. When questioned prior to PS's victory about what he thought of working with Mitterrand, Schmidt tersely replied, "François Mitterrand elected? Don't talk to me about such a misfortune." Hubert Védrine, *Les mondes de François Mitterrand: A l'Elysée, 1981-1995* (Paris: Fayard, 1996), 128.

¹²⁸ François Heisbourg, a former member of the Socialist Defense Commission and the Ministry of Defense's Director of Political Affairs under Hernu, "The Mitterrand-Hernu connection permitted an osmotic or fusional relationship. This relationship was not only convenient, but clever. It increased Hernu's throw-weight within the system because everybody knew that if Hernu spoke it was the President speaking. Being subordinate and close to the President gave Hernu power." Interview with François Heisbourg, Paris, July 13, 2004.

¹²⁹ Guisnel, *Charles Hernu: ou la République au couer*, 397-425.

¹³⁰ Reflecting on Hernu's appointment, one of his collaborators stated that, "The socialists at the time knew that they could not afford a problem on the military side and that there was only one man who could do it.... Mitterrand trusted Hernu to keep things quiet on the military side and tell him what was going on." Interview with François Heisbourg, Paris, July 13, 2004.

¹³¹ Ideas were canvassed from a wide variety of senior military officers, who were, with the exception of the CEMP, Giscard-era appointees. Secretary of State for Defense Georges Lemoine openly admitted that, "The question we are asking is the following: are the current dispositions and organization of the First Army the best adapted to the two requirements of reinforcing allied forces and providing for the immediate defense of national territory." In the French political system, secretaries of state are lower ranked officials than ministers. Jérôme de Lespinois, *L'Armée de terre français: de la défense à la projection*, vol. 2 (Paris: L'Harmattan, 2001), 453.

¹³² Interview with François Heisbourg, Paris, July 13, 2004.

¹³³ Fricaud-Chagnaud had good relations with Delaunay, however Fricaud-Chagnaud predicted correctly that Delaunay would attempt to block his reform. Guisnel, *Les généraux: Enquête sur le pouvoir militaire en France*, 149.

¹³⁴ Fricaud-Chagnaud concluded this line of reasoning by asserting that his new doctrine would permit France to concentrate its industrial efforts on producing weapons where it possessed a comparative technological advantage—notably helicopters and anti-tank missiles—while abandoning the costly development of new tanks, where "our national products have never been able to rival those of [West] German industry." de Lespinois, *L'Armée de terre français: de la défense à la projection*, vol. 2, 455.

¹³⁵ *Ibid.*

¹³⁶ The political need for France to visibly possess the capability to participate in West Germany's forward defense became increasingly evident in Hernu's weekly lunches with Foreign Minister Claude Cheysson. Védrine, 49-50.

¹³⁷ Since 1977, each French army corps benefited from the support of two organic helicopter regiments with 72 combat helicopters apiece and a light helicopter detachment with 30 machines. To create the FAR's helicopter division, over 40 percent of the Army's helicopters (241 of 560) would be reassigned to the new unit, including 70 percent of the Army's anti-tank helicopters (90 of 127). *Ibid.*, 459-61.

¹³⁸ The French Army had a long tradition of using wheeled armored vehicles. However, the most widespread members of France's previous generation of armored cars could not have been employed in Western Europe, where they would have faced Soviet

armor. The AML was a light armored car (4 tons) that was originally developed during the Algerian War (1954-62) for counterinsurgency operations. After the end of the Algerian War, production of the AML continued and it was used to equip territorial defense and intervention forces. The AML's lack of firepower and sophistication meant that the French Army never intended to employ them on NATO's Central Front. The AMX-10RC entered service in 1979. It was France's first armored vehicle equipped with a laser range finder, which gave it a comparatively high first-hit probability against enemy tanks. However, the shaped charge warheads it employed would not have been able to penetrate the explosive reactive armor (ERA) that Soviet T-72 tanks began carrying at the time-period and the low velocity of the AMX-10RC's cannon placed the vehicle at a comparative disadvantage in a long-range gunnery duel with T-62s, T-64s or T-72s. At the time of the AMX-10RC's introduction, the Group of Soviet Forces Germany (GSFG) was largely equipped with modern T-64s and T-72s, but many Warsaw Pact allies and second echelon Soviet forces remained equipped with the T-55. Le Chatellier was careful to add that the AMX-10RC was not designed to combat enemy tanks, but as an armored reconnaissance vehicle. Interview with General Yves le Chatellier, Paris, May 12, 2004; and Stéphan Ferrard, *Engins blindés français: Cent ans d'histoire* (Paris: EPA, 1996), 112-14, 122-24.

¹³⁹ The AML was a light armored car (4 tons) that was originally developed during the Algerian War (1954-62) for counterinsurgency operations. After the end of the Algerian War, production of the AML continued and it was used to equip territorial defense and intervention forces. The AML's lack of firepower and sophistication meant that the French Army never intended to employ on NATO's Central Front. The AMX-10RC entered service in 1979. It was France's first armored vehicle equipped with a laser range finder, which gave it a comparatively high first-hit probability against enemy tanks. However, the shaped charge warheads it employed would not have been able to penetrate the explosive reactive armor (ERA) that Soviet T-72 tanks began carrying at the time-period and the low velocity of the AMX-10RC's cannon placed the vehicle at a comparative disadvantage in a long-range gunnery duel with T-62s, T-64s or T-72s. At the time of the AMX-10RC's introduction, the Group of Soviet Forces Germany (GSFG) was largely equipped with modern T-64s and T-72s, but many Warsaw Pact allies and second echelon Soviet forces remained equipped with the T-55. Le Chatellier was careful to add that the AMX-10RC was not designed to combat enemy tanks, but as an armored reconnaissance vehicle. Interview with General Yves le Chatellier, Paris, May 12, 2004; and Stéphan Ferrard, *Engins blindés français: Cent ans d'histoire* (Paris: EPA, 1996), 112-14, 122-24.

¹⁴⁰ General Maurice Schmitt, who was a paratroop officer and First Army chief of staff between 1978 and 1981, suggested at several meetings at a NATO conference at Bruunssum that the 11th DP could act as the First Army's rapid reaction force. Fricaud-Chagnaud was present at many of these meetings in his capacity as France's representative to CINCENT. This may explain how the idea of including the 11th DP in a rapid deployment force was transmitted to Hernu's cabinet.

In 1981, the Army experimented in dropping French paratroops to mount a hasty anti-tank defense during the Meuse 81 exercise. The employment of paratroops was

judged problematic after the exercise. Although quickly deployed to their positions, the paratroops remained basically stationary thereafter because of their dearth of wheeled vehicles. Moreover, when the exercise provided for an NBC environment, the light and encumbering equipment of paratroops was judged inadequate. De Lespinois, *L'Armée de terre français: de la défense à la projection*, vol. 1, 309; and Rynning 110-11.

¹⁴¹ General Maurice Schmidt, a future Chief of Staff of Ground Forces (CEMAT) opined that “The attachment of the alpine to the FAR [Force d’Action Rapide or Rapid Action Force] was of doubtful utility.” Maurice Schmidt, *De Diên Biên Phu à Koweït City* (Paris: Grasset, 1992), 148.

¹⁴² SHAT 3 K 3 General Francois Gerin-Roze, Paris, October 10, 1996.

¹⁴³ Guisnel, *Les généraux: Enquête sur le pouvoir militaire en France*, 150.

¹⁴⁴ Under the new socialist government, the CPE was renamed in 1982. *Ibid.*, 150-51.

¹⁴⁵ The GROUPES study was never published, but journalist Jean Guisnel received access to it. Guisnel, *Les généraux: Enquête sur le pouvoir militaire en France*, 151.

¹⁴⁶ *Ibid.*, 152.

¹⁴⁷ de Lespinois, *L'Armée de terre français: de la défense à la projection*, vol. 2, 457.

¹⁴⁸ Guisnel, *Les généraux: Enquête sur le pouvoir militaire en France*, 152.

¹⁴⁹ Interview with General Jean Delaunay, Versailles, June 15, 2004.

¹⁵⁰ *SIRPA Actualité* (No. 147, January 6, 1983).

¹⁵¹ Guisnel, *Charles Hernu: ou la République au couer*, 464.

¹⁵² Interview with François Heisbourg, Paris, July 13, 2004.

¹⁵³ Guisnel, *Les généraux: Enquête sur le pouvoir militaire en France*, 156.

¹⁵⁴ *Ibid.*, 157.

¹⁵⁵ de Lespinois, *L'Armée de terre français: de la défense à la projection*, vol. 2, 459.

¹⁵⁶ On 15 November 1983, Hernu took advantage of his annual speech at the IHEDN to announce his intention to create the FAR. After stating the specific composi-

tion of the FAR, five divisions with 47,000 men, and emphasizing the flexibility with which it could be employed, Hernu returned to the diplomatic theme that had provided the impulse for the FAR's creation—France's strategic relationship with West Germany. According to Hernu, "As soon as France has decided to employ the FAR, our closest neighbors will benefit from a precious reinforcement. This is particularly true for the Federal Republic of Germany, with which France is tied by the Elysée Treaty and the two of which [France and West Germany] constitute an 'alliance within the alliance.'" Charles Hernu, "Discours devant l'Institut des Hautes Etudes de Defense Nationale," in *La politique de defense de la France: textes et documents*, 268.

¹⁵⁷ The United States had operated airmobile divisions since the 1960s. However, the American concept of airmobile warfare differed from its French counterpart. American airmobile divisions were essentially light infantry divisions that used helicopters for transport. The French 4th DAM was, by contrast, a division whose offensive power resided in helicopters armed with either HOT anti-tank missiles or automatic 20mm cannons. The 4th DAM possessed only a single regiment of infantry, the 1st RI, specialized in helicopter deployment and anti-tank warfare.

¹⁵⁸ Only 134 Milan launchers were delivered to the French Army after 1982 and the actual percentage of France's Milan's in the FAR probably exceeded one-third. Although 1,257 Milan launchers in total were delivered to the French Army, some of these were withdrawn from Army service and sold to states in the Persian Gulf, to meet urgent orders for anti-tank weapons. It is likely that no more than 1,000 Milan launchers ever served in the French Army at a given time. See de Lespinois, *L'Armée de terre français: de la défense à la projection*, vol. 1, 260-61; and de Lespinois, *L'Armée de terre français: de la défense à la projection*, vol. 2, 463.

¹⁵⁹ Interview with General Jean Delaunay, Versailles, June 15, 2004.

¹⁶⁰ SHAT 3 K 3 General Francois Gerin-Roze, Paris, October 10, 1996.

¹⁶¹ *Ibid.*



Chapter IV:

British Military Doctrine in the Cold War

I. Introduction:

As discussed in the previous chapter, military doctrine can be broadly defined as how military power will contribute to accomplishing a state's foreign policy objectives through actual or threatened use of force.¹ Its creation involves the interaction of a state's political leadership and its military high command. In principle, political leaders are responsible for establishing the foreign policy ends a state will pursue and the means available for the armed forces to do so, while armed forces are accountable for conducting battles and engagements that may result from a foreign policy interest. In practice, the formulation of military doctrine involves a range of issues that straddle the boundaries of civilian and military competence. Questions such as how offensive or defensive a military doctrine should be, what constraints allied or neutral states should impose on war plans, and how tactical nuclear weapons should be used have military and political components.

Certain authors argue that doctrine is best produced when political leaders are involved with the entire process, ensuring that a military tool is forged to accomplish political ends. Others maintain that political leaders should be content with broadly determining the political ends the armed forces will pursue and the military means the state will provide, that determining how military forces will fight is best left to the high command of armed forces.² As we have seen, the formulation of French military doctrine corresponds to the former model.

This chapter addresses four propositions about the creation of military doctrine in the United Kingdom. First, unlike France, the institutional process of British defense policymaking enables its armed forces to develop military doctrine internally. If this is true, changes in British military doctrine should be prompted by perceived shifts in the military balance and officers' perceptions of opportunities and constraints presented by new technology.³ Because military organizations tend to prefer offensive to defensive doctrines, British military doctrine should reflect an offensive bias insofar as the armed forces control the processes by which doctrine is formed.⁴ Also, if primarily developed within the armed forces, one would predict that the resultant doctrines would be less closely coordinated with foreign policies than in states where elected leaders have a more direct impact on military doctrine. The cases used to test these hypotheses in this chapter are drawn from the British Army's changing views of how it would contribute to the defense of Central Europe against a Warsaw Pact invasion from 1958 until 1989.

Contrary to France, the institutional process for defense policymaking in the United Kingdom evolved in an environment where the armed forces were viewed as loyal, capable and responsive to political needs. Because the state's elected leaders did not view the army as a problematic partner, successive governments never felt a need to reduce the autonomy of the armed forces and "reassert" civilian primacy over defense policy. Changes in the institutional structure for forming British doctrine have been the evolutionary product of functional imperatives. Although crucial reforms have been introduced since the Second World War, the basic division of authority between political and military authorities has not changed.⁵

Fundamentally, the institutional process by which military doctrine is formed involves clear hierarchic roles and divisions of authority as to which individuals and

institutions are authorized to make decisions. By delimiting political and military domains, the institutional structure for creating British military doctrine matches Huntington's definition of "objective political control" over the armed forces. At the uppermost level is the Cabinet, which establishes the ends and means of British defense policy. Critical issues about the United Kingdom's overall foreign policy, alliances and defense commitments are addressed in the Cabinet's Defense and Overseas Policy Committee, known as the DOP. Although participation in the DOP fluctuates according to the issue discussed, the Prime Minister, Chancellor of the Exchequer and the Foreign, Defense and Commonwealth Ministers are regular attendees. When military input is needed, the chiefs of staff are invited to participate.

If the ends of British defense policy are determined at the DOP, the means are defined during the recurring Public Expenditure Review. Annually, the Minister of Defense argues with his Cabinet colleagues for the Ministry to receive a percentage of the national budget. Although the chiefs of staff of the armed forces assist the Minister of Defense in preparing his arguments for the Review, the high command of the armed forces is not represented at this level. At the ministerial level, the essence of British defense policymaking revolves around reconciling resources to the United Kingdom's international interests.⁶

The detailed allocation of resources for the military objectives is determined within the Ministry of Defense through a process of bargaining among the Chiefs of Staff of the armed services and other related bodies. Since much of this discussion occurs within the Chiefs of Staff Committee, where the Minister of Defense is not a member or generally in attendance (unlike France where the Minister presides over the Committee), it is a process dominated by the professional heads of the armed services.⁷ Financial

undertakings agreed upon at the Chief of Staff Committee are inscribed in the Ministry's Long-Term Costing, in which all commitments are planned on a 10-year basis, with detailed and relatively firm provisions made on a rolling three-year cycle.⁸ Under most circumstances, this process results in a seldom-changing division of funds between the services, occurring in an orderly, collegial atmosphere.⁹ However, when the chasm between the demands of the individual armed services and the resources allocated is great, inter-service rivalry becomes bitter and unconstrained. When the Chiefs of Staff cannot agree how to divide the defense budget, the Minister of Defense plays a more active role, and if the Chiefs collectively oppose the Minister of Defense's solution, they may demand an audience with the Prime Minister.

Once the division of resources has been agreed upon, each service remains essentially autonomous to determine *how* it will structure its resources to meet the foreign policy goals and obligations established by the Cabinet. At the apex of the British Army lies the Chief of the General Staff (CGS), who administers the army along with its educational establishments. Under the CGS lie the administrative heads of combat arms: the infantry, artillery, armored corps and engineers. Normally within each combat arm, tactical doctrine is compiled into manuals.¹⁰ Although during the Cold War the Army's combat arms produced their own tactical manuals under the aegis of the CGS, these had a limited impact on units in the field. Because of a culture of improvisation to meet the demands of the theaters and a general belief that tactics were best left to operational commanders, doctrine centrally produced under the CGS had a limited impact on combat units. In General John Kiszely's words:

The British Army has a strong antipathy for doctrine.... To most officers there was no such thing as 'doctrine', only 'pamphlets'—and they were, at best, a basis for discussion and for quoting in promotion exams. Instead

there was an ethos – a generally accepted way of approaching matters – which viewed tactics as being the opinion of the senior officer present: an agreeable state of affairs (for the senior officer, at least).¹¹

For the defense of Central Europe, the commander of the British Army of the Rhine (BAOR) held the position of commander-in-chief of the North Atlantic Treaty Organization's (NATO) Northern Army Group (NORTHAG). Commanding a multinational army group of British, Dutch, Belgian and West German army corps, he coordinated the defense of the northern half of NATO's border with the Warsaw Pact, including synchronizing the defensive plans of the national army corps under his command. To this end, he established "lines of contact" beyond which they should not retreat without permission. To counter a breakthrough of the front, the commander of BAOR/ NORTHAG also controlled NORTHAG's operational reserve, which until the 1980s consisted of one armored division. In addition, in peacetime the commander of BAOR/NORTHAG controlled the British Allied Liaison Mission (BRIXMIS) with the Soviet forces in East Germany, and as such had a central role in disseminating information on the capabilities and practices of Soviet forces to corps commanders under his authority.¹²

Under the commander of BAOR/NORTHAG, the commander of the 1st British Corps controlled the United Kingdom's largest single permanent combat formation, approximately 55,000 soldiers in peacetime and potentially twice as many in war. Throughout the period in question, the commander the 1st British Corps was responsible for plans to defend a 65-mile sector (north to south) of West Germany against a Warsaw Pact assault. In principal, he developed and modified the General Deployment Plan (GDP), which identified where particular British units would deploy in the event of hostilities. Although not necessarily laying out the tactics they were to use, the GDP set

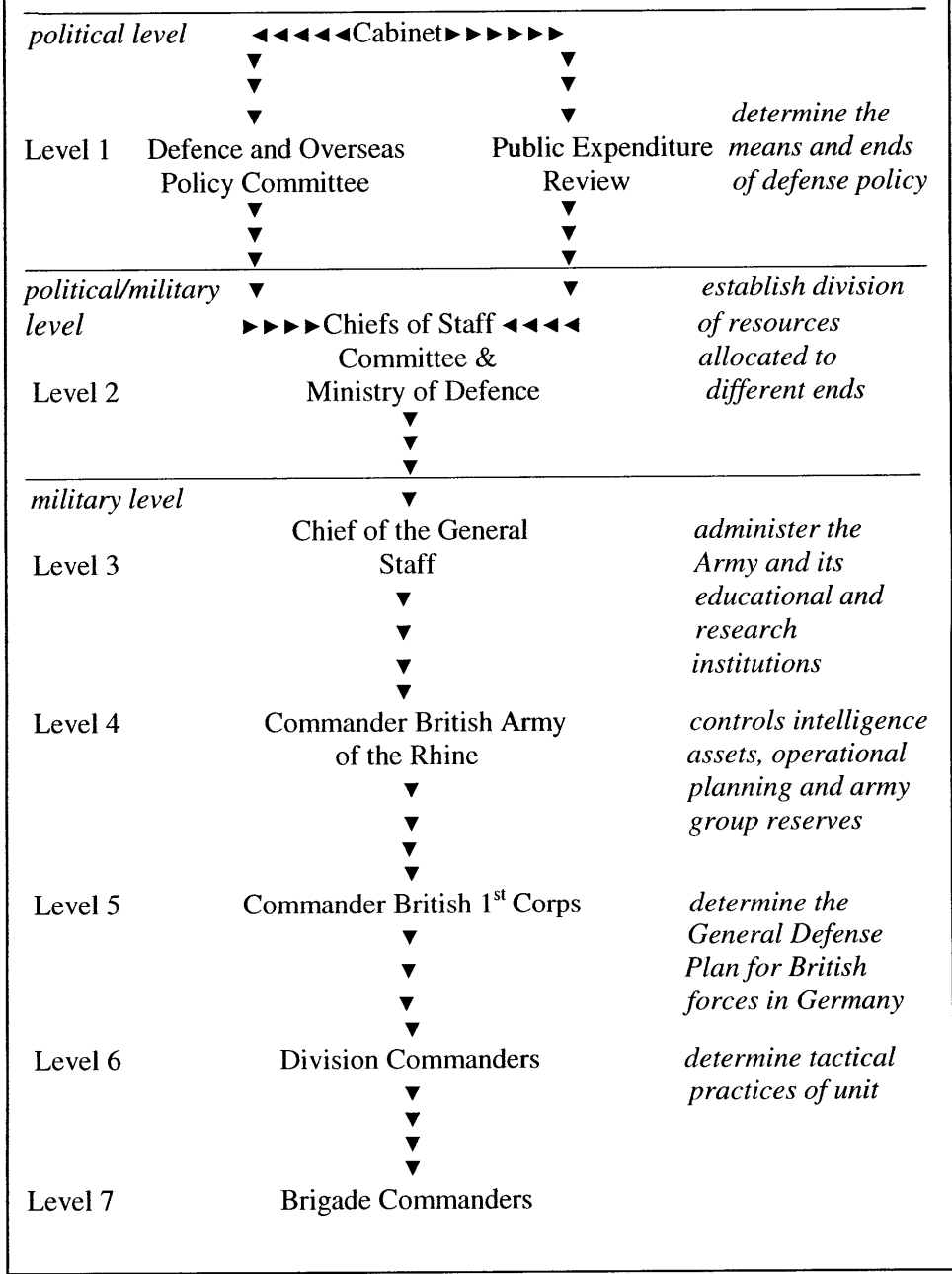
the tenor for how the defensive battle would be fought in the British sector of NATO's defense, including determining the percentage of the Corps' divisions that would be committed to a forward battle and what would remain in reserve.¹³ Because the commander of 1st British Corps controlled the United Kingdom's heavy armored and mechanized divisions, he could shape their organizational structure. However, reorganization of armored and mechanized divisions needed approval from the Chief of the General Staff (CGS), which meant that reforming or restructuring them involved major consultation between the commander of the 1st British Corps and the CGS.¹⁴

Beneath the commander of the 1st British Corps were the commanders of the Corps' three or four divisions. Divisional commanders were usually accorded a wide margin of autonomy to determine tactics. It was not uncommon for British divisional commanders to decide to defend "their" particular sectors in ways that contravened the logic of the GDP.¹⁵ Below the division, the commanders of brigades constituted the final, lowest echelon in the creation of doctrine. Commanding the smallest operational combined arms formations, British brigadiers frequently developed unique tactical solutions for how their unit would fulfill its role. As with divisional commanders, their solutions were sometimes innovative and broke with the general concepts of their superiors.

As an ensemble, the institutional process for creating British military doctrine during this time is multi-level and hierarchal, with each echelon having a specific area of responsibility and no single individual or body having global authority for military doctrine. Rather, seven layers of authority contribute, each forming procedures for using the means they possess to fulfill the missions established by the next highest element.

Table I illustrates this structure.

**Table I.
Seven Levels of Actors and Roles in the Creation
of Military Doctrine for British Land Forces
in Central Europe**



The institutional structure for creating British military doctrine imposes evolutionary change, limiting the ability of political leaders to influence how British

armed forces will conduct their missions.¹⁶ The capability of an innovative CGS to effect fundamental reform is likewise constrained by the autonomy of subordinates and by the CGS' responsibilities in inter-service bargaining over resources for all the services. What the British system lacks in potential for top-down reform is compensated for by the development of new concepts from the bottom-up. Commanders at various levels can advance and experiment with ideas for executing missions entrusted to them, leading to an almost constant development of new, distinct tactical solutions. However, the lack of a centralized organization capable of testing concepts and issuing formal doctrine meant that changes in how the British Army intended to conduct war occurred gradually, as promising officers with new ideas were promoted to positions of responsibility or innovative operational concepts gained currency within the high command.

Because of the many hierarchal echelons involved in formulating military doctrine, it is frequently difficult to detect exactly where and when a change originates within the system. New doctrinal concepts were frequently adopted haphazardly at brigade, divisional or army corps levels before being generalized. Certain reforms became the subject of internal debate and were tested in war games long before implementation.

The pages that follow examine how the British Army planned to participate in the collective defense of Central Europe against a Warsaw Pact invasion. Between 1958 and 1989, British military doctrine for the defense of West Germany underwent four major and six minor transformations. A major transformation of military doctrine can be defined as a significant change in an Army's theory of how military force can best be applied to achieve a political aim, while a minor shift consists of a more modest

modification of the force structure and war plans by which an Army will enact its theory of warfare.

The four fundamental shifts in military doctrine experienced by British land forces in West Germany are: 1) From 1958 until 1964, the Army's plan for the defense of West Germany depended on a massive tactical nuclear air interdiction campaign against Warsaw Pact lines of supply from the onset of hostilities. 2) From 1964 to 1971, this doctrine changed to fighting conventionally as long as possible before resorting to tactical nuclear weapons, in a strategy in which the Army envisaged drawing advancing Soviet forces into tactical nuclear "killing zones" where concentrations of Soviet armored and mechanized units could be annihilated by tactical nuclear rockets and artillery. 3) From 1971 to 1981, the British Army's theory shifted to a reliance on infantry firing anti-tank guided missiles and tanks fighting from prepared positions to inflict disproportionate attrition on attacking Warsaw Pact armored forces. 4) Between 1981 and 1989, the British Army embraced a doctrine of maneuver warfare, predicated on disrupting a Warsaw Pact offensive by delivering a concentrated and powerful armored counter-thrust or counter-offensive shortly after the onset of hostilities.

The British Army's operational concepts underwent five minor shifts between 1971 and 1989; and although the British Army's theory of how to defend West Germany from 1971 to 1981 was based on inflicting attrition on Soviet armored forces using anti-tank missiles and tanks fighting from defensive positions, plans to achieve this objective underwent three changes. Likewise, although the British Army embraced a doctrine of "maneuver warfare" from 1981 to 1989, based on the notion that the Red Army's highly centralized and rigidly structured manner of fighting could be defeated by shattering its moral and physical cohesion rather than attempting to destroy enemy forces physically

through attrition, the modalities of how maneuver warfare would be executed underwent two distinct evolutions.

II. The Evolution of a Commitment, 1945-1958

Through historic and geographic accidents, the United Kingdom held the primary burden for defending West Germany's most exposed sector throughout the Cold War. Vulnerable terrain, an ample road network and weak allies all rendered the British Army's task more difficult. The United Kingdom did not seek disproportionate responsibility, but found itself gradually drawn into this commitment as a result of its Second World War campaigns and the comparative reluctance of Belgian and Dutch taxpayers to invest in a strong national defense.

Between 1945 and 1959, a series of policy decisions and compromises led to the British assuming responsibility for defending a 65 mile wide sector of North Germany with 55,000 soldiers. By the end of the Second World War, the British 21st Army Group had become a veteran and well-balanced military force with 15 British divisions under the leadership of Field Marshal Bernard Montgomery. In Normandy, Belgium, Arnheim, the Reichswald and Ruhr, British forces overcame determined and expert resistance on the part of Nazi Germany's flagging legions.¹⁷ Success in battle left the 21st Army Group occupying much of northwest Europe, including the North German plain, which constituted the historic route by which Eurasian invaders penetrated Western Europe.¹⁸ Despite the value of the terrain it held, the United Kingdom rushed to disband its costly war machine with the advent of peace in Europe. Many units were disbanded and others sent to police the empire. Only a bare minimum of troops were retained in northern Europe to garrison regions recently devastating by battle and aerial bombardment.

In keeping with its new mission, the 21st Army Group's remnants were officially re-designated the British Army of the Rhine (BAOR) on 25 August 1945.¹⁹ This change in name was indicative of the BAOR's capabilities. Whereas the 21st Army Group had been a combat formation that became operational with the Normandy landings, the BAOR harkened back to the British garrison force that occupied the Rhineland between 1919 and 1929, and was also named the BAOR.

Because its mission was maintaining internal order, the BAOR was neither structured nor equipped to defend territory.²⁰ With its army corps headquarters disbanded, the BAOR could not maneuver or fight effectively. Even worse, reliance on Hamburg for its supplies meant that the BAOR could be quickly cut off from its sources of food and ammunition.²¹ The BAOR's deficiencies were of little concern to British political or military leaders between 1945 and 1948, when crises in the Balkans, Middle East and Asia appeared graver.

However, the Prague Coup and Berlin blockade of 1948 roused British policymakers to the danger posed by Soviet forces in Central Europe.²² Troop reductions were cancelled and the BAOR was frozen at its existing size.²³ With 1950 and the Korean War, British policymakers went further and actually decided to expand the BAOR from two to four divisions.²⁴ However, British initiatives alone could do little to protect western Europe against a Soviet Army estimated to possess 175 divisions.²⁵ A larger American commitment to Europe and German, Dutch and Belgian rearmament would be necessary to meet this threat.²⁶

At NATO's Lisbon Conference, in 1952, the United Kingdom committed itself to deploying nine divisions as part of NATO's broader effort to raise 96 divisions.²⁷ However, economic realities led to the abandonment of the Lisbon goals almost as soon

as they had been agreed to.²⁸ The United Kingdom's presence in Germany therefore stagnated at the four divisions and 77,000 men present in late-1952.²⁹ With conventional defense unfeasible, the British chiefs of staff argued that even this presence should be reduced to provide forces for the brushfire wars in Asia and the Middle East.³⁰ However, a British presence in continental Europe was necessary for western European states to accept West Germany's rearmament.³¹ Thus, despite the reticence of military commanders, Foreign Minister Anthony Eden pledged in 1954 that the United Kingdom would retain 77,000 men in West Germany for the indefinite future.³²

Thus, the United Kingdom's military commitment to defending northwest Europe owed itself to alliance politics rather than military calculations. However, the forward basing of Dutch and British forces and West Germany's rearmament gradually reduced the territory the British had to defend, such that, by the late 1950s, the BAOR defended only a quarter the territory it had once controlled. However, the BAOR's vulnerability remained high despite its defending a sector "only" 65 miles wide.³³

Because British forces were comparatively well equipped, they remained responsible for the broad, long corridor of flat countryside at the heart of the North German Plain, recognized as providing the geographical prerequisites needed for the Soviet Army to launch a massive armored offensive.³⁴ Moreover, an ample road network made it easy for the Soviet Union to concentrate overwhelming forces against the British should war erupt.³⁵ With only four divisions available to defend 65 miles of such premium invasion territory--at a time when one division could comfortably defend four miles--the BAOR's task was considered impossible.³⁶

To make matters worse, the Dutch and Belgian forces on either flank of the British never fulfilled their promises to NATO.³⁷ Economically neither state consented to

spend as high a percentage of their national wealth on defense as Europe's larger powers (the United Kingdom, France and West Germany).³⁸ As a consequence, Belgian and Dutch forces frequently made due with older equipment and withheld many of their forces at home, where their upkeep was cheaper.³⁹ Thus, throughout the Cold War, British commanders worried lest the Belgian and Dutch forces on their flanks collapse, and allied leaders feared that NORTHAG constituted NATO's Achilles heel.⁴⁰

Because efforts at conventional defense appeared foredoomed, the British armed forces began lobbying in 1955 that the BAOR should be reduced, freeing up forces for conflicts elsewhere. If conventional defense was impossible, then only a small force was needed to counter "local infiltration" and serve as a "tripwire" for massive nuclear retaliation.⁴¹ Economic necessity soon with military pragmatism to prompt a reexamination of the BAOR. In 1957, the growing financial burden of defense prompted Prime Minister Harold MacMillan to promulgate a series of cost-cutting measures. For the Army, conscription would end and the Army would shrink from 380,000 to 180,000 personnel. For the United Kingdom to maintain its global commitments with this reduced force, it had to negotiate a commensurate reduction in the size of the BAOR.

Britain's allies understandably resisted Britain's efforts to reduce its force commitment and invoked Eden's 1954 pledge to deploy 77,000 personnel indefinitely.⁴² After acrimonious negotiations, the British government obtained an agreement to reduce forces to 55,000 in 1958 and 45,000 in 1959. Unfortunately for the British government, Soviet Premier Nikita Khrushchev's ultimatum of 27 November 1958 intervened between the two planned British troop withdrawals. By threatening the status quo in Berlin, Khrushchev put the British in a position where further troop withdrawals would be seen as a sign of weakness.⁴³ The United Kingdom therefore decided to retain its 55,000

troops in West Germany for the foreseeable future. Although few could have predicted it at the time, this became the definitive size of the BAOR for the remainder of the Cold War.⁴⁴

Thus, by 1959 the United Kingdom's commitment to western Europe's defense assumed a character and dimension that would not change until the end of the Cold War. Driven by evolving political and economic factors, the British commitment had fallen from 15 divisions in 1945, to two divisions in 1948, before rising to a size of four divisions in 1952, only to suffer a 29 percent reduction in manpower in 1957 and 1958. Britain's fluctuating contingent ended up responsible for a 65 mile sector of West Germany's least defensible terrain. Because of the inadequacy of the means at hand to defend the designated objective, British military leaders repeatedly argued for reductions in the BAOR.⁴⁵ If Europe could not be defended conventionally, then the United Kingdom should waste a minimum of resources in the attempt. Although British political leaders listened to their military advisors, alliance politics and unforeseen events, such as the Prague Coup (1948), Korean War (1950) and Berlin Crisis (1958-61) frustrated their efforts to withdraw troops. In sum, political factors ensured that the BAOR evolved independently of a specific military rationale. The force was much too weak to conventionally defend its sector, yet larger than necessary as a mere tripwire of constabulary force.

III. A Doctrine for Atomic Defense, 1958-1964

Largely because the British Army's commitment to Central Europe was driven by the necessity of strengthening the Atlantic Alliance politically rather than a desire to constitute an effective defense of Western Europe, British military planners embarked

upon the Cold War without having a clear idea of how NORTHAG or the British 1st Corps could be employed to accomplish their mission of halting a Soviet invasion. However, their professional ethic drove British officers to examine how their limited resources could best be employed in the event of war. Independently of political leaders, British officers determined that tactical nuclear weapons and conventional defense practices could be combined decisively. From 1952 to 1958 a military doctrine emerged combining the conventional defense of river lines with a massive atomic interdiction campaign against Warsaw Pact supply lines.

When the Korean War sparked Western European rearmament in 1950, American and British intelligence services evaluated the Soviet conventional threat as comprised of 170 to 175 divisions.⁴⁶ To mount an effective defense against this force, allied military planners calculated that NATO would have to deploy 96 divisions. In the early 1950s, conventional wisdom held that an American and Western European division could defend, at most, a front of six miles.⁴⁷ Although allied military planners believed that NATO's 96 would be outnumbered by the Soviet Union's 175, they calculated that because a defense is tactically more effective than an attack, NATO could win with these forces.

Soon, however, the political and economic impossibility of maintaining such large forces led allied planners to revise their force goals downward. In 1954 NATO had 21 front-line divisions in Central Europe and only 18 by 1956, and the United Kingdom never possessed more than four to defend a front of 65-miles. Judged by the criteria of the period, which would have allocated 16 to this frontage, the United Kingdom did not have nearly enough forces to defend the front allocated it.

NATO's strategic answer to its deficiency in ground troops was the threat of massive nuclear retaliation. With their 1952 study on "Defence Policy and Global Strategy," the British Chiefs of Staff Committee accepted the notion of massive retaliation before the United States or other NATO allies as a cheap alternative to the prohibitively costly policy of maintaining conventional forces of the scale needed.⁴⁸ However, massive retaliation raised another question. If war broke out, what would the United Kingdom's not inconsiderable forces in Western Europe do? Although too small to defend their 65-mile sector according to an ideal allotment, the BAOR was a large military formation comprising 20 percent of the British Army.⁴⁹ Because the BAOR was the largest permanent commitment of British Army resources, British officers strove to make it as effective as possible, rather than to accept the passive role of political tripwire.

From 1949, the British Army struggled to retrain the BAOR for large-scale conventional warfare.⁵⁰ Efforts to increase the combat readiness of the BAOR initially focused on re-learning the tactics and attaining the proficiency that British combat forces had achieved by the end of the War.⁵¹ However, the British Army did little to examine whether the tactics, organizational structures and operational practices inherited from the War were relevant to the new strategic situation.⁵² In a war with the Soviet Union, the British Army would not possess the preponderance in armament or air superiority that it had enjoyed against the Wehrmacht in the latter stages of the last War. Considering that the British 1st Corps possessed only three divisions to defend its sector of more than 100 miles, the BAOR would in practice be unable to achieve the force-to-space ratios rehearsed in training.⁵³

The British Army's initial response was to maximize the efficiency of its forces to fight a comparatively static defensive battle. The Royal Armoured Corps' 1949

requirement for an extremely heavy tank, which entered service as the Conqueror in 1955, exemplified this trend. Reasoning that better firepower and greater armored protection would permit British armored forces to withstand the assault of numerically superior enemy forces, the British Army demanded a tank capable of destroying the heaviest Soviet tanks at a range of 1,000 meters, the majority of Soviet tanks at 2,500 meters, while remaining immune to point-blank hits from most Soviet tanks.⁵⁴ Although powerful, the Conqueror heavy tank was a problematic behemoth. At 66-tons, it was the third heaviest ever manufactured.⁵⁵ Although it accommodated significant armor and the most powerful tank gun yet fielded, Conqueror was too wide to be transported through most Western European railway tunnels, too heavy for many bridges and for all but the most solid roads. By distributing Conqueror-equipped units throughout the BAOR's armored forces, the British armored forces mobility suffered.⁵⁶ The British Army intended to use its limited, heavy forces to mount a static, linear defense of the Rhine River as long as possible, but the reality of the BAOR's weak force-to-space ratio led the Commander of the BAOR to report in 1952 that it was unlikely that the Rhine could be held in the event of war.

Gradually, a military doctrine emerged by 1958 that offered a hope of stopping a Soviet attack on Western Europe. As early as 1952 the British Chiefs of Staff Committee predicted that the increasing availability of atomic weapons, especially small ones, would soon make them available for tactical use against military targets, rather than only retaliatory strikes on the Soviet homeland.⁵⁷ Because the United Kingdom's own nuclear program was not yet developed enough to provide atomic bombs for both the strategic deterrent role and tactical use in Europe, the British Chiefs of Staff pressured their American counterparts to provide NATO with tactical nuclear weapons. In May 1957,

NATO adopted policy document MC 14/2, which stipulated that limited aggression, short of a conventional enemy offensive, would be met by conventional forces, while a full-scale enemy attack would be countered with tactical nuclear weapons. Once the United States agreed to make tactical nuclear weapons available to NATO allies under a variety of control mechanisms, the British armed forces quickly enacted a doctrine for using them to halt a Warsaw Pact invasion.

Initially, the main vectors for delivering American-supplied tactical nuclear weapons were the Royal Air Force's (RAF) Canberra bombers.⁵⁸ In 1957, the United Kingdom began transferring five Canberras squadrons to RAF Germany, the British component of the 2nd Allied Tactical Air Force (ATAF), which itself was the air counterpart of NORTHAG.⁵⁹ The British operational plan for how tactical nuclear weapons would be used resulted from a compromise between the commanders of BAOR/NORTHAG and RAF Germany. The moment hostilities began, RAF Germany would unleash its Canberras to destroy critical Warsaw Pact infrastructure and military assets in Eastern Europe, with the first priority being enemy nuclear forces. Then, Canberras would target the enemy's radar network in Eastern Europe to cripple the ability of enemy air defenses to respond to follow-on strikes. The RAF Canberras would devote their remaining atomic bombs to obliterating targets whose destruction would impact the movement of enemy forces: supply depots, railway and bridges.

The commanders of British ground forces in Western Europe expected that a Warsaw Pact offensive against the British 1st Corps sector would subside once the RAF cut its supply lines. For this to work, the British 1st Corps needed to retain cohesion and sustain an unbroken line until the atomic interdiction campaign could bear fruit. The imperative of holding out conventionally until a lack of supplies halted enemy operations

militated in favor of defending an obstacle, either the Necker or Rhine Rivers, as far westwards as possible. However, for the Canberras to hit their targets, RAF Germany relied on a network of radio navigation aids deployed further eastwards, between the Necker and Weser Rivers. The RAF argued that the 1st British Corps had to halt the enemy at the Weser until the tactical nuclear interdiction campaign was completed.

The compromise agreed upon by the British 1st Corps and RAF Germany was that British land forces would defend at the Weser until Soviet pressure forced them to withdraw further back. At a minimum, it was hoped that British forces would be able to hold the Weser for 48 hours. If RAF Germany began its nuclear interdiction campaign immediately upon the outbreak of hostilities—a decision that depended on the permission of the United States President and the British Prime Minister—two days was judged sufficient for RAF Germany to destroy its targets in Eastern Europe.

In its broad outlines, the doctrine of meeting a Soviet offensive by a combination of an atomic air interdiction campaign and static conventional defense of river lines dominated British war planning from 1958 to 1964. This plan represented the first British concept of operations that offered hope of preventing Soviet forces from overrunning Western Europe, or, at least the British portion of NATO's front. Prior to this doctrine, British military analyses floundered on the inability of British divisions to defend the vast fronts assigned to them. By employing the new tactical nuclear weapons, the British armed forces had a remedy for the disadvantageous force-to-space ratio and superior Soviet numbers. The 1958 doctrine was innovative in that it employed a new military tool to achieve a previously unattainable military objective.

In other respects, the 1958 British doctrine was an evolutionary development of practices. The British 1st Corps' organizational structure and basic tactics of conducting a

static attritional defense of river lines remained unchanged. Although the assignment of Canberra squadrons to RAF Germany was new, the missions flown by these aircraft changed little. As before, Canberras were tasked with dropping atomic bombs from high altitudes. The only difference was that instead of attacking targets in the Soviet Union, they would now attack logistics targets in Eastern Europe. Compared with the United States Army's contemporaneous adoption of its Pentomic Army concept, designed for waging tactical nuclear warfare with self-contained battle groups, the British armed forces' response to the "atomic battlefield" was conservative. Instead of reshaping the organizational structures and tactics to exploit a new technology, the British armed forces grafted tactical nuclear weapons onto existing structures and plans.

IV. Atomic Uncertainties, 1964-1970

The new 1958 doctrine became the focus of criticism from the start. British officers tasked with its execution questioned whether political leaders in the United Kingdom and the United States would assent to the immediate use of nuclear weapons and whether their use would succeed in stopping the Warsaw Pact. While doubts rapidly emerged, it took years for the British Army to develop an alternative doctrine. The BAOR's next operational concept for combating a Warsaw Pact offensive, which achieved official status in 1964, involved mounting a conventional defense at the beginning of a conflict to pressure enemy forces into "killing areas." Once conventional resistance became impossible, tactical nuclear weapons would be used to annihilate these concentrated pockets of enemy forces. This change in doctrine was prompted by the growing influence of a new generation of officers who understood the subtleties of

nuclear warfare better than their forbearers, whose military experience was heavily influenced by World War II and imperial policing.

When British military commanders began to question the assumptions underlying the 1958 military doctrine, they did so discreetly and informally, with a major impetus coming from the renowned military maverick, Captain Basil Liddell Hart, who had been a prolific commentator on defense matters since the First World War.⁶⁰ During the late-1950s, Hart maintained a correspondence with a number of up-and-coming British officers and presided over an informal organization known as the Military Commentators Circle, where political and military thinkers engaged in regular discussion. Two of his correspondents and occasional participants in the Circle were General John Hackett, then Commandant of the Royal Military College of Science, and Brigadier Michael Carver, Director of Plans at the War Office. In the coming years, both attained positions of influence concerning British doctrine, with Hackett serving as commander of the BAOR/NORTHAG between 1966 and 1968, and Carver commanding a Brigade in NORTHAG (1960-1962) before becoming Chief of the General Staff (1971-1973) and Chief of Defence Staff (1973-1975).⁶¹

Within the Commentators' Circle, three broad criticisms emerged about British and NATO doctrine. First, perhaps the use of nuclear weapons could not be restrained to the battlefield once initiated or whether any use of tactical nuclear weapons would escalate to a strategic exchange that would destroy the United Kingdom.⁶² Secondly, because the use of tactical nuclear weapons could escalate to a mutually destructive exchange, Hart and his interlocutors reasoned that the United States' President and the United Kingdom's Prime Minister would hesitate to authorize their use, and since the British war plan predicated on immediately launching a tactical nuclear interdiction

campaign, any delay could be fatal.⁶³ Finally, Hart and his correspondents doubted the assumption, implicit in British and American military doctrine, that tactical nuclear weapons strengthened the defense rather than the attacking forces. Previously, Western planners calculated that attackers must concentrate their forces to break through a defensive line and that the massed forces preparing for a breakthrough battle offered ideal targets for tactical nuclear weapons. Hart turned this argument on its head, reasoning that, if used, tactical nuclear weapons would favor the aggressor. He wrote,

. . . that limitation [of tactical nuclear weapons] also applies to the defender—reducing the number of troops that he can safely position in an area. . . . The increased dispersion enforced on the defender diminishes the attacker's need to concentrate—enabling a dispersed attacking force to infiltrate more easily. And once it had infiltrated into the defender's position, it exerts the moral effect characteristic of any threat to the defender's rear, which tends to be largely an effective substitute for physical weight and effect.⁶⁴

Developed in publications such as his 1960 book *Deterrent or Defense: A Fresh Look at the West's Military Position*, Hart's impact on British military doctrine came from his personal contact with rising officers.⁶⁵ But these officers, including Michael Carver did not accept all of Liddell Hart's ideas, especially his argument that NATO should unilaterally forsake using tactical nuclear weapons.⁶⁶ The strategy favored by them was based on defending conventionally as long as possible before using tactical nuclear weapons as a last resort.

While the Commentators' Circle attacked the military logic, the tide of international events soon revealed other flaws in British war plans. Khrushchev's November 1958 ultimatum, implicitly threatening a new blockade of Berlin, initiated a frenetic period of military contingency planning that subsided only in late 1962.⁶⁷ Until then British military plans had been based on the Soviet Union initiating hostilities with a

massive attack on Western Europe. The Berlin Crises raised the possibility that fighting could erupt from a combination of diplomatic brinkmanship and the threat of force. Western planners also felt that there could be scenarios where NATO forces would initiate the use of limited force.

By emphasizing containing fighting at the lowest possible level and combining military force with diplomatic communications, the military contingency plans elaborated between 1958 and 1962 differed fundamentally from the British 1st Corps' battle plan. Whereas the British 1st Corps still planned to initiate a massive atomic air interdiction campaign from the onset of hostilities, the Berlin contingency plans aimed to "exhaust the possibility of non-military action first; to exhaust the possibilities of non-nuclear military intervention before resulting to nuclear weapons; and to avoid threatening Soviet vital interests such as loss of their satellite empire."⁶⁸

In this context, the joint staff of American, British and French officers that elaborated the Berlin contingency plans envisaged the possibility of western allies using significant force, short of initiating full-scale war, to break a blockade of the city.⁶⁹ Among the more extreme measures considered was sending a four-division battle group to fight in Berlin along the line of the Helmstedt-Berlin autobahn or detonating five tactical nuclear weapons simultaneously in the upper atmosphere.⁷⁰ Although allied planners recognized that brinkmanship could lead to combat between NATO and Warsaw Pact forces, they hoped that hostilities could be contained short of full-scale war.

Faced with the possibility of hostilities resulting from both sides pursuing limited objectives, the British Army's plan to use tactical nuclear weapons immediately and massively was counterproductive. Such disproportionate use of force would provoke the escalation to the extremes that allied politicians and military planners hoped to avoid. As

a result of officers' growing doubts, elements in the British Army began to express discontent with the current doctrine and experiment with alternatives.

In an early challenge to the established doctrine, Lieutenant-General John Cowley publicly argued in 1959 that the British Army's plan to conduct war with tactical nuclear weapons was irrational. A year later, Carver used his position as a brigade commander in BAOR to oppose their immediate use.⁷¹ Without openly contradicting official doctrine, he emphasized training for conventional rather than nuclear combat and informed his subordinate officers that if the Soviet Union attacked, his brigade would attempt "to oppose, to seal off and to halt enemy action, while every possible step is taken to prevent it leading to a global exchange."⁷² Carver believed that because war could occur by accident or miscalculation, it was essential to buy time through conventional operations in the hope that higher political and military leaders would pull the opposing armed forces from the brink.⁷³

The exigencies of the Berlin Crisis compelled the BAOR leadership to drift in a similar direction. During the 1961 *Spearpoint* Exercise, British troops practiced fighting conventionally for two days before tactical nuclear weapons were finally "used" on the third.⁷⁴ For its organizers, *Spearpoint* responded to the need for a flexible option in response to Soviet moves against Berlin, at a time when British doctrine still anticipated unleashing a sweeping tactical nuclear interdiction campaign within 12 hours of the start of hostilities.⁷⁵

Following the Berlin Crisis and the first public critiques of early recourse to tactical nuclear weapons, elements in the British Army spent the next two years debating doctrinal options. Meanwhile, specialized studies helped clarify some of the underlying issues. In 1962, the United Kingdom's Joint Intelligence Committee (JIC) estimated that

the Soviet Union's strategic nuclear forces were approaching the point where they could inflict unacceptable damage on the United States even if the United States struck first. The JIC concluded, "We only envisage global or limited war between the Soviet Union and the West coming about through a process of miscalculation."⁷⁶ This appreciation placed a premium on avoiding escalation. In a study the following year, the JIC concluded that mutually assured destruction rendered the threat of American and British nuclear reprisals against the Soviet Union unconvincing as a response to conventional aggression. It postulated: "It is now the fear of global war arising through a process of escalation which constitutes the deterrent to limited aggression, rather than the fear of immediate, massive retaliation."⁷⁷

According to the JIC, "Unless the initial tactical use of nuclear weapons had the desired effect of immediately causing the other side to disengage *without retaliation* the risk of escalation to global war would be very high indeed [emphasis added]."⁷⁸ Unfortunately, as the Defense Science Advisor went to great pains to emphasize, most railway centers were located in the middle of heavily populated cities, while ammunition dumps and tank parks were close to railway centers.⁷⁹ Thus, using tactical nuclear weapons to interdict enemy supply lines would obliterate many Warsaw Pact cities.⁸⁰ Unleashing a nuclear response to what could be a limited conventional assault would therefore push the Soviets retaliate.⁸¹ Documents coming to light since the end of the Cold War confirm that any use of tactical nuclear weapons would have provoked indiscriminant Soviet retaliation.⁸² Thus, should a conflict erupt, NATO's priority must be to convince the Warsaw Pact that it had underestimated the importance to NATO of its objectives and negotiate a ceasefire.

Although neither the JIC nor the office of the Defense Science Advisor had institutional input into British Army doctrine, military officers participated in their studies and the higher echelons of the Army were privy to their conclusions. Due to the experience of the 1958 to 1962 Berlin Crisis, the comments of the military officers associated with Liddell Hart and the analyses produced by the JIC and the Science Advisor, a majority of officers became convinced that British doctrine needed to be changed.

By 1964 the outlines of a new doctrine had emerged. In the event of a Warsaw Pact attack, the new British plan involved screening their advance with reconnaissance forces while offering enough resistance to determine whether the attack was a limited, perhaps local initiative, or a general offensive. Once Warsaw Pact forces pushed through British screening forces, they would be engaged by the bulk of British forces, which would force the enemy to gather in dense concentrations, where they would be vulnerable to tactical nuclear weapons. As described by Major-General Perkins, “Our tactics were to force the enemy into ‘killing zones’ where they would be sitting ducks for our tactical nuclear weapons. In practice, this meant holding hills and important geographic features, to force the Soviets to concentrate in the lowlands.”⁸³ The use of tactical nuclear weapons would be necessary when enemy forces broke out of the “killing zones,” rupturing the defensive integrity of British forces. When this happened, the British Army would use tactical nuclear rockets and artillery to selectively destroy concentrations of enemy forces “pressurized” into killing zones.

From 1959 to 1961, the BAOR acquired its first tactical nuclear delivery systems -- American-built Corporal and Honest John missiles and 8-inch diameter howitzers.⁸⁴ Initially they played an auxiliary role to the five squadrons of Canberra bombers in RAF

Germany. However, the new doctrine reversed the priority. Under the “killing zone” concept, the faster reaction time of the Army’s tactical nuclear weapons rendered them better suited for destroying concentrations of forces. If everything worked as hoped, the initial selective use of tactical nuclear weapons against Warsaw Pact forces concentrated into “killing zones” would obliterate the threat posed by the first echelon of Soviet military forces. A pause in offensive military operations would ensue until Soviet reinforcements arrived from Belarus, the Baltic Republics and Ukraine. The BOAR leadership hoped that the pause and fear of further escalation would lead to NATO and the Warsaw Pact to conclude a ceasefire.

Under the 1964 doctrine, tactical nuclear weapons would create a lull in military operations and threaten the Soviet Union with escalation. In explaining the doctrine to the United States in 1964, the British Army claimed that it favored “an initial nonnuclear delay capability of perhaps a few days followed if necessary by the selective use of up to 200 tactical nuclear weapons per corps as a ‘link’ if necessary to general war.”⁸⁵ Table II summarizes the differences between the atomic air interdiction campaign and the nuclear “killing zone” doctrine.

Table II:
Changes in Tactical Nuclear Doctrine
1958-1971

Concept	Atomic Air Interdiction (1958-1964)	Nuclear “Killing Zones” (1964-1971)
Primary Nuclear Vector	Canberra Bombers (5 Squadrons)	Rockets and Artillery (Corporal, Honest John and 8" guns -- five regiments total)
Secondary Nuclear Vector	Rockets and Artillery	Canberra Bombers
Primary Nuclear Target	Enemy atomic weapons, logistics hubs and air bases	Dense concentrations of enemy tanks and infantry
Nuclear Release	Immediate	After covering force battle (up to three days into hostilities)
Conventional Tactics	Defend river lines (Weser, then Rhine)	Canalize and pressurize enemy forces in nuclear “killing zones”
Theory of Victory	Enemy attack will grind to a halt after their forward units are isolated from re-supply and reinforcement by the interdiction campaign	Densely concentrated enemy breakthrough forces can be destroyed through the selective use of tactical nuclear weapons

Although many elements of the new doctrine were present in the *Spearpoint* Exercise of 1961, the old doctrine ostensibly remained in vogue in 1964, when the British Army discussed its new operational concept with its American counterpart, elements of the “killing zones” doctrine were still being codified five years later. Only in 1969 did the British Army’s publication of “Guidance on the Conduct of Operations of a Battle Group in North West Europe,” define the tactics and strategy underlying the new doctrine as “canalizing or compressing the enemy into killing zones and using obstacles and conventional fire to hold him there long enough to destroy him with nuclear weapons.”⁸⁶

Thus, the entire period of 1961 to 1969 can be viewed as a lengthy transformation between two doctrines.

This transition from one doctrine to another is symptomatic of the decentralized process by which one concept of operations came to be discredited by a critical mass of officers, while another became increasingly attractive. Rather than the highest echelons imposing a fully developed doctrine, British officers discussed doctrinal concepts informally, experimented with novel tactics in combat formations (Carver's brigade) and tested new ideas in war games (*Spearpoint*). Gradually the new operational concept gained adherents and became codified in the instructional military publications. Nearly six years had elapsed (1958 to 1964) from the first diagnoses of the problems with the atomic interdiction plan to the adoption of the new "killing zone" doctrine by the BAOR. Another five would pass (1964 to 1969) until the "killing zone" doctrine became fully codified in Army tactical manuals. Although non-military civil servants influenced this process through studies communicated by the JIC and the Defence Science Advisor, the elaboration of the new doctrine occurred entirely within the Army.

V. Tank Attrition Through ATGMs, 1970-1981

By the time the nuclear "killing zones" concept was codified in publications, pressure was accumulating for another revision of British Army doctrine. A growing conviction that the use of tactical nuclear weapons, even if employed selectively, would be detrimental to British forces, and the concurrent development of new anti-tank guided missiles (ATGM), led the Army to reconsider its concept of how to conduct military operations in Central Europe. The impetus for change came from within the Army's ranks themselves, where enterprising officers identified technical shortcomings with

existing doctrines and proposed tactical solutions to them. Under the emerging doctrines, the British 1st Corps planned to defend its sector exclusively with conventional weapons, combined with the defensive firepower of tanks and ATGMs to inflict disproportionate attrition on an invader. Only when the Warsaw Pact overcame the British Corps' conventional defense would tactical nuclear weapons be used, in a limited manner, to communicate the risk of escalation to the Soviet Union.

Although the nuclear “killing zones” concept allowed for a brief period of non-nuclear operations, that doctrine relied on tactical nuclear weapons to halt Soviet forces once the battle reached the main British defensive position. However, it was considered implausible by the mid-1960s that Soviet armed forces would not respond in kind to tactical nuclear weapons. Published statements of Soviet strategy and reports of Warsaw Pact exercises indicated that Soviet military commanders intended to use tactical nuclear weapons on a massive scale should NATO initiate the process.⁸⁷ The prospect of the Soviet Union retaliating in kind prompted some British officers to pose the question whether British troops would be better off if both sides employed tactical nuclear weapons or if nobody used them at all. In the late 1950s, Hart and Carver concluded that the defender would not necessarily benefit from using tactical nuclear weapons. But, the nuclear “killing zone” concept seemed based on a belief that the employment of tactical nuclear weapons would strengthen the defense. By late 1965, Army studies began to indicate that if employed by both sides, tactical nuclear weapons would accelerate the attrition of conventional military forces, reducing the time that an inferior defender could adequately man a defensive front.⁸⁸ On a nuclear battlefield the British 1st Corps' tank force would diminish 50 percent faster than in a purely conventional combat.

The British Army moved from 1965 to 1970 to the view that a nuclear battlefield would disadvantage defending NATO forces against Warsaw Pact attackers, prompting British military commanders to examine ways to defend conventionally for longer.⁸⁹ This was not easy considering the Warsaw Pact's conventional superiority and the limited forces the British 1st Corps possessed. Having entered service in the mid-1950s, but now in its second-generation, the ATGM appeared to offer improved prospects of halting a Warsaw Pact armored offensive.⁹⁰ ATGMs were comparatively light, could hit tanks at ranges in excess of 3,000 meters and could penetrate even the thickest steel armored plate.⁹¹ Because they were comparatively inexpensive and could be carried on light vehicles, ATGMs revitalized the defensive power of infantry vis-à-vis armored vehicles.⁹²

Despite their promise, the British Army invested few resources in ATGMs while the high command believed that the nuclear "killing zone" doctrine offered the best response to a Warsaw Pact tank offensive.⁹³ However, with the retirement of Field Marshal Richard Hull as Chief of the General Staff in 1965, control of the Army passed to a generation of officers less enamored with tactical nuclear warfare.⁹⁴ In 1965, an Army study highlighted, for the first time, the potential strategic impact of ATGMs. According to this study, the British 1st Corps could now rely on ATGMs that are "not expensive compared to the tanks they destroy" to halt the Warsaw Pact's numerically superior tank forces.⁹⁵ Several years of experimentation and debate were still necessary for the Army to exchange dependence on tactical nuclear weapons for the prospect of conventionally inflicting disproportionate attrition.

An important step occurred when Carver protégé Brigadier Edwin Bramall was assigned the 5th Air Portable Brigade, an airmobile reserve designed to reinforce NATO's

Central or Northern Fronts. Until then, the high command considered the lightly equipped brigade incapable of fighting Soviet tanks. Enthusiastic about the potential of ATGMs and transport helicopters, Bramall lobbied for an opportunity to prove that new technologies and appropriate tactics would enable even non-mechanized infantry to halt enemy tank attacks.

In August 1968, Bramall was permitted to organize *Exercise Iron Duke*. Observed by much of the Army's leadership, the 5th Air Portable Brigade faced 60 tanks on the Army's largest armored training ground in the United Kingdom, the Salisbury Plain.⁹⁶ The overall objective was to test whether light infantry, with ATGMs, could block an armored offensive. In the event, Bramall's force took advantage of natural chokepoints and long-range vistas to wreak havoc on the opposition's tanks. At the exercise's climax, he redeployed forces by helicopter to block a tank attack delivered from an unexpected direction.⁹⁷ Applying the most realistic criteria possible, *Iron Duke* was judged a success. Following this, Bramall's superior officer, Major-General Terence McMeekin, tasked Bramall and a fellow brigadier with examining how infantry could fight tanks in NATO's Central Region.

By March 1969 Bramall and his collaborator presented a booklet entitled "The Killing of Armour," to the Army's Strategic Command. Impressed, but skeptical, Strategic Command directed Bramall to outline the weapons and tactics a non-mechanized infantry division should use against a Soviet aggressor possessing tanks, armored personnel carriers and artillery. Completed in December 1969, the new study, "Formation Tactics," broke with the traditional disposition of combat brigades, based on two battalions forward and one in reserve, to advocate a concept centered around a battle composed of two distinct phases.

According to Bramall, a non-mechanized infantry division with limited tank support, employing correct tactics, could defend up to 16-kilometers (10 miles) of front rather than the 10 (6 miles) that infantry divisions were deemed capable of defending in the early 1950s. During the first phase, the division's armored reconnaissance regiment, a motorized infantry battalion and a small detachment of tanks, would fight the "covering battle" to delay the enemy for 24 to 36 hours and identify the main axes of their advance. When the covering force ascertained where the enemy would deliver its main blow, British infantry equipped with ATGMs and the division's few supporting tanks would deploy themselves to cover gaps between obstacles such as buildings, woods or rivers where enemy tanks would have to pass. Meanwhile, engineers would sow minefields to canalize the enemy into the gaps and, within them, to prevent enemy tanks from pushing through. For Bramall, a division so arrayed could dissipate the tank strength of a superior enemy, preventing its rapid forward movement.⁹⁸

While new concepts based on the defensive firepower of ATGMs offered a way to combat enemy tanks, the death knell for the doctrine of nuclear "killing zones" was sounded by Michael Carver's promotion in 1971 to Chief of the General Staff. Carver quickly imposed his view that, "There is no way that the West can gain by starting to use tactical nuclear weapons because the Russians have more forces and more forces with nuclear weapons is even worse than more forces with conventional weapons."⁹⁹ Carver's directive to the BAOR was to fight conventionally until NATO's front collapsed. Although NATO and British forces should retain tactical nuclear weapons, they should no longer use them in a tactical role. The functions of tactical nuclear weapons were now to deter the Soviet Army from using them first and to signal NATO's willingness to escalate to strategic nuclear warfare.

Thus, 1971 marks the BAOR's shift from doctrines dependent on tactical nuclear weapons to one premised on the use of ATGMs, tanks, and other conventional weapons to inflict disproportionate attrition on enemy armored forces. However, an Army-wide consensus on the need to fight conventionally did not automatically translate into an agreement on how this should be done. Between 1971 and 1981, three distinct concepts for conventional operations, summarized in Table III below, succeeded one another.

Table III:			
British Operational Concepts, 1970-1981			
Concept	Mobile Linear Defense (1971-1973)	Killing Areas Mobile Defense (1973-1976)	Killing Areas Forward Defense (1976-1981)
Deployment	Two Divisions Forward One in Rear	Two Divisions Forward One in Rear	Four Divisions Forward
Warning Assumptions	Two Weeks	48 hours	48 hours
Employment Of Armour	Separate from infantry in counter-attack groups	Mixed with infantry, fighting "hull-down" in anti-tank role	Mixed with infantry, fighting "hull-down" in anti-tank role
Prognosis	British forces could hold for 6 days if reinforced (14 day warning), 2 days if not	British forces could hold 5 days with only 48 hours warning	British forces could " <i>hold for a long week</i> " with 48 hours warning
Theory of Victory	ATGMs would slow enemy attack, Warsaw Pact logistics would collapse after several days	Enemy could be canalized into anti-tank "killing areas" where ATGMs, mines and hull-down tanks would inflict heavy losses	A higher density of British forces in the main battle area would permit a better exchange ratio, of 4 to 5 enemy tanks for every British tank

The new doctrine, known as the “mobile linear battle,” was predicated on the assumptions that ATGMs would permit infantry to defend themselves against tanks and that the Warsaw Pact’s logistics system would collapse if Soviet forces were forced to fight a slowly moving battle of attrition. In the mobile linear battle, the British 1st Corps would be divided into two echelons that would fight sequentially. The forward echelon would begin its battle near the border with East Germany, where British infantry would attempt to maintain an unbroken line, relying heavily on ATGMs and British armored battle groups.¹⁰⁰ When enemy pressure became unbearable, the first echelon would retreat through the second, comprised of one division. Being smaller than the first, the second would attempt to delay enemy forces so that the first could reestablish a defensive position further to the rear.¹⁰¹ In this fashion, the British 1st Corps viewed its role as destroying disproportionate numbers of Soviet tanks and slowing the momentum of enemy operations in a sequence of linear defensive engagements. Because of Warsaw Pact divisions’ limited logistics means, the British Army calculated that the enemy would run out of supplies if forced to fight an intensive battle of attrition rather than a blitzkrieg.¹⁰²

Although the mobile linear defense represented the British Army’s internal consensus as to the best recipe for employing new technologies and using the British 1st Corps’ limited means to defend the British sector in West Germany, reflection and new intelligence on enemy capabilities led the BAOR to further modify its plans. Almost as soon as they knew the details, many officers doubted whether disengaging an echelon of British forces and withdrawing it through another echelon would work. Assessments of Soviet doctrine and war plans provided little reason for confidence. In 1973, British military intelligence claimed that a Soviet offensive would begin “by a rapid general

move forward to pin NATO forces, developing in selected areas into deep and comparatively narrow tank penetrations, paying little heed to losses.... Once penetration of NATO's main positions had been achieved, the Soviets could operate with little regard to logistic support."¹⁰³ In this way, Warsaw Pact forces would negate many advantages of the mobile linear defense. Another problem lay in the dependence of the mobile linear defense on reinforcements from the United Kingdom. Although all BAOR war plans provided for reinforcements from the United Kingdom, the mobile linear defense was dependent on their arriving before hostilities began.¹⁰⁴ Without 56,000 additional troops, doubling the size of the BAOR, neither of the two echelons would be strong enough to hold their fronts.

According to British Army documents, the British 1st Corps could probably hold for six days of full-scale conventional warfare if reinforced before hostilities began. Should the Warsaw Pact attack before the BAOR was brought to strength, the Army's leadership doubted that it could offer resistance for more than two, and effective reinforcement of the BAOR depended on at least two weeks of warning.¹⁰⁵ Intelligence raised the specter that the Warsaw Pact could attack NATO without providing the United Kingdom with sufficient warning to reinforce the BAOR.¹⁰⁶ Because the BAOR's ability to uncover Soviet war preparations relied on detecting an increase in Soviet divisional radio communications, the prospect of Warsaw Pact forces attacking under radio silence and advancing on pre-designated lines raised the specter of their achieving tactical surprise.¹⁰⁷

Responding to fears of a surprise attack, British commanders set out to devise a means of resisting a Warsaw Pact offensive if only 48 hours warning were available, which meant preparing to fight with or without reinforcements.¹⁰⁸ The new concept

largely resulted from the efforts of Brigadier Robin Carnegie, commander of the 11th Armored Brigade, and his Chief of Staff, Major Peter Inge. Their ideas were promoted by Bramall, who was promoted to Major-General and given command of the BAOR's 1st Armoured Division. Bramall developed the concept at the division level and promoted it to higher echelons of authority.¹⁰⁹

When Bramall assumed command of the 1st Armoured Division in January 1972, he sensed faults in the “mobile linear” battle concept, including the reliance on reinforcements, the overly linear nature of the war plan and poor use of tanks. To rectify these, he drew on the anti-tank tactics he had developed in 1968 and 1969 and concepts for “mobile defense in depth” developed by Carnegie and Inge. Bramall advocated drawing enemy armored forces into anti-tank “killing areas” where minefields, infantry equipped with ATGMs and tanks fighting from hull-down defensive positions would inflict massive casualties. Bramall's concept differed from the mobile linear defense in several respects. His emphasis on mobile anti-tank “killing areas” discarded the “mobile linear” battle's reliance on holding continuous lines. Rather than attempting to defend a linear position the breadth of the British sector (65 miles), British forces would now concentrate their efforts along the few routes that Soviet armored spearheads intended to take. In this way, Bramall planned to exploit what he perceived to be a defect in Soviet offensive operations—a reliance on small numbers of narrow, fast moving tank thrusts.¹¹⁰

To execute his concept, Bramall planned to employ his division's 144 tanks defensively, interspersed with infantry and firing from camouflaged and hull-down positions.¹¹¹ Although a rupture from existing armored doctrine, which envisioned using tanks in local counterattacks, Bramall's concept harkened back to traditional British views on the use of tanks.¹¹² For most British tank officers, the way to use a tank consisted of

locating a camouflaged position where the tank could be stationed, exposing the top of the turret, and snipe at enemy tanks at ranges up to 1500 meters.¹¹³

At the level of British 1st Corps, Bramall's concept of operations called for two divisions to be deployed forward, with one in reserve. Each of the forward divisions (two brigades each) would employ one brigade conducting "aggressive delaying actions" beginning at the border with East Germany, and one brigade mounting a "mobile defense" to the rear. Bramall envisioned the forward brigades employing small groupings of ATGMs and tanks to fight a running battle with advancing Soviet armor, ambushing enemy forces from the back edges of villages and woods. The actions of the delaying brigade would permit divisional commanders to ascertain which axes enemy troops were using. Once known, the "mobile defense" brigades would scramble to establish anti-tank killing areas across their route.¹¹⁴ If the forward two divisions were breached, the rearward division would be used to counterattack the enemy penetration.¹¹⁵ Bramall calculated that this doctrine would permit British forces to resist an offensive for approximately five days, even if the BAOR were given only 48 hours warning and received no reinforcements before the beginning of hostilities.¹¹⁶ The new concept of operations based on "killing areas" and "mobile defense" was gradually applied to the whole of the BAOR.¹¹⁷

Although the twin concepts of anti-tank "killing areas" and "mobile defense" would dominate British Army thinking until the 1980s, both the BAOR's structure and plans underwent one more significant evolution in the 1970s. British planners soon calculated that the two divisions assigned to the forward defense under the first version of the "killing areas" concept could probably not achieve the density of forces needed to resist a Soviet attack and armored officers doubted the rationality of holding a division in

reserve for a counter-attack. They questioned that if tanks are most effective in the defensive, why withhold a third of available forces for a counter-attack?¹¹⁸ The solutions adopted entailed dedicating all British 1st Corps' divisions to the "aggressive delaying" and "mobile defense" actions, leaving virtually none in reserve. By 1975, this re-distribution of forces from the rear to the forward area in the British 1st Corps was widely accepted.¹¹⁹

To better execute the revised "killing areas" doctrine, the British Army reorganized the 1st Corps between September 1976 and March 1977, redistributing troops into four smaller divisions. Permanent brigades were replaced by "task forces," consisting of headquarters that could command any grouping of units from the division. The 1976-1977 reorganization is detailed in Table IV.¹²⁰

Table IV:	
The Organization of British 1st Corps	
<u>Pre-1976 Structure</u>	<u>Structure After 1976-1977</u>
1 st Division	1 st Armoured Division
• 7 th Armoured Brigade	• TF Alpha
• 11 th Armoured Brigade	• TF Bravo
2 nd Division	2 nd Armoured Division
• 4 th Armoured Brigade	• TF Charlie
• 12 th Mechanized Brigade	• TF Delta
4 th Division	3 rd Armoured Division
• 6 th Armoured Brigade	• TF Echo
• 20 th Armoured Brigade	• TF Foxtrot
	4 th Armoured Division
	• TF Golf
	• TF Hotel

The British 1st Corps' new structure was calculated to better enable it to mount a powerful defense of the British sector in West Germany. Smaller divisions would permit divisional commanders to focus on protecting narrower sectors, while flexible task forces

would enable them to tailor the composition of their units to meet unforeseen eventualities.

Although playing no role in the further doctrinal changes of 1975 to 1977, Bramall defended the British 1st Corps' revised concept of operations after being named Chief of the General Staff in 1979. In a 1982 speech to the Royal United Services Institute, he likened the BAOR's British doctrine to the battle plan that had permitted the British 8th Army, under Montgomery, to halt the German-Italian advance into Egypt in 1942.¹²¹ Revealing the evolutionary processes of British Army doctrine development, the experiences of World War II continued to shape the Royal Armoured Corps vision of warfare. In personal terms, Bramall benefited from Carver's patronage throughout his career, while Carver, in turn, had been a protégé of Montgomery.

The theory behind British doctrine was equally constant, based on the assumption that disproportionate attrition would permit British forces to resist the advance of numerically superior armies.¹²² At a strategic level, the purpose of attrition was to buy time for diplomats to arrange a ceasefire, American or French reinforcements to arrive or the threat of tactical nuclear escalation to be brandished.¹²³ Although the British battle plan had undergone significant modifications, the objectives remained virtually identical to those Carver had articulated to his brigade in 1960 and imposed as Chief of the General Staff beginning in 1971.¹²⁴ While evolving through three distinct phases during the 1970s, the fundamental operational objective remained the same – to prevent an enemy breakthrough as long as possible using conventional means.

A mixture of continuity and change in British Army doctrine marked the 1970s. The major transformation marking the beginning of the decade saw the British Army reject the early use of tactical nuclear weapons. The next ten years saw the Army adopt

three distinct concepts for how conventional forces, using ATGMs, could resist a Warsaw Pact assault. Although each individual change was an incremental development, they were collectively precocious when compared with foreign counterparts. The United States Army did not modify its doctrine to take advantage of ATGMs to a similar extent until 1976, after the 1973 Arab-Israeli War dramatically proved their utility.¹²⁵ The Americans and, more particularly, the French continued to believe in the value of tactical nuclear weapons even while efforts were made by both to raise the nuclear threshold. Finally, the replacement of brigades with task force headquarters with no permanently assigned forces was an original, although not wholly successful, attempt to improve the tactical flexibility of British forces.

Although innovative in its reappraisal of weaponry, the development of British Army doctrine demonstrates remarkable continuity. Second World War-era beliefs about tank use were never rigorously reappraised, nor were the slow-moving tempo of warfare imagined by British officers and their confidence in engaging the enemy on prepared battlefields. Some new developments were incremental improvements on more recent doctrines, such as the concept of anti-tank “killing areas,” which differs from the earlier nuclear “killing zones” in that ATGMs, anti-tank minefields and hull-down tanks replaced tactical nuclear weapons as the means to destroy tank concentrations. Thus, British developments in the 1970s were the product of a continual evolution from and, at times, return to the lessons of the Second World War.

The process by which doctrine emerged involved multiple echelons of the Army's hierarchy and frequently occurred from the bottom up. Reflections and experiments by brigade commanders underlay two of the three operational concepts, while changes in the

Army's top leadership permitted all three. Political leaders never once intervened in this process, which remained too arcane and technical for them to influence.

VI. Victory by Maneuver Warfare, 1981-1989

From 1981 until the end of the Cold War, the British Army in West Germany underwent another wave of doctrinal change, as emphasis shifted from inflicting attrition through comparatively static engagements to employing maneuvering armored formations. Three influences shaped the British Army's evolving doctrine: 1) A better understanding of Soviet military practice led British officers to conclude that Soviet operations in the British rear could disrupt a static British defense; 2) British commanders came to appreciate that the rigidity of Soviet military operations opened the possibility of seizing the initiative through a well-timed counterattack; and 3) a renewed interest in military history, particularly the German Army's defensive battles in the Second World War, promoted a philosophy that a weak-defending force could defeat a more powerful attacker through operational maneuvers and tactical skill. As with previous doctrinal developments, the drive for change came from field commanders. The distinguishing feature of the British Army's adoption of maneuver warfare was the extent to which it was motivated by a better appreciation of Soviet doctrine.

The Army's embrace of maneuver warfare proceeded through three phases. From 1981 to 1983, the new doctrine was introduced at the level of British 1st Corps, involving restructuring the corps' divisions, amending its battle plan and preparing officers and soldiers to execute the new concept. From 1983 to 1985, the commander of the BAOR / NORTHAG, General Nigel Bagnall, imposed a fully integrated battle plan on the four national corps of NORTHAG. Following his replacement by General Martin Farndale,

the aims and timing of the counterattack in the NORTHAG battle plan expanded. From 1985 to 1988, the Army Group's battle plan was based on an early, ambitious counter-offensive into East Germany.

These changes in British Army doctrine in the 1980s were rooted in an improved understanding of the tactics and strategy of the Soviet Army. In the United Kingdom, the armed forces and the Joint Intelligence Committee had long produced competent analyses of Soviet capabilities, intentions and strategy.¹²⁶ However, their "Secret" and "Top Secret" designations prevented their serving as the basis for a broad doctrinal debate. Consequently, Army doctrine, developing without consideration of Soviet military doctrine, was influenced primarily by judgments on the value of new technologies, perceptions of "best military practices," and a rough understanding of enemy military capabilities, measured in terms of quantities of military equipment and manpower.

The creation of the Soviet Studies Centre at the Royal Military College (Sandhurst) in 1971 put Soviet military doctrine at the heart of reflections on British military doctrine. Staffed mainly by academic researchers, the Sandhurst Soviet Studies Centre concentrated much of the United Kingdom's expertise on the Soviet armed forces in a single research institute, where debate and discussion improved analysis. Using unclassified sources, researchers delivered lectures throughout the British armed forces' educational establishments and published their findings in journals, such as the *Journal of the Royal United Services Institute*, *Jane's International Defense Review* and the United States' *Military Review*. Because of the public nature of its work, the Centre's analyses reached a larger audience than the classified studies. Although it would be an exaggeration to claim that their articles enjoyed a large readership among the officer corps, the Centre's impact derived from the influence its work had on officers holding

important commands and the fact that information tended to “diffuse or trickle down from the officers who read the articles to their colleagues.”¹²⁷

Overall, four themes emerged for how the Soviets intended to defeat NATO’s conventional defenses. First, the Soviets focused on using a fast operational tempo to overwhelm NATO forces, even if this meant accruing greater casualties.¹²⁸ Secondly, they intended to conduct operations simultaneously throughout the BAOR sector, using airborne and airmobile (helicopter borne) forces, commandos and armored raiding forces.¹²⁹ Although Western armed forces had developed many of the same types of forces, the Soviet belief in the necessity of attacking deep into the enemy’s rear, regardless of casualties, differed from Western conceptions.¹³⁰ A third lesson was that the Soviet Army thought about warfare in terms of an intermediate level between tactics and strategy, referred to as the “operational level of war.” This meant that they thought in terms of larger forces and geographic terms than the British.¹³¹

The Soviet Studies Centre also tracked new developments in Soviet doctrine and force structure. For example, in the early 1980s, the Centre’s Christopher Donnelly revealed the Soviet Army’s development of a concept for extremely rapid victory in Western Europe centered on Operational Maneuver Groups (OMG). Consisting of reinforced tank divisions, OMGs would advance deep into the rear of NATO forces to disrupt their command and control facilities and establish blocking positions to prevent them from reconstituting a defense further to the rear.¹³²

Taken collectively, the new insights into Soviet military doctrine clarified the problems facing British war planners. The Army’s concept of anti-tank “killing areas” dedicated all four of the British 1st Corps’ divisions to the main defensive battle, leaving the 1st Corps with no way of dealing with a Soviet force behind the battle area.

Furthermore, the importance the Soviets attached to tempo and operational maneuver led British officers to conclude that a Soviet offensive would be “much larger, faster and more brutal” than expected.¹³³

The Soviet Studies Centre also educated British officers about deficiencies in the Soviet Army and its doctrine -- rigid central planning, a lack of individual initiative at lower echelons of the chain of command, archaic staff procedures and stereotyped training -- deficiencies that could enable NATO to disrupt a Warsaw Pact offensive.¹³⁴ British officers came to appreciate that Soviet forces would attack aggressively and intelligently as long as they were able to adhere to detailed plans communicated from above, but lower level units would have difficulty adjusting to unforeseen eventualities if cut off from higher level headquarters. Even if the Soviet chain-of-command functioned flawlessly from a communications perspective, offensive operations could suffer from substantial command and control problems. Drawing on published Soviet military debates, Donnelly argued that Soviet staff procedures, communications facilities and professional preparation were ill suited for the tempo envisioned.¹³⁵ Finally, Soviet Studies Centre scholars contrasted the operational excellence of the Soviet Army with poor lower level tactics and training.¹³⁶ Because of comparative inexperience and the small size of their staffs (four officers), Soviet battalions had trouble employing combined-arms tactics.¹³⁷ They also tended to respond poorly to the stress and uncertainty engendered by battle or even large-scale exercises.¹³⁸

Besides the Soviet Studies Centre, two complementary intellectual influences also marked the evolution of British Army doctrine in the 1980s. One of these was a British military maverick, retired Brigadier Richard Simpkin of the Royal Tank Regiment, whose books on Western and Soviet philosophies of armored warfare and tank design never

failed to criticize the British Army, as “addicted to attrition.” Implying that British officers lacked intelligence, Simpkin criticized the Army’s tank development policy as costly and counterproductive.¹³⁹ In 1985, in *Race to the Swift: Thoughts on Twenty-First Century Warfare*, which divided military theory into “attrition” and “maneuver” warfare, Simpkin argued that only “maneuver warfare” would permit NATO to ward off an offensive by numerically superior Warsaw Pact forces. Accordingly, NATO needed to constitute operational reserves and defend in far greater depth than planned.¹⁴⁰ However, Simpkin highlighted similar defects with Soviet planning and predicted that a Soviet attack might collapse under the weight of its own complexity.¹⁴¹ Simpkin’s writing style, which described warfare in terms of physics, appealed only to a small proportion of British officers—a fact probably reinforced by his statements about the British military establishment.¹⁴² But Simpkin’s writings appealed to General (later Field Marshal) Bagnall who became the driving force behind British military doctrine during the 1980s.

The third intellectual influence on British military doctrine emanated from West Germany. The Second World War-era experiences of the German Army provided an intriguing model for British officers preoccupied with countering a Soviet armored offensive, as the German Army repeatedly defeated attacks by overwhelming numbers of Soviet forces, even when they possessed nothing like the force-to-space ratio considered necessary to mount an effective defense. To British officers in the 1980s, the secret behind the last German defensive victories on the Eastern Front was the fact that they not only defended, but also maneuvered, abandoning territory, and counterattacked when Soviet movements provided an opening.¹⁴³

During the early 1980s, West German General Ferdinand von Senger und Etterlin, NATO’s Commander in Chief of the Central Region (CINCENT), vocally espoused the

relevance of these World War II lessons for NATO's present environment. He argued that NATO needed centrally controlled reserve forces to counterattack, even if front line forces suffered as a consequence. For von Senger und Etterlin, these reserves would take the form of armored forces, as in World War II, or could be created by amalgamating NATO's scattered helicopter reserves into an airmobile reserve of perhaps eight divisions and 1,950 helicopters.¹⁴⁴ Although his ideas were controversial with West German political leaders, von Senger und Etterlin forged a friendship with Bagnall.¹⁴⁵ Bagnall, in turn, popularized German thinking on maneuver warfare within the British Army to the extent that it became fashionable for British officers to discuss large-scale conventional warfare using terms such as *auftragstaktik* (mission-oriented tactics), *schwerpunkt* (point of emphasis or center of gravity) and *beweglichkeit* (mobility).¹⁴⁶

The central tenets of the scholarship and arguments advanced by the Soviet Studies Centre, Brigadier Simpkin and West Germans such as General von Senger und Etterlin on British Army thinking are summarized in Table V.

Table V:

Intellectual Influences On British Army Doctrine, 1981-1990

Sandhurst Soviet Studies Centre	Brigadier Richard Simpkin	General Ferdinand von Senger und Etterlin
<ul style="list-style-type: none"> ● Soviet offensives will be deep, massive and conducted at a fast tempo ● Soviet soldiers lack initiative, the army has command-and-control problems and planning is rigid ● The Soviet Army is vulnerable to disruption should it lose the initiative 	<ul style="list-style-type: none"> ● Successful defense is only possible through maneuver warfare--taking calculated risks to exploit enemy errors ● Maneuver depends on the interaction of “mass, time and space” ● Soviet Army incapable of getting the most out of its doctrine because of poor quality officers and NCOs ● Soviet “deep battle” theory “unmanageably complex” 	<ul style="list-style-type: none"> ● NATO forces need strong operational reserves to counter Soviet Operational Maneuver Groups (OMGs) and encirclement operations ● Armored forces are best employed <i>en masse</i> in a counterattack role ● NATO helicopter forces should be concentrated into a single reserve force of 1,950 helicopters in eight divisions

Intellectual advocacy cannot alone change how an Army plans to fight.¹⁴⁷ For a change in doctrine to occur, lessons had to be internalized and a new concept of operations crafted. In this context, the change from the attritional doctrines of the 1970s to the maneuver warfare doctrines of the 1980s is linked to the promotion of General Nigel Bagnall to positions where he shaped the Army's plans to fight a third world war. Throughout the 1980s, Bagnall held *every position* most critical to the elaboration of British doctrine, culminating in 1988 with his appointment to Chief of the Defense Staff, the professional head of the British armed forces.¹⁴⁸ Having also commanded an armored division in West Germany from 1975 until 1978, Bagnall was well placed to know the strengths and weaknesses of the British Army in West Germany and successively reform every aspect of its training and doctrine.¹⁴⁹

Fellow officers considered Bagnall atypical both in the British Army and its high command. He was an intellectual—who wrote histories of the Punic Wars and the Peloponnesian War after his retirement—in an army that was un-intellectual.¹⁵⁰ He was also openly critical of the British Army as an institution. For Kiszely, “He [Bagnall] certainly didn’t tolerate fools and made no effort to pretend otherwise.”¹⁵¹ For Bagnall, the British Army’s heritage of limited and colonial wars constituted an obstacle to its achieving the intellectual excellence needed for large-scale warfare in Central Europe.¹⁵² To realize their potential, Bagnall believed, the mentality and education of British officers needed to be transformed.

Despite his belief in the intellectual mediocrity of the British officer corps and his affinity for informality in dress and protocol, Bagnall was not a maverick struggling against the system.¹⁵³ His career benefited repeatedly from the support of superiors, who sympathized with his ideas or recognized his skills. Bramall, who served as Chief of the General Staff from 1979, proved a solid supporter of Bagnall despite the fact that Bagnall significantly revised doctrinal concepts that Bramall had developed.¹⁵⁴

Bagnall believed that the British 1st Corps’ concept of operations and the mentality of the officer corps needed to be changed. From the moment he assumed control of the Corps in 1981, he reintroduced brigades, annulling the “task force” organization introduced in 1976 and 1977. He then moved to implement a wide-ranging series of reforms. Almost immediately, he created an institutional motor, the Tactical Doctrine Committee, to develop and disseminate his ideas. He invited subordinate officers sharing compatible views to meet regularly to discuss British Army doctrine and war plans.¹⁵⁵ Breaking with tradition, Bagnall insisted on informality and called upon junior officers to give their opinions before their superiors.¹⁵⁶

From the moment he assumed command, Bagnall tried to imbue the British 1st Corps with a maneuver warfare philosophy.¹⁵⁷ He also emphasized the need for commanders to give succinct orders that “leave the subordinate commander as much freedom of execution as possible and should contain only those constraints essential to cooperation with other units.”¹⁵⁸ He returned repeatedly to the need for the divisions and brigades under his command to maneuver in depth, abandoning West German territory and counterattacking forwards as circumstances dictated.

In 1982, Bagnall wrote *Battle Notes* for his subordinate commanders, in which he laid out his concept of “maneuver warfare,” later defined as, “a warfighting philosophy which seeks to defeat the enemy by shattering his moral and physical cohesion—his ability to fight as an effective whole—rather than destroy him physically through incremental attrition.”¹⁵⁹ Bagnall reiterated his call for a different type of leadership, based on decentralized authority and rapid decision-making. Although *Battle Notes* presented a rupture with British Army tactics and practice and affected over a third of its manpower, Bagnall published this document without approval from higher authorities.¹⁶⁰

In *Battle Notes*, Bagnall developed a new battle plan for the British 1st Corps. His plan differed from its predecessor in that it foresaw fighting in greater depth and led to the reestablishment of an operational reserve within the corps. It differed from all preceding doctrines in that the counterattack of the reserve division represented the culminating point of the corps’ defensive battle, rather than an effort to reestablish a defensive line that had been penetrated. In this context, the entire purpose of the Corps’ battle was to provide the preconditions necessary for an armored counter-stroke to disrupt a Soviet offensive.

In Bagnall's eyes, the battle would occur in three phases. First would come the covering force battle, during which limited reconnaissance and delaying forces would slow the enemy's offensive and identify the geographic axes they intended to use. Initially, Bagnall planned for a strong covering force, consisting of two armored reconnaissance battalions to screen enemy forces and two brigades to fight delaying actions. With such heavy forces, he hoped that the covering force could buy 24 hours for the Corps to prepare for the main defensive battle and inflict significant losses on the enemy in the process.¹⁶¹ Later, Bagnall reduced the covering force to two reconnaissance battalions because the British 1st Corps lacked the resources to commit over two brigades or 20 percent of its combat power to the covering force.¹⁶²

After the covering force battle, Warsaw Pact forces would reach the British 1st Corps' strongest defensive positions, where the main defensive battle would begin. Unlike the 1970s, rather than defending a line extending across his corps' entire sector, he planned for the enemy to penetrate the main battle position. Drawing on the tactical reforms of the early to mid-1970s, Bagnall thought that a combination of mobile and positional defenses, based on tanks and ATGMs, should defend "vital ground."¹⁶³ At first Bagnall planned to employ four of nine brigades in the main defensive battle, and later, when he withdrew the two brigades from the covering force battle, he reinforced the force destined for the main defensive battle to six brigades (two divisions) out of nine (three divisions).

In the third, final phase of Bagnall's war plan, once enemy forces penetrated the British 1st Corps' main defensive position, the Corps commander would launch its reserve division in a counter-stroke against narrow Warsaw Pact columns that emerged from the battle.¹⁶⁴ At minimum, it was calculated that the counter-stroke could destroy a Soviet

Operational Maneuver Group (OMG) operating in the rear of the main defensive position, but it was hoped that a well-delivered counter-stroke could end the offensive operations of the first Soviet echelon.¹⁶⁵

To achieve the operational tempo needed for surprise, Bagnall planned to abandon traditional British tank tactics, which emphasized halts and long-range gunnery.¹⁶⁶ He argued that “The detailed tactics [of the counterstroke] will depend on the situation, but there should be no stopping unless it is unavoidable. Once in firm range, fire should be opened while still on the move and the momentum of the assault maintained until the enemy’s penetration has been broken through.”¹⁶⁷ Through speed and surprise, the British counter-stroke would seize the initiative from the Soviets.

Bagnall’s reforms marked a substantial change in how the British Army intended to fight in Europe.¹⁶⁸ By 1983 when his term as commander of British 1st Corps ended, the British concept for fighting in Central Europe had changed to one combining an elastic defense-in-depth with a well-timed counter-attack to defeating a Soviet attack. Although new, Bagnall’s reforms were evolutionary within the broader context of the development of British Army doctrine. In its three-phase composition, with a covering battle, main battle and counter-stroke, Bagnall’s plan resembled the “mobile defense / killing-areas” concept of Major-General Bramall and Brigadier Carnegie in 1972. Similarities extended to deployment patterns in that Bagnall’s 1981 and Bramall’s 1972 plans that relied on two divisions forward, one in reserve. Moreover, Bagnall’s initial orders for the covering force battle, involving two brigades, were identical to the Carnegie concept. Even though there were notable differences, the two concepts were similar enough for Major-General Michael Tillotson to claim that the earlier doctrine

“helped to shape the new approach for the defence plan for the Northern Army Group sector under Field Marshal [then General] Sir Nigel Bagnall.”¹⁶⁹

In 1983 after being promoted to the command of the BAOR and NATO's Northern Army Group (NORTHAG), Bagnall struggled to apply his “maneuver warfare” approach to the multi-national army group. However, reforming NORTHAG posed a greater challenge. Until Bagnall's period of command, the four national army corps comprising NORTHAG had planned to fight separate battles, employing tactics and operational concepts adopted by their national armed forces. The Army Group had no resources of its own and only one of the 11 divisions assigned to NORTHAG was in reserve under the direct authority of the NORTHAG headquarters. Worse, Bagnall's predecessors since the mid-1970s had accepted the principle of “forward defense,” in which the Army Groups' strategy hinged on defeating a Warsaw Pact offensive virtually at the East German border.

In Bagnall's mind, the emphasis on independent “corps battles” and the lack of Army Group reserves were dangerous. Warsaw Pact forces could focus on delivering an overwhelming blow to a single corps or attack the juncture between two, where communications problems and dissimilar battle plans would make a NATO riposte unlikely.¹⁷⁰ British intelligence had hypothesized for at least a decade that a major Soviet thrust would be directed at the British and German corps juncture, while another might be aimed at the boundary between the British and Belgian corps.¹⁷¹ Avoiding specifics, Bagnall justified the need for an Army Group battle plan on the basis that “Soviet thrusts are not going to be obligingly directed at individual corps, but will spin over neighboring ones. And a cursory map study suggests that at least one major soviet thrust will be directed at an inter-corps boundary.”¹⁷²

A “forward defense” at the border between the two German states comprised Bagnall’s third concern. If deployed too close to the border, NATO soldiers would be subjected to a massive artillery barrage at the beginning of war, which Bagnall feared would incapacitate them before Soviet tanks reached their positions.¹⁷³ For NORTHAG to fight effectively, Bagnall promoted creating a reserve of corps strength (three divisions) under the authority of the Army Group headquarters and obtaining a shift from “forward defense” to a defense based on greater elasticity and depth. Bagnall then focused on crafting a war plan whereby NORTHAG would disrupt an enemy offensive by seizing the initiative early, most probably by an attack into East Germany.

Bagnall succeeded in constituting an Army Group reserve consisting of three divisions, two West German (the 3rd and 7th Panzer Divisions) and one British (3rd Armored Division). This meant depriving the German and British corps in NORTHAG of their own armored reserves; however, the reallocation of resources from the corps to the Army Group level gave Bagnall a powerful tool with which to intervene in battle, either by seizing the initiative with a counter-offensive or countering an overwhelming Soviet offensive against a single corps or along a boundary between two.¹⁷⁴

Although he began lobbying for defense in depth when he took command of NORTHAG, Bagnall knew that the issue would elicit opposition from West Germany.¹⁷⁵ Securing General von Senger und Etterlin’s support at an early date, Bagnall struggled to revise the “totally unrealistic orders” concerning forward defense. Bringing matters to a head at the *Winter Sale* Command Post Exercise of 1983, Bagnall, during a simulated Warsaw Pact offensive, authorized units to retreat, rather than engage the enemy at the border. After gaining time by abandoning territory, he used NORTHAG’s reserve to launch a powerful offensive at a weak point in the Soviet dispositions in East Germany.

Although this counter-stroke disrupted the simulated Soviet offensive and destroyed the Warsaw Pact's first echelon, Bagnall's tactics elicited sharp criticism from West Germany.¹⁷⁶ However, von Senger und Etterlin's support and the indifference of the British Government to West German complaints led to the acceptance of Bagnall's operational concept.¹⁷⁷

After *Winter Sale*, Bagnall's reflections became increasingly offensive in nature. To achieve maximum results, Bagnall planned to employ NORTHAG's reserve of three divisions to launch an offensive into East Germany, in the direction of Magdeburg, as quickly as possible after the start of hostilities, in the hope that the maneuver would eradicate the Soviet first echelon.¹⁷⁸ If successful, Bagnall's counter-stroke would create a pause in operations, as the Warsaw Pact's second echelon advanced to contact. Ideally, either the Soviets would consider stopping the war or diplomacy would intervene. At the least, Bagnall hoped that the operational pause would permit American and French troops to reinforce NORTHAG.

Astonishingly, this potentially most controversial element of Bagnall's doctrine—his plan to launch a counter-offensive into East Germany was never questioned or, perhaps, understood by the British government. If gains to be achieved by an early offensive were substantial, the risks of attacking East Germany were equally great. If hostilities were the result of an unwanted crisis, an attack in East Germany could catalyze further escalation. Moreover, in dedicating NORTHAG's reserve to an offensive, Bagnall deprived the Army Group of reserves needed to counter attacks into West Germany. Bagnall seems to have recognized the trade-offs inherent in his strategy, but privileged the militarily expedient solution to the detriment of alternatives that were superior from a political point of view.¹⁷⁹

After imposing his “maneuver warfare” plan on NORTHAG, in 1985 Bagnall was promoted to Chief of the General Staff. The vacancy he left as commander of the BAOR / NORTHAG was filled by his handpicked successor, General Martin Farnale. In their respective offices, Bagnall and Farnale persevered in instilling the British Army and NORTHAG with an ethos of maneuver warfare, the three most visible manifestations of which were 1) Bagnall’s creation of a Higher Command and Staff Course to teach planning and maneuver at the operational level; 2) the publication of *Design for Military Operations* in 1989 that codified Bagnall’s vision of military operations; and 3) Farnale’s continued development of battle plans for enacting “maneuver warfare” and an operational counter-stroke at the Army Group level.

As we have seen, Bagnall believed that the British officer corps lacked the intellectual background needed for fast-paced maneuver-intensive operations.¹⁸⁰ When appointed Chief of the General Staff, he reformed higher education within the British Army by presiding in 1988 over the foundation of the Higher Command and Staff College (HCSC), which provided an additional layer of military education to selected British officers (colonels and brigadiers) who had completed the Staff College. For In Bagnall's opinion, the Staff College’s time honored pedagogic techniques were ill-suited to conducting war on the scale that might occur in Central Europe. In Bagnall’s opinion, only the study of military history and theory could compensate for this dearth of relevant experience.¹⁸¹ In addition to emphasizing the study of history as a “form of vicarious experience,” Bagnall highlighted “re-discovered” military theoretical classics such as Clausewitz and Sun Tzu, and required students to read Simpkin’s *Race to the Swift*.¹⁸² Institutionally, it was easier for him to create a new structure, the HCSC, than attempt to reform the existing Staff College. The year after the HCSC’s foundation, the Army

published *Design for Military Operations*, which codified Bagnall's philosophy of military operations and his concept for how the British Army should fight in Central Europe. Sometimes lauded as the British Army's first formal doctrine, the *Design for Military Operations* codified both Bagnall's philosophy of military operations and his concept for how the British Army should fight in Central Europe.¹⁸³

Meanwhile, General Martin Farndale continued to amend NORTHAG's plan for war. Like Bagnall, Farndale had commanded a division in British 1st Corps before following Bagnall as commander of British 1st Corps and NORTHAG. Throughout, Farndale benefited from Bagnall's support and patronage, and, despite differences in personality, proved a spiritual successor to Bagnall. While he commanded NORTHAG, Farndale continued to amend British war plans, particularly when it came to envisioning how American (the 3rd Corps) or French (the FAR or the 3rd Corps) reinforcements could be utilized for an attack deep into the Warsaw Pact.¹⁸⁴

By the time the Berlin Wall fell in November 1989, Bagnall's effort to impose "maneuver warfare" on the British Army had born significant fruit. In the course of eight years he and his collaborators had orchestrated significant changes in British war plans at the level of the British 1st Corps and NORTHAG and had reformed British higher military education to produce a new type of officer, steeped in military history and theory. These accomplishments were crowned in 1989 by the erection of Bagnall's thoughts, philosophy and concept of operations into a formal military doctrine. His reforms represent a significant shift in British military practice. By his insistence that flexibility, quick decision-making and a fast tempo were the keys to military performance, Bagnall successfully challenged the existing British Army paradigm dating from the Second World War. His emphasis on the operational counter-stroke also

clashed with the established “attritional” mindset of the British Army. Perhaps most dramatically, Bagnall refocused British professional military education from small-scale interventions overseas to the North German Plain where masses of tanks, artillery and armored vehicles might clash.

Although an atypical product of the British officer corps, Bagnall was not a military maverick. He benefited from the support of his superiors who permitted him to reform doctrine and protected him when his ideas became a focus for West German criticism, as well as promoted him to positions where he could best implement his ideas. Bagnall, in turn, enlisted the aid, via the Tactical Doctrine Committee, of middle-ranking officers he considered to possess the most promising intellects.¹⁸⁵ Finally, he ensured the longevity of his reforms by lobbying for Farndale to succeed him by creating institutions (HCSC) and a formal doctrine to perpetuate his operational precepts.

Ironically, the final stages of Bagnall’s reforms were implemented in 1988 and 1989, as the Warsaw Pact crumbled and the Cold War ground to a close. The specifics of his doctrine became irrelevant when the likelihood of large-scale warfare with a numerically superior opponent faded. However, the institutional structures and intellectual tools—such as a formal British Army doctrine and the HCSC—have proven Bagnall’s most enduring legacy.

Although frequently hailed as a significant innovation in the British Army’s manner of making war, it is worth posing the question whether Bagnall’s reforms produced a battle plan that was “better” than its predecessors. Some British generals, including Bagnall’s successor as Chief of the General Staff, Field Marshal John Chapple, have expressed doubts whether it had been feasible to launch an offensive into East Germany considering the disparity of forces.¹⁸⁶ If the counter-stroke had failed to

produce decisive results, NORTHAG would have found itself fighting defensively without effective reserves. Moreover, an early counter-stroke delivered into East Germany could have hastened the use of tactical nuclear weapons, which the Soviet Union might have employed to avoid defeat.

Bagnall's reforms and, more particularly, their development under Farndale, were also poorly suited to changing diplomatic circumstances. From the mid to late-1980s, reformers in the Soviet Union struggled to de-militarize the Cold War by shifting to a more defensive military doctrine and reducing the size of the Soviet armed forces.¹⁸⁷ From an international relations perspective, the British Army's adoption of progressively more offensive war plans—the outlines of which were publicized through exercises and in speeches and articles—was not conducive to the efforts of Soviet moderates. The Soviet Army's initial response to more aggressive NATO doctrines ("Follow On Forces Attack," the American Air-Land Battle, and British "Maneuver Warfare") was to push for an increase in the readiness of front-line Warsaw Pact forces and for a more offensive, preemptive military doctrine.

VII. Conclusion

During the Cold War years, 1958-1989, British Army doctrine went through four significant shifts. Prior to 1958, the BAOR could have countered only small-scale infiltrations and served as a tripwire for nuclear retaliation. In 1958 the British armed forces' first operational concept for the defense of the BAOR's sector relied on a massive atomic air interdiction campaign launched at the outset of hostilities, with a simultaneous conventional defense of successive river lines. In 1964 a concept emerged based on tactical nuclear rockets and artillery fire destroying Warsaw Pact forces pressurized in to

“killing zones” after a short conventional battle. In the 1970s, new doctrines were predicated on the use of conventional weapons, including ATGMs, tanks and mines, with the hope of delaying the use of tactical nuclear weapons still further. In the 1980s, with the “maneuver warfare” doctrine, the British Army sought to obtain greater military results by defending elastically, in depth, and launching an offensive counter-stroke at an appropriate time and location. Although more risky than previous doctrines, “maneuver warfare” offered the potential of opposing a longer conventional resistance to a Warsaw Pact offensive and, potentially, inflicting a decisive defeat on enemy forces. Table VI, below, illustrates the major doctrinal changes and the factors leading to their adoption.

**Table VI:
Major Changes in British Doctrine, 1958-1990**

	Tactical Nuclear Air Interdiction	Tactical Nuclear "Killing Zones"	Defense with ATGMs	Maneuver Warfare
Date of Introduction	1958	1964	1971	1981
Enabling Technologies	Nuclear Bombs	Tactical Nuclear Artillery and Rockets	ATGMs	Minor (New Tanks and Infantry Fighting Vehicles)
Nuclear Threshold	Immediate atomic interdiction	Up to to 3 days of non-nuclear combat	5-7 days of non-nuclear battle	conventional victory possible?
Reactive to Soviet doctrine	No	No	No	Yes
Offensiveness	Offensive-Defensive	Defensive-Defensive	Defensive-Defensive	Offensive-Defensive
Major Actors	Commanders of BAOR and RAF Germany	Brigadier Carver, Gen. Hackett, B.H. Liddell Hart	F.M. Carver, Brigadier Bramall, Brigadier Carnegie	F.M. Bramall, Gen. Bagnall, Gen. Farndale, R. Simpkin

The major impetus for these changes was officers' perceptions of the evolution of weapons technology, the art of war and the relative capabilities of British forces and their adversaries. The question was how best could a fixed British contingent—the BOAR's 55,000 men—be employed to accomplish the mission of defending a 65-mile long sector against a Warsaw Pact attack. The answers favored by the British Army changed as the Army reconsidered new technologies, lessons drawn from military experience and emerging intelligence. The primary factor behind the adoption of the atomic air interdiction doctrine was the availability of tactical nuclear weapons and the Canberra bombers, combined with the armed forces' perceptions about how they should be used. The doctrine was politically escalatory because the need to launch the air interdiction campaign from the beginning of hostilities left little opportunity for diplomats to agree to a ceasefire and increased the likelihood that the Soviet Union would employ strategic nuclear weapons.

The inflexibility of the atomic air interdiction doctrine, which became evident during the Berlin Crises of 1958 to 1962, prompted the formation in 1964 of a doctrine based on tactical nuclear "killing zones." Although new technology, in the form of tactical nuclear missiles and artillery projectiles, permitted the adoption of the new concept, the tactical nuclear weapons were grafted onto a force structure that had undergone only comparatively minor changes.¹⁸⁸

The transition from tactical nuclear "killing zones" to employing ATGMs to inflict disproportionate attrition on enemy armored forces was driven both by a fundamental reevaluation of the value of tactical nuclear weapons and the Army's perception of the potential utility of ATGMs. After years of study and debate, the British Army collectively changed its mind, concluding that tactical nuclear weapons would

favor the attacker if used by both sides. In addition, the cost effectiveness of ATGMs offered a potential alternative that would permit the British Army to resist a Soviet offensive for a limited time.

The evolution from the “mobile linear” defense to a concept based on conventional anti-tank “killing areas” was motivated by findings that indicated that Soviet forces would concentrate on achieving narrow breakthroughs rather than advancing on a broad front. Also contributing were changing views on whether tanks should be used to launch local counter-attacks or deployed defensively in anti-tank gunnery from concealed positions.

Finally, the shift from conventional doctrines based on inflicting attrition on enemy armored forces to one founded on disrupting an enemy offensive through “maneuver warfare” was prompted by a better understanding of Soviet military doctrine and the British Army’s own changing vision of the practice of war. Largely through journal articles and lectures on Soviet military thought, British officers came to consider their existing military plans as inadequate. Selected writings and a fresh look at military history convinced them that existing British military practice was tied to an obsolete attritional model of warfare that was less efficient than the “maneuver warfare” approach that the German and Soviet armies had developed as early as the 1930s.

The most frequent factor motivating change in British Army doctrine was changing views of military technology, which underlay doctrinal changes in 1958, 1964, 1971 and the mid-1970s, when a new appreciation of tactical nuclear weapons, ATGMs and tanks contributed to doctrinal reform. Changing perceptions of enemy capabilities proved an important ingredient in two cases, the shift to anti-tank “killing areas” in the mid-1970s and the adoption of “maneuver warfare” during the 1980s. A fundamental

reassessment of the art of war played a role in one change—the shift to “maneuver warfare.” What all of these motivating factors have in common, save the last, is that they are exclusively concerned with military efficiency—i.e. employing a fixed set of resources to the best effect in countering a given threat. Unlike French military doctrine during the same period, political considerations were almost entirely absent from the British doctrines.

Changes in British Army doctrine are both evolutionary and radical. On the one hand, institutional processes shaping British doctrine from 1958 to 1989 were fundamentally evolutionary, with internal debates leading to doctrinal reforms taking a decade or more to run their course. This is seen with the arguments that tactical nuclear weapons would favor an attacker relative to a defender, which were present in the correspondence between Carver and Hart as early as 1958, validated in Army studies from 1965, and became the basis for doctrinal change in 1971. Similarly, the Sandhurst Soviet Studies Centre began informing British officers of how the Soviet Army intended to fight soon after its foundation in 1971, however British doctrinal change did not follow until a decade later.

The evolutionary nature of British Army doctrine is also evident in the significant elements of continuity linking doctrines over time. British conceptions of large-scale conventional warfare changed incrementally between 1945 and 1981 and were marked by an exceptionally deliberate, static and attritional mindset. At a micro-level, the concept of canalizing enemy forces into killing “zones” was recycled for use with both tactical nuclear weapons (1964-1971) and conventional weapons (mid-1970s). Likewise, much of the tactical theory behind how the main battle position would be defended remained constant throughout the shift from anti-tank attrition to maneuver warfare.

Although doctrines contained evolutionary components, the concept of how military means will be employed to accomplish a political end changed radically with each shift in doctrine. Issues as fundamental as the effect of technologies on warfare, the crossing of the nuclear threshold and the offensiveness or defensiveness of doctrines changed dramatically from one doctrine to the next.

In the United Kingdom significant doctrinal change occurred when senior military leaders chose to impose a new vision and plan for conducting military operations. However, there were two separate pathways by which senior military leaders could articulate a vision for change, either when promoted into a key position while already possessing definite ideas for reform or when endorsing new operational concepts advanced by lower-level division or brigade commanders. Some key reformers, such as Carver and Bramall, were promoted to the upper echelons of the British Army's hierarchy precisely because their superiors recognized a capacity for creative and independent thought.¹⁸⁹

In other cases, new operational concepts emerged from below, from brigade and divisional commanders. The role of brigadiers, such as Bramall and Carnegie, was key in the elaboration of tactics for employing ATGMs and armor in the late-1960s and early-1970s. Lower ranked officers contributed to the development of doctrine through studies of technical matters, such as the potential of new forms of weaponry, and military mavericks (Hart and Simpkin) contributed to the elaboration of doctrine on two occasions through their contacts with serving officers.¹⁹⁰ In no case did civilian policymakers promote or employ maverick officers to shape alternatives to the Army's doctrines.

In sum, professional military officers developed British Army doctrine through a decentralized process in which various echelons of authority and structures within the

Army contributed to doctrinal change. In certain cases, such as the Bagnall reforms, a senior military commander with reformist ideas imposed changes. In others, such as the development of doctrines based on anti-tank attrition during the 1970s, so many elements within the Army contributed to doctrinal change that the new doctrines seemed to organically evolve from their predecessors. In no case did the United Kingdom's elected leaders intervene in these processes. They, rather, established, negotiated and maintained the United Kingdom's foreign policy commitments and determined the financial resources that would be dedicated to these military engagements.

The question remains as to how satisfactory were British military doctrines. Each successive British military doctrine represented an informal consensus or compromise within the Army's high command as to the best manner in which a given set of resources could be employed to counter a Warsaw Pact offensive on West Germany. As such, however objectively imperfect they may be, British Army doctrines represented the acme of the state's military expertise at a given moment. Doctrine tended to respond in a timely and fluid manner to developments in military technology and clear evidence of new enemy military capabilities.

Although British Army doctrine evolved incrementally, this does not constitute grounds for criticism. Compared to other great power armies facing similar structural conditions, the British Army's judgments about doctrinal trends appear sound and, occasionally, precocious, as seen, for example, in the British Chiefs of Staff accurately foreseeing the need to rely on massive retaliation and, later, the need to introduce tactical nuclear weapons in Europe, several years before their American counterparts did. After precociously forecasting the need for tactical nuclear weapons, the British Army went further and faster than its American counterpart in discounting their value.

However, it is possible to level three criticisms at British Army doctrine. Firstly, because the ultimate authority for authoring reforms was diffuse and belonged to a range of senior military commanders, changes in British military doctrine timidly challenged the balance between different combat arms (i.e. infantry, tanks, artillery and engineers). As a result, reforms that did not benefit an existing combat arm or radically upset the balance between them were rarely enacted. One example was the British Army's failure to use helicopters for either tactical mobility or anti-tank combat.

Despite promising experiments, institutional opposition emerged whenever someone proposed that the British Army should create a large tactical formation (brigade or division) centered upon helicopters. The Royal Armoured Corps feared that helicopters would supplant tanks and the Royal Air Force (RAF) was apprehensive lest the Army use the creation of an airmobile unit as an excuse to seize the RAF's helicopters. As a consequence, the United Kingdom lagged behind the United States, the Soviet Union, France and West Germany when it came to employing helicopters in a land battle.¹⁹¹

A second criticism that can be leveled against British Army doctrine is its lack of political-military integration. Although political leaders established and periodically revalidated the United Kingdom's commitment to defending West Germany and provided certain means for doing so, neither political nor military leaders attempted to elucidate exactly what political affect British military forces should attempt to achieve in the event of war. Consequently, the British Army established its own metrics for success. Under the 1958 doctrine, success was defined by military victory, which depended on the immediate and massive use of tactical nuclear weapons; by the 1970s, it consisted of halting Warsaw Pact forces long enough, using conventional force, for diplomacy and

coercive threats to bring about a ceasefire; in the 1980s, it hoped to win a decisive military victory against the first echelons of Warsaw Pact forces.

In no case were the political implications of different military doctrines adequately explored. For example, the objective of stopping an enemy offensive temporarily—for a long week, to use Bramall’s expression—would have only paid dividends if British or NATO leaders had concrete plans for how they would extend diplomatic feelers to the Soviet Union and what tactics they would use to threaten further escalation, yet propose de-escalatory measures. Neither archives nor interviews have produced any evidence of diplomatic or political planning of this sort, and it is likely that none took place. Likewise, when “maneuver warfare” was introduced in the 1980s, its political ramifications were ignored in the United Kingdom. As we have seen, “maneuver warfare” seemed aggressive to Soviet leaders, could have increased the likelihood of escalation in the event of war and worried certain political and military leaders in West Germany.¹⁹²

By way of conclusion, the evolution of British Army doctrine was marked by progressive and continuous improvements in how the British Army intended to fight. These reforms were developed and approved by the Army’s high command and reacted to changes in military technology, enemy capabilities and tactical practices. The principle shortcomings of this system were the poor integration of military doctrine with the states’ foreign policy and the bounded nature of doctrinal reforms, which avoided upsetting existing institutional equilibriums. Given the large discrepancy in conventional forces, British doctrines also appear more offensive and escalatory than political or, perhaps, military criteria would warrant.

End Notes

¹ Many different definitions of military doctrine have been advanced over time. In the Soviet Union, Minister of Defense Grechko defined doctrine as “a system of views on the nature of war and methods of waging it, and on the preparation of the country and army for war, officially adopted in a given state and its armed forces.” The 1993 edition of the United States’ Army’s manual FM 100-5 stated that, “Doctrine is the statement of how America’s Army, as part of a joint team, intends to conduct war and operations other than war. It is the condensed expression of the Army’s fundamental approach to fighting, influencing events in operations other than war, and deterring actions detrimental to national interests. As an authoritative statement, doctrine must be definitive enough to guide specific operations, yet remain adaptable enough to address diverse and varied situations worldwide.” The British Army defines doctrine (in the 1996 British Military; Doctrine) as “Military doctrine is a formal expression of military knowledge and thought, that the Army accepts as being relevant at a given time, which covers the nature of current and future conflicts, the preparation of the Army for such conflicts and the methods of engaging in them to achieve success.”

As should be evident from these three examples, there are both numerous similarities and differences between definitions of doctrine. The Soviet definition of doctrine is broader than the Anglo-American definitions in that it refers to *preparing the country* and the army for war according to *views adopted by the state* and the armed forces. As such, the Soviet definition clearly emphasizes the political as well as the military nature of doctrine. British and American definitions of doctrine, by way of contrast, concentrate solely on the role of the armed forces in establishing and executing a military doctrine.

Drawing on any of these definitions, doctrine is clearly different from strategy, tactics or war plans, but encompasses elements of each of them and is therefore difficult to entirely distinguish from these related concepts.

See Department of the Headquarters of the Army, *FM 100-5 Operations* (June 1993), 1-1; and Prepared under the Chief of the General Staff, *Design for Military Operations: the British Military Doctrine* (1996), 1-1.

² Stephen Rosen, *Winning the Next War: Innovation and the Modern Military* (Ithaca: Cornell, 1991), *passim*; and Samuel Huntington, *The Soldier and the State* (Cambridge: Harvard, 1957), *passim*.

³ Rosen, 251-53.

⁴ The offensive bias of military organizations has been widely documented in the political science literature on war plans, doctrine and innovation. A number of reasons have been advanced for this bias. First, the military normatively prefers offensive operations as being more “manly” or valorizing. Barry Posen best expressed this motivation in his statement that, “Offense makes soldiers specialists in victory, defense makes them specialists in attrition, and deterrence makes them specialists in slaughter.” Second, offensive operations permit military organizations to simplify their planning requirements. Whereas a defensive army must react to enemy initiatives, an offensive

army can make detailed plans, during peacetime, for its future military operations. Third and finally, offensive doctrines are organizationally useful when it comes to arguing for financial and human resources. As Jack Snyder argued, “Offense is difficult and demands large defense budgets. It is also productive—productive in that decisive offensive campaigns produce demonstrable returns on the state’s investment in military capability.” Jack Snyder, *The Ideology of the Offensive: Military Decision Making and the Disasters of 1914* (Ithaca: Cornell, 1984), 15-40; Barry Posen, *The Sources of Military Doctrine: France, Britain and Germany between the World Wars* (Ithaca: Cornell, 1984); and Richard Ned Lebow, “The Soviet Offensive in Europe: The Schlieffen Plan Revisited?,” in *Soviet Military Policy* (Cambridge, MIT Press, 1989), 312-46.

⁵ These include the unification of the Ministry of Defense, the strengthening of the Chief of Defense Staff vis-à-vis the Chiefs of the separate services and the restructuring of higher military education along “joint” inter-service lines.

⁶ As Burke Trend, the Cabinet Secretary and highest-ranking civil servant in the United Kingdom, confided to the Prime Minister in 1967, defense policymaking at this level consisted of “a series of arbitrary and spasmodic responses to recurring economic crises.” PREM 13/2688 Burke Trend to Prime Minister, March 13, 1967.

⁷ Assistant Chief of the General Staff General William Jackson likened this process to a two level commodity market, where the Cabinet’s Public Expenditure Review served as a the general market, while the Ministry of Defense “can be looked upon as a specialized commodity market, in which the three Services and the Defence scientists bargain for their share of the resources won by the Secretary of State on the main trading floor during the annual Public Expenditure Review.” William Jackson, *Britain’s Defence Dilemma: An Inside View* (London: Batsford, 1990), 10.

⁸ Ibid.

⁹ In procurement terms, the RAF has received on average 18 percent of the procurement budget, the Army 17 percent and the Navy 16 percent between 1965 and 1989. Ibid., 16.

¹⁰ Interview with Major-General Kenneth Perkins, September 19, 2007.

¹¹ John Kiszely, “The British Army and Approaches to Warfare since 1945,” *Journal for Strategic Studies* (December 1996): 185.

¹² Established in 1945 as part of a bilateral agreement with Soviet occupying forces in Eastern Germany, BRIXMIS fulfilled an official espionage role throughout the Cold War, monitoring the equipment, readiness and standard operating procedures of the Group of Soviet Forces in East Germany (GFSG) and the Eastern German National People’s Army.

¹³ These ratios varied significantly, from two-forward/two-back, to two-forward/one-back, to four-forward.

¹⁴ Interview with Major-General Kenneth Perkins, September 19, 2007.

¹⁵ As one division commander relates in a statement that was as much the rule as the exception in British planning, “I always had it in my mind to alter our positions from the published ones if the balloon went up.... This would unquestionably land me in serious trouble with the corps commander but in the light of all of the other troubles at such a time [the Third World War] I doubted if it would be remembered as important.” John Akehurst, *Generally Speaking: ‘Then Hurrah for the Life of a Soldier’* (Wilby: Michael Russell, 1999), 177.

¹⁶ As General Jackson observed, “When a new government takes office and opens the Defence books, it expects to find ample room for change and improvement. The new ministers soon find that there is remarkably little room for manoeuvre.... The whole structure which the Ministry controls and administers is as closely integrated as that of modern warships and high-performance aircraft.” Jackson, 20.

¹⁷ After the allied breakout from the Normandy beachheads in 1944, the British 21st Army Group and two American Army Groups (12th and 6th) were assigned operational sectors based on political and logistics considerations. Because advancing northwards through the low-countries, into Northern Germany permitted British forces to remain comparatively close to their supply bases in the United Kingdom, it made sense to direct the 21st British Army Group to attack in a northeasterly direction, as opposed to directly eastwards or in a southeasterly direction. Once Germany began launching missile attacks on the United Kingdom, it became politically important for British forces to evict German missile forces from launch zones in Northern France and the Netherlands.

¹⁸ This comprised the territory from the Danish Border in the north to the city of Cologne in the south.

¹⁹ After the end of hostilities, the British Army rapidly drew-down its forces in Northern Europe both as a response to the need to demobilize its large wartime army and meet colonial and overseas obligations. As a result, the 14 divisions and 835,000 men that comprised 21st Army Group at the end of hostilities quickly withered to four divisions in 1946, before reaching a nadir of two divisions by 1947. Jean Bouchery, *The British Soldier from D-Day to VE-Day: Volume 2, Organization, Armament, Tanks and Vehicles* (Paris: Histoire et Collections, 1999), 8-24; and Graham Watson and Richard Rinaldi, *The British Army in Germany (BAOR and After): An Organizational History, 1947-2004* (United States: Tiger Lily Publications for Orbat.com, 2005), 3-17.

²⁰ Their limited forces in Germany were more to assist the occupying authorities to maintain order and prevent an outbreak of German revisionism than to deter a Soviet invasion. In fact, when a team of Anglo-American planners examined the strategic

situation in 1947, they concluded that all existing allied forces in Western Europe must be evacuated to the United Kingdom as quickly as possible in the event of war with the Soviet Union. In a not-so-subtle reference to the withdrawal of British forces from the continent in 1940, the joint Anglo-American plan was code-named “Dunkirk.” Sean Greenwood, *Britain and the Cold War, 1945-91* (London: Macmillan, 2000), 57.

²¹ Michael Carver, *Out of Step: The Memoirs of Field Marshal Lord Carver* (London: Hutchinson, 1989), 240-42.

²² As Foreign Minister Ernest Bevin told the Cabinet in January 1948, “he would be embarrassed in his dealings with Britain’s potential European allies if planning were based on the assumption that an army was not to be sent.” Greenwood, 61.

²³ Though several previously planned dissolutions occurred as scheduled, the BAOR’s troop numbers finally bottomed-out at 24 combat battalions in late 1948, compared to 25 battalions at the beginning of the year. Watson and Rinaldi, 4.

²⁴ Despite the creation of the North Atlantic Treaty Organization (NATO) in 1949, the United Kingdom did not immediately envision a larger commitment to continental Europe. In December 1949, the British government informed its NATO allies that its contribution to the alliance would lay in strategic air power, defending oceanic lines of communication and guaranteeing the security of the Middle East.

The true transition in the BAOR’s mission to an operational military structure occurred a year later, in 1950 after North Korea invaded South Korea. Although it did not result in an immediate increase of British troops in Western Europe, the British Cabinet’s Defence Committee agreed in March 1950 (i.e. before the outbreak of the Korean War in June) that the United Kingdom should provide an army corps of two infantry divisions in the event of war. This decision reversed the earlier policy of not reinforcing Western Europe in the event of war. The decision was explained in terms of Cabinet now holding that it was a fundamental interest to hold the Russians East of the Rhine. While not sharing the worries of American policymakers that the war in Korea was a possible prelude to an attack in Western Europe, British decision-makers were convinced that a stronger allied military presence in Western Europe was necessary.

The British decision to reinforce its forces in Western Europe was followed by a similar American decision, in September 1950 to send four to six additional divisions to Western Europe. Saki Dockrill, “Retreat from the Continent? Britain’s Motives for Troop Reductions in West Germany, 1955-1958,” *The Journal of Strategic Studies* 20, no. 3 (September 1997): 48; John Gaddis, *Strategies of Containment: A Critical Appraisal of Postwar American National Security Policy* (Oxford: Oxford, University Press, 1982), 114; and Greenwood, 49.

²⁵ At the Lisbon Conference of 1952, NATO’s member states accepted the goal of building-up a total force of 96 divisions by 1955, which was what American military planners considered necessary.

²⁶ Given the United Kingdom's limited resources and extensive commitments elsewhere, British policymakers hoped that most of the additional forces required for Europe's defense would be provided by a large-scale commitment of American combat forces to Western Europe and the rearmament of West Germany. Percy Cradock, *Know Your Enemy: How the Joint Intelligence Committee Saw the World* (London: John Murray, 2001), 94.

²⁷ France pledged 15 to 20 divisions and West Germany 12. PRO CAB 21/3585 Report by the Chiefs of Staff: Defence Policy and Global Strategy, June 17, 1952; and Dockrill, 51.

²⁸ In June of 1952, the British Chiefs of Staff Committee predicted that the Lisbon goals would not be met because, "The continental Allies cannot, however, meet their share of the rearmament programme without increasing and continuing American aid, which there seems no reason to suppose will be forthcoming." Within several months, the British Chiefs of Staff's analysis proved prescient when France informed its NATO partners that the ongoing war in Indochina prevented it from maintaining more than 10 divisions in Western Europe. PRO CAB 21/3585 Report by the Chiefs of Staff: Defence Policy and Global Strategy, June 17, 1952; and Dockrill.

²⁹ It consisted of 52,000 soldiers, or 12 percent of the total force of 434,000 men in late 1950.

³⁰ According to the Chiefs of Staff, "The road to Paris might well be via Peking and Delhi. Communism is already in Peking and, unless action is concerted against it, may soon be in Delhi and well on the road to the Mediterranean and Africa," and, "The stabilization of the Middle East States within the Western orbit by international action is an essential measure in the Cold War, and any excessive reduction—let alone complete withdrawal—of British military forces would result in the rapid spread of Russian influence throughout the area."

Partially due to their 1952 examination of British strategy, leading to the Top Secret report to the Cabinet on "Defence Policy and Global Strategy," the British Chiefs of Staff also argued that providing an adequate conventional defense for Western Europe would be financially ruinous. They argued that, "Over-expenditure on rearmament, leading to the ruin of the economy of Western Europe, would be to play the Communist game and to present Russia with a bloodless victory gained at the sole cost of playing upon the nerves of the Free World." PRO CAB 21/3585 Report by the Chiefs of Staff: Defence Policy and Global Strategy, June 17, 1952.

³¹ There was a political limit to the extent that the United Kingdom could economize in Western Europe. They would not jeopardize the integrity of NATO and thus lose the Cold War. The Chiefs of Staff Committee articulated their dilemma very succinctly, "A substantial reduction of existing peace-time forces maintained by the United Kingdom in Europe would produce the biggest saving in overseas military expenditure. But the one thing that would inevitably lose the Cold War would be to bring

about the disruption of N.A.T.O. by the withdrawal of United Kingdom forces from the Continent.” Ibid.

³² Dockrill, 53.

³³ In a comprehensive 1975 study of the different options available to the Warsaw Pact, NORTHAG’s headquarters concluded that the British 1st Corps was likely to bear the brunt of between 44 and 46 percent of the enemy divisions assigned to attack NORTHAG. Given that the British sector counted only a third of NORTHAG’s active divisions, it was expected to suffer disproportionately in an enemy attack. Even worse, one contingency consisted of over half of the Warsaw Pact’s effort against NORTHAG being directed in the British sector. PRO DEFE 48/769 Major P.M. Will, DOAE Study No. D7504, Warsaw Pact Land Threat, October 1975.

Although later documents are unavailable, considerable evidence indicates that British military leaders continued to believe that massive and disproportionate Warsaw Pact forces would attack the 65-miles of front that the British Army was supposed to defend in the event of war. Both of the fictional works dated from 1978, written by well-informed retired British generals, involved massive attacks on the British sector. NORTHAG’s commander, General Nigel Bagnall, reiterated the same theme in 1984. See Hackett et al., 159-86; Bidwell et al., 208-25, and Imperial War Museum Oral History Archive, Document 16197, Nigel Bagnall, “Concepts of Land-Air Operations in the Central Region: A British Perspective,” May 25, 1984.

³⁴ The Belgians were to defend the Harz Mountains and the Dutch a low-lying region congested by numerous waterways. Broadly speaking, the North German Plain consists of a broad, flat geographic corridor, delineated by Bremen in the north and the Harz Mountains in the south. In terms of length, it is difficult to say exactly where the North German Plain ends. An army advancing along the plain can march through Northern Germany, the Southern Netherlands, Belgium and Northern France before encountering a strategically significant geographic obstacle in the form of France’s Massif Central.

³⁵ Although tanks and other tracked armored vehicles can move across open countryside, the many wheeled logistics vehicles comprising late-twentieth century armies needed dense road networks to sustain the units in combat. The autobahn running from Berlin, to Magdeburg and Hannover, before forking into two routes after passing the Wesser River south of Minden, provided a seemingly ideal invasion route, which ran directly through the center of the British defensive sector. Further to the north, the autobahn running from Verden to Bremen and Oldenburg provided the axis for another large-scale attack. Although an offensive in this sector would be more difficult to exploit strategically, it had the advantage of enabling Warsaw Pact forces to strike the juncture between the British 1st Corps and the West German 1st Corps.

³⁶ As Major-General Kenneth Perkins confessed, “We [the British Army] were always conscious that being on the North German Plain we were sitting astride the obvious route for a Soviet offensive.” Until the end of the Cold War, analyses continued

to highlight the danger to NORTHAG and the British 1st Corps in particular. General John Hackett, who served as commander of the BAOR and NORTHAG from 1966 to 1968, emphasized that, from a Soviet perspective, “NORTHAG continues to offer the most attractive point of decisive entry.” In a fictional work from 1978, British Brigadier Shelford Bidwell envisaged the main Soviet offensive crushing NORTHAG within three days, while American and West Germany troops in the CENTAG sector stymied the Soviet advance in their own sectors.

Bidwell and Hackett both led teams of experts in writing fictional accounts of a Third World War. In Hackett’s book, NATO eventually manages to halt the Warsaw Pact offensive, largely because of increased defense spending prior to the beginning of the scenario. Bidwell’s book involves the collapse of NATO after a relatively short war. However, in both cases NORTHAG is presented as the favored area for the Warsaw Pact assault. Interview with Major-General Kenneth Perkins, September 19, 2007; John Hackett et al. *The Third World War: August 1985* (New York: Macmillan, 1978), 108; and Shelford Bidwell et al. *World War 3: A Terrifying Military Projection Founded on Today’s Facts* (Feltham, the United Kingdom: Hamlyn, 1978), 208-25.

³⁷ The military readiness of the Belgian corps suffered further from the state’s modest defense budget, the lowest as a percentage of GNP of any of the European states committed to the Central Front, and the shortest period of military service, which declined to eight months for forces assigned to West Germany. Obligatory military service in Belgium declined from a maximum of 20 months in 1950 to 12 months by the end of the decade. Eventually, terms of service were reduced further, to 10 months for soldiers assigned to Belgium and eight for those based in West Germany. The repeated reductions in Belgian terms of conscription elicited complaint from NATO allies, but to no avail. Perhaps surprisingly given the short terms of military service, Belgian units performed well at NATO’s bi-annually tank gunnery competition, the Canadian Army Trophy contest.

Because of Belgian and Dutch deficiencies, American assessments continually viewed NORTHAG as highly vulnerable. In a blunt Top Secret assessment from 1964, the American Department of Defense judged the forces guarding NORTHAG as “weak.” The theme of NORTHAG’s comparatively low-readiness was later repeated in secret NATO analyses and published studies of the Central Front. Of the latter, a 1977 work by a Belgian general asserted that NORTHAG could be defeated in a surprise attack before allied forces could reach their defensive positions. Writing along the same general lines, Brigadier Bidwell lamented in his 1978 that, “The accident of history had placed the strongest foreign contingent, the Americans, well to the south of the most dangerous Soviet thrust line [NORTHAG].” See Yves Debay, *Leopard 1* (Paris: Histoire et Collections, 2005), 54-57; The International Institute for Strategic Studies, *The Military Balance, 1980-1981* (London: Arms and Armour Press, 1980), 21; Frank Camm, OASD, *The Role of Tactical Nuclear Forces in NATO Strategy*, NATO Ministerial Meeting, Paris, France, December 1964; General Close, *Europe sans defense?* (Brussels: Arts et Voyages, 1977); and Bidwell et al., 213.

³⁸ The table below illustrates average annual defense expenditures as a percentage of GNP.

Western Europe and the Central Front: Average Annual Defense Expenditures as a Percentage of GNP				
<u>Country</u>	<u>1962-64</u>	<u>1966-69</u>	<u>1971-74</u>	<u>1979-80</u>
Belgium	3.7	3.0	2.8	3.3
Netherlands	4.9	3.7	3.4	3.3
West Germany	5.7	3.9	3.4	3.3
France	6.9	4.8	3.6	4.0
The United Kingdom	7.1	5.5	5.1	5.0

See The Institute for Strategic Studies, *The Military Balance, 1965-1966* (London: The Institute for Strategic Studies, 1965), 42; The Institute for Strategic Studies, *The Military Balance, 1970-1971* (London: The Institute for Strategic Studies, 1970), 110; The International Institute for Strategic Studies, *The Military Balance, 1975-1976* (Boulder, Colorado: Westview Press, 1975), 76; The International Institute for Strategic Studies, *The Military Balance, 1980-1981* (London: Arms and Armour Press, 1980), 96; and The International Institute for Strategic Studies, *The Military Balance, 1985-1986* (London: Arms and Armour Press, 1980), 170.

³⁹ The Belgian and Dutch army corps were assigned to NORTHAG's sector for logistical, political and economic reasons. In the Belgian case, one division (60 percent) out of the two comprising the Belgian corps was forward deployed in peacetime, while the other remained based in Belgium. In the Dutch case, only one brigade was deployed on German territory out of a total force of two active divisions and one reserve division.

⁴⁰ French studies from 1959, 1966 and 1970 all anticipated that the main threat to NORTHAG would come in the British sector. Providing more details, a West German assessment from 1969 independently concluded that the Warsaw Pact would concentrate its attacking forces against NORTHAG in three locations. The main offensive blow would be delivered in the north of the British 1st Corps sector, at the juncture between British and West German forces. A second thrust would be directed at the center of the British sector, along the line of autobahn running from Magdeburg to Hannover. Finally, the third Warsaw Pact assault would be directed at the southern area of the British sector—between Hannoversch-Münder and Höxter—at the juncture of 1st British Corps and the Belgian forces further to the south. The main thrust was described as coming from the area of Wittenberge-Stendal via the Weser crossings between Bremen and Verden, with the aim of crossing the Rhine between Nijmegen and Wesel. The first supporting

thrust was described as coming from the region of Magdeburg and the Letzlinger Heide in the direction of the Weser crossings on either side of Minden (known as the “Westphalian Gates”), before advancing south westwards in the direction of the Ruhr region. The third attack was described as coming from the area around Nordhausen, in the direction of the Weser crossings near Hannoversch-Münder and Höxter, before advancing westwards towards Paderborn. See “Fighting for the Heart of Germany: The I (GE) Corps and the NATO-planned Defense of North German Plain in the 1960s.” and Sarmat and Mercier, 113-19.

⁴¹ The British government began to argue in April 1955 that NATO should not sustain more forces than necessary in Western Europe for countering “local infiltration, to prevent external intimidation and to enable aggression to be identified as such.” For British planners, the BAOR was larger than warranted for these limited tasks and there was neither the need nor the likelihood of the United Kingdom, the United States or European states bearing the costs to provide the scale of conventional forces needed to defend Western Europe. Andreas Wegner, “The Politics of Military Planning: Evolution of NATO’s Strategy,” *War Plans and Alliances in the Cold War: Threat Perceptions in the East and West* (London: Routledge, 2006), 170.

⁴² While the United States shared the United Kingdom’s ambition of reducing its troop contribution, American military planners feared a British cutback would lead to greater dependence on American nuclear weapons. Meanwhile, British and American efforts to reduce their contributions to NATO prompted the West Germans to slow down their rearmament, to curtail the financial support they were providing for NATO troops on West German territory. Belgian, Dutch and French political leaders saw the presence of large numbers of British troops as a guarantee against recidivism.

As already mentioned, West Germany’s planned contribution to NATO was originally 12 divisions, comprising a total of 500,000 men. These forces were supposed to be operational by 1958. The unpopularity of rearmament led the Bundestag to approve conscription for only 12 months in September 1956, as opposed to the 18 months believed necessary. One of the reasons for the Bundestag’s decision was the leak to the *New York Times* of the so-called Radford Plan (named after the Chairman of the American Joint Chiefs of Staff), which argued for a reduction in American military personnel of 800,000, including significant forces in Europe. By October 1956, the West German government revised the timetable for its own rearmament to providing 360,000 troops by 1960. By the end of 1956, only 70,000 troops were available out of the 96,000 West Germany had promised. See Dockrill, 52-58.

⁴³ Throughout the Berlin Crises (1958-61) the United Kingdom’s behavior was in fact the least resolute of the three occupying powers. Whereas American Secretary of State John Foster Dulles argued that Khrushchev was bluffing and that the allied powers should not respond to his threats. French President Charles de Gaulle was dismissive of Khrushchev’s threats. As a firm believer in nuclear deterrence, de Gaulle did not believe that Khrushchev was willing to initiate acts that could lead to war. Showing defiance in the face of Khrushchev’s threats therefore became a means of developing France’s alliance with West Germany, whose government feared Western concessions over Berlin.

By way of contrast, British Prime Minister Harold Wilson favored a policy of nearly continuous summit meetings and considered a variety of concessions, including dealing with the East German government over access to Berlin and accepting Polish Foreign Minister Adam Rapacki's proposal to disarm Central Europe. See Craddock, 142-47.

NATO's Supreme Commander of Allied Forces Europe (SACEUR), General Lauris Norstad, went so far as to tell the British Foreign Minister in June 1959 that if the United Kingdom withdrew any more troops "he would throw his hand in." *Ibid.*, 61.

⁴⁴ Contrary to expectations, the Berlin Crisis lingered, with fears expressed about further Soviet initiatives until well after the construction of the Berlin Wall in August 1961, and even after the resolution of the Cuban Missile Crisis in October 1962. By the time the Berlin question finally retreated into the background, the Kennedy Administration had replaced the Eisenhower Administration in the United States. The new American government wanted to shift NATO's strategic from one of instant nuclear retaliation to one based on mounting a flexible response to aggression. Because this entailed greater reliance on conventional forces, there was even less hope for the United Kingdom to negotiate further troop withdrawals from West Germany.

⁴⁵ Although British forces would be reorganized several times, the Army's commitment to the defense of West Germany remained a constant 55,000 until 1990; thus as the overall size of the British Army declined, the percentage of troops assigned to West Germany increased, from 20 percent in 1957 to a third of the total. The 77,000 British troops committed to NATO's Central Region in 1957 constituted 20 percent of a British Army possessing 380,000 troops; the 55,000 troops present in 1960 comprised 21 percent of a British Army of 264,000 troops; and as the BAOR retained a constant strength of 55,000, yet the British Army eventually shrunk to 180,000 and, finally, 165,000 personnel, the percentage of British Army manpower committed to Germany comprised a third of the total.

⁴⁶ The British Joint Intelligence Committee evaluated the threat as 170 divisions in 1947. The Joint War Plans Committee of the American Joint Chiefs of Staff produced an estimate of 175 divisions the next year. Both British and American estimates appear not to have substantially changed until Khrushchev announced significant reductions in the size of the armed forces in It is now known that only a small proportion of the Soviet divisions mentioned were combat ready. Perhaps half of the Soviet divisions were of no more than cadre strength, possessing 10 percent of their theoretical allocation of manpower. See Matthew Evangelista, "Stalin's Postwar Army Reappraised," *International Security* 7, no. 3 (Winter 1982/1983); and Craddock, 52.

The 96 division objective, enshrined in the Lisbon force goals of 1952, was based on two calculations: 1) the quantity of forces needed to achieve a force-to-space ratio sufficient to prevent enemy forces from brushing by allied forces too thinly deployed on the ground, and 2) the number of forces needed to compensate for the enemy's military strength.

⁴⁷ Raoul Castex, "Toujours 'La Revanche du Barème,'" *Revue de Défense Nationale* 7 (June 1951): 696-699.

In theory, a division defending a front of this length could halt a more numerous adversary until attrition gradually forced it to give way. However, if a division had to defend a front much longer than this, enemy forces could infiltrate between its positions or brush through its defenses without undo difficulty. Using this metric, it would take approximately 63 allied divisions to defend the 440 miles (700 kilometers) of NATO's Central European border with the Warsaw Pact. supported by a reserve capable of intervening where problems arise, additional forces were necessary beyond those needed to populate a sufficiently dense front-line. A frequent, although rarely attained ideal, in the defensive is to possess one division in reserve for every two on the front-line. Taking this logic and applying it to the situation in Central Europe led NATO's planners to conclude in 1952 that NATO needed 96 to provide adequate reserves as well as man the front line.

Because standard military practice holds that units defending a front must be supported by a reserve capable of intervening where problems arise, additional forces were necessary beyond those needed to populate a sufficiently dense front-line. A frequent, although rarely attained ideal, in the defensive is to possess one division in reserve for every two on the front-line. Taking this logic and applying it to the situation in Central Europe led NATO's planners to conclude in 1952 that NATO needed 96 to provide adequate reserves as well as man the front line.

⁴⁸ Two years later, American President Dwight Eisenhower rallied to the argument that the threat of nuclear reprisals could deter the Soviet Union from using its preponderant conventional forces against vital western interests. PRO CAB 21/3585 Report by the Chiefs of Staff: Defence Policy and Global Strategy, June 17, 1952.

⁴⁹ Whereas much of the British Army consisted of infantry forces that were comparatively lightly equipped and assigned to duties within what was still a far-flung British Empire, the BAOR contained a significant proportion of heavier forces, including tanks and artillery. Between the 1950 buildup and the troop withdrawals completed in 1958, the BAOR comprised two to three armored divisions, out of a total of four divisions. Besides the BAOR, the United Kingdom's only other substantial concentration of armored forces was an armored division in Libya. Watson and Rinaldi, 31-62.

⁵⁰ Following the BAOR's first large-scale exercises, staged in October 1949, a military correspondent highlighted the spirit of the BAOR's revival, "The large-scale exercises 'Agility One and Two,' staged by the B.A.O.R. last October, did much to disabuse the general civilian impression over here that our troops in Germany were simply having a good time. These very strenuous manoeuvres, involving some 50,000 troops, were not isolated outbursts of energy, but the culmination of a summer's work in which many regiments and battalions had been out on training away from their barracks continuously for months or more." Special Correspondent, "A Visit to the B.A.O.R.," *The Fighting Forces: Service Notes and Articles* 26, no. 5 (January 1950): 221.

⁵¹ One author characterized this process as one in where the "hallowed battle drills of the Twenty-first Army Group were brought out, polished lovingly and put to work

again.” Alun Gwyn Jones, cited in John Stone, *The Tank Debate: Armour and the Anglo-American Military Tradition* (Amsterdam: Harwood, 2000), 42.

⁵² The British Army’s art of war during the Second World War has frequently been characterized as deliberate, static and attritional. During its later campaigns in North Africa and North-West Europe, the British Army achieved high force-to-space ratios in both the attack and the defense, employed overwhelming concentrations of tanks and artillery when offensive action was necessary, and benefited from the Allies’ massive air superiority. These practices, exemplified in Field-Marshal Bernard Montgomery’s philosophy that victory was achievable through a well-trained “teed up” army, fighting according to a rigid master plan on a “tidy battlefield,” were of questionable utility to thinly-spread British troops tasked with combating a massive Soviet offensive. Kiszely, “The British Army and Approaches to Warfare since 1945,” 183.

⁵³ During exercises in 1947, BAOR divisions emphasized the construction of field fortifications and did not defend sectors exceeding six to seven miles. This chasm between British Army tactics and their operational mission led French Field Marshal Jean de Lattre de Tassigny to remark that, “We [the British Army] were wrong to stage an exercise in which a Division was covering a front of only about six or seven miles.... At the start of another war our Divisions would have to cover very much more, and that we should therefore practice delaying actions over a wide front.” Marshal de Lattre de Tassigny was the Commander-in-Chief of Western Union Land Forces and commented in this capacity. Emerging from the Brussels Treaty, concluded in 1948, the Western Union preceded NATO by one year. Special Correspondent, “A Visit to the B.A.O.R.,” 222.

⁵⁴ Rob Griffin, *Conqueror* (Ramsbury, the United Kingdom: Crowood, 1999), 7-40; and Richard Ogorkiewicz, “Armoured Fighting Vehicles,” *Cold War, Hot Science: Applied Research in Britain’s Defence Laboratories, 1945-1990* (Harwood: Amsterdam, 1999), 119-28.

⁵⁵ The largest up to that time had been the French FCM 2C, which weighed 70 tons. Destined for the offensives of 1919, only 10 FCM 2Cs were produced after the end of the First World War. Besides the FCM 2C, the next heaviest tank was the German King Tiger of the Second World War, which weighed 68 tons. At 66 tons, the Conqueror was the heaviest tank manufactured during the Cold War. Only since the end of the Cold War have some tanks, notably the American M1A2 (with depleted-uranium armor) approached the Conqueror’s weight.

⁵⁶ With the help of Conqueror, the distribution was at a ratio of one troop of Conquerors per squadron of medium tanks. Conqueror reinforced the static and attritional bent of British Army tactics, which was already considered a comparative weakness of British forces. Since the beginning of the Cold War, a number of military officers argued that greater mobility was needed to compensate for Soviet numbers. The military correspondent who wrote on the BAOR exercises of 1949, observed that, “If our divisions are to hold wider fronts, they will surely have to be remodeled to provide fire-power and mobility.” In a 1951, the former commander of the Royal Armoured Corps

pleaded that, "The way to take on the Russians, if we should have to fight them in Europe or the Middle East, is by making use of highly skilled mobile armoured forces operating from firm bases. In this role mobility must have top priority. It replaces the numerical strength of the Russian masses.... They [British forces] must be able to move rapidly between enemy columns or round their flanks or to attack them in rear, and they must be prepared to spend a week behind enemy lines." See Special Correspondent, "A Visit to the B.A.O.R.," 222; Watson and Rinaldi, 21; and Giffard Martel, "Tank Policy," *Journal of the Royal United Services Institute* 95, no. 3 (August 1951): 450.

⁵⁷ PRO CAB 21/3585 Report by the Chiefs of Staff: Defence Policy and Global Strategy, June 17, 1952.

⁵⁸ As Britain's first jet-powered bomber, Canberras had been the delivery means for the United Kingdom's national nuclear deterrent until production of the more sophisticated V-Bombers (Valiant, Victor and Vulcan) rendered the Canberras superfluous for dropping atomic bombs on Soviet cities and making them available for tactical nuclear missions.

⁵⁹ Rapidly, the Canberra became RAF Germany's principal aircraft, equipping seven out of 18 squadrons by the end of 1958. Bill Taylor, *Royal Air Force Germany Since 1945* (Hinckley, the United Kingdom: Midland, 2003), 76-89.

⁶⁰ Michael Carver, *The Apostles of Mobility: The Theory and Practice of Armoured Warfare* (New York: Lees Knowles, 1979), 40-54.

⁶¹ Roy Fullick, *Shan Hackett: In Pursuit of Exactitude* (Barnsley, the United Kingdom: Leo Cooper, 2003), 177-78; and Michael Carver, *Out of Step: The Memoirs of Field Marshal Lord Carver* (London: Hutchinson, 1989), 292-95.

⁶² According to Carver, "Tactical [nuclear] weapons were not only unnecessary... but positively dangerous, because, if deterrence did fail, their use would mean the destruction of Europe." Carver, *Out of Step: The Memoirs of Field Marshal Lord Carver*, 294.

⁶³ For example, if their use were postponed until Soviet forces crossed the Weser, authorization for an interdiction campaign would be too late. The British 1st Corps would probably fail to reconstitute itself and with radio navigation aids lost, few Canberras would hit their targets in Eastern Europe. A late decision to launch the atomic interdiction campaign would raise the possibility of escalation to targeting population centers, while failing to prevent the Soviet occupation of Western Europe.

⁶⁴ B.H. Liddell Hart, *Deterrent or Defense: A Fresh Look at the West's Military Position* (New York: Praeger, 1960), 79-80.

⁶⁵ Liddell Hart's book had a relatively limited readership amongst the British officer corps. In an interview, Major-General Kenneth Perkins observed that few officers

read Liddell Hart, who was considered old and excessively theoretical. Interview with Major-General Kenneth Perkins, September 19, 2007.

Michael Carver claimed that, "The development of my views... owed much to an almost continuous correspondence with Basil Liddell Hart, punctuated by occasional meetings." Carver, *Out of Step: The Memoirs of Field Marshal Lord Carver*, 292.

⁶⁶ For Carver, "If we did not have the ability to use tactical nuclear weapons, the Russians, playing on the reluctance of the West to unleash global nuclear war, would I believe be tempted to use force to solve the German problem." Carver reasoned that any use of tactical nuclear weapons could bring about the danger of a global nuclear exchange via escalation. Because NATO would likely respond to a conventional attack with tactical nuclear weapons, the Soviet Union would have to incorporate into its calculations the possibility that conventional aggression would produce nuclear escalation. *Ibid.*, 295.

⁶⁷ Retrospectively, the Berlin Crisis is considered to have begun in November 1958 with Khrushchev's ultimatum and ended in August 1961 with the construction of the Berlin Wall. However, British and American policymakers remained nervous throughout 1962 that Khrushchev would make further efforts to change Berlin's status. As a result, when the Cuban Missile Crisis erupted in October 1962, many decision-makers were convinced that the installation of missiles in Cuba was a means of applying pressure on Berlin.

⁶⁸ PRO CAB 158/47 Cabinet, Joint Intelligence Committee, Soviet Reactions to Military Measures Foreseen in Berlin Contingency Planning, December 6, 1962.

⁶⁹ Because the status of Berlin resulted from agreements amongst the occupying powers at the end of the Second World War, the 1958-62 crisis over the city's status involved a significant amount of direct negotiation between the Soviet Union, the United States, the United Kingdom and France. The two German states were in odd situation that their territory and populations were at stake, yet they were not recognized internationally as having a stake in the matter.

⁷⁰ The three-power Berlin contingency plans grouped options into four phases. Phase three included significant conventional options "to demonstrate the determination of the Allies not to accept the blocking of access." Phase Three Plans included four scenarios under which large NATO forces would conduct limited conventional offensives against the Warsaw Pact. These included: 1) the use of a reinforced division to attack towards Berlin along the Helmstedt-Berlin autobahn; 2) an attack by a corps of four divisions along the same itinerary; 3) a two division attack to pinch off and hold the salient East of Kassel; and 4) a corps attack of four divisions to seize the high ground in the Thuringer Wald. Phase Four Plans included those where "nuclear weapons are used, either in implementation of nuclear support for Phase 3 operations or in the form of nuclear demonstrations intended to ensure that the Russians are aware that the Alliance stands ready for nuclear action." There were two Phase Four plans, which included using nuclear weapons over East Germany either in desolate regions as a pure demonstration or

against isolated military targets away from population centers. PRO CAB 158/47 Cabinet, Joint Intelligence Committee, Summary of Berlin Contingency Plans.

⁷¹ Given his opposition to the immediate use of tactical nuclear weapons, Carver recollected, “I found myself in the position of having to train my brigade for operations in which I did not believe.” Carver, *Out of Step: The Memoirs of Field Marshal Lord Carver*, 298.

⁷² *Ibid.*, 299.

⁷³ Carver applied his vision at the comparatively modest level of the brigade he commanded. The brigade comprised only one seventh of the British First Corps’ front line strength.

⁷⁴ Stone, 45.

⁷⁵ It is interesting to contrast this war game with the Buria (Storm) command post exercise conducted by the Warsaw Pact between September 28 and October 10, 1961. In the Warsaw Pact exercise, the scenario begins with the Soviet Union handing over control to East Germany for the access routes to Berlin. In response to this act, an United States Army division attempted to push its way to Berlin along the Helmstedt-Berlin autobahn (an action that actually figured in the allied contingency plans). When Soviet and East German forces resisted the movements of the American division, NATO began using tactical nuclear weapons. The Warsaw Pact then responded massively with nuclear weapons and invaded Western Europe, crushing most NATO forces and occupying a substantial portion of the Benelux countries and France by the fifth day of operations.

Faced with the arguments over doctrine, the British high command had difficulty making up its mind. Throughout 1958 to 1961, Chief of the General Staff Frankie Festing left the issue entirely to subordinates in the command structure. Matthias Uhl, “Storming on to Paris: The 1961 Buria exercise and the planned solution of the Berlin crisis,” *War Plans and Alliances in the Cold War: Threat Perceptions in the East and West* (London: Routledge, 2006), 52-58.

⁷⁶ The JIC report states, more fully: “We only envisage global or limited war between the Soviet Union and the West coming about through a process of miscalculation.... We believe that it is most improbable that general nuclear war could come about through miscalculation without being preceded by a period of limited hostilities.... During this period, with the dangers of miscalculation very much in mind, will strive to impress the other with its determination, and at the same time to leave the door open to negotiation so that neither gets into the position of being unable to withdraw without loss of face.” PRO CAB 158/47 Cabinet, Joint Intelligence Committee, Likelihood of War with Russia up to 1967, December 6, 1962.

⁷⁷ PRO CAB 158/47 Cabinet, Joint Intelligence Committee, Escalation, February 19, 1963.

⁷⁸ Ibid.

⁷⁹ Solly Zuckerman, *Monkeys, Men and Missiles: An Autobiography 1946-1988* (New York: W.W. Norton, 1988), 279.

⁸⁰ Warsaw Pact war games from this period never specified that Warsaw Pact forces would use tactical nuclear weapons first. Rather, Warsaw Pact forces used tactical nuclear weapons after either NATO forces had employed them, or firm intelligence was available that there were imminently going to do so. However, if NATO initiated the use of tactical nuclear weapons, the Warsaw Pact planned to respond massively. Uhl, 46-65.

⁸¹ As Defense Science Advisor Solly Zuckerman emphasized, most railway centers were located in the middle of heavily populated cities and ammunition dumps and tank parks were close to railway centers. Solly Zuckerman, *Monkeys, Men and Missiles: An Autobiography 1946-1988* (New York: W.W. Norton, 1988), 279.

⁸² Warsaw Pact war games from this period never specified that Warsaw Pact forces would use tactical nuclear weapons first. Rather, Warsaw Pact forces used tactical nuclear weapons after either NATO forces had employed them, or firm intelligence was available that there were imminently going to do so. However, if NATO initiated the use of tactical nuclear weapons, the Warsaw Pact planned to respond massively. Uhl, 46-65.

⁸³ Interview with Major-General Kenneth Perkins, September 19, 2007.

⁸⁴ With all three of these weapons, the United Kingdom purchased the delivery systems (i.e. the missiles, launch vehicles and, in the case of the 8-inch howitzer, the gun itself), but the United States retained control of the warheads. If war erupted, it required the authorization of both the American President and the British Prime Minister to use the weapons. When the United States President gave his approval, an American warhead custodial unit would transport the nuclear warheads to the British artillery battalion (the Army's nuclear weapons were assigned to the artillery) that possessed the launchers. Once the warheads turned over to British authority, the BAOR could determine how they would be used, provided the Prime Minister did not object to their employment. Shaun Gregory, *Nuclear Command and Control in NATO: Nuclear Weapons Operations and the Strategy of Flexible Response* (London: Macmillan, 1996), 103-29; and Watson and Rinaldi, 19-53.

⁸⁵ Colonel Frank Camm, OASD Systems Analysis, NATO Ministerial Meeting, Paris, France – December 1964, The Role of Tactical Nuclear Forces in NATO Strategy (Defense Background Brief), December 4, 1964, in Parallel History Project of NATO and the Warsaw Pact.

⁸⁶ Kiszely, 187.

⁸⁷ Both in Soviet statements from the period and subsequent revelations from Warsaw Pact archives, it is impossible to ascertain for certain whether Soviet officers

intended to use tactical nuclear weapons first, or only to respond in kind to any Western use. In many exercises, the Soviet organizers obscured the issue of first use of tactical nuclear weapons with the conceptual device of the “converging strike,” which consisted of the Warsaw Pact using tactical nuclear weapons when they possessed solid intelligence that NATO was preparing to do the same. Thus, each side was postulated to conduct its first tactical nuclear strikes at precisely the same moment. Because of the confusion generated by the “converging strike” concept, it is difficult to ascertain whether and for how long the Soviet armed forces planned to use tactical nuclear weapons first. Some authors have suggested that first use of tactical nuclear weapons constituted official doctrine until 1966, others 1968, while some analysts suggest dates still later. What is clear is that Soviet military leaders had no intention to continue fighting conventionally if NATO employed tactical nuclear weapons. Vojtech Mastny, “Imagining War in Europe: Soviet Strategic Planning,” *War Plans and Alliances in the Cold War: Threat Perceptions in the East and West* (London: Routledge, 2006), 25-37.

⁸⁸ A December 1965 study on tank wastage concluded that the British 1st Corps would probably lose between 15 and 32 percent of its tanks in one day in a purely conventional battle. But if tactical nuclear weapons were used, tank losses would rise to 29 to 42 percent of British tanks. PRO DEFE 48/33 Ministry of Defence: Defence Operational Research Establishment, Memorandum No. 10/65, A.J. White, An Estimate of Tank Wastage in the Land Battle for North-West Europe, 1968-73, December 1965.

⁸⁹ In 1970, the Prime Minister was briefed that, “The outcome of a tactical nuclear exchange was likely to leave the Warsaw Pact at a still greater advantage than before the battle commenced.” PRO PREM 15/037 Summary of Discussion Following the Defence Secretary’s Presentation of NATO Strategy to the Prime Minister on Wednesday 25th November 1970.

The next year, an armed forces report stated, “The analysis confirms existing assessments... that the firepower of their tanks; and that an exchange of tactical nuclear weapons – with about equal numbers being used on the two sides – although causing roughly the same level of casualties on the two sides *moves the force ratio to NATO’s disadvantage* [emphasis added].” PRO DEFE 25/299 DPS Central Region Study/DOAE Project 147, June 30, 1971.

⁹⁰ Based on German designs from the Second World War, France began producing the first anti-tank guided missile, the SS-10, in 1953.

⁹¹ ATGMs were propelled by a small rocket motor and guided by signals transmitted to the missile via a trailing wire from a control panel; they also employed shaped-charge warheads. They were introduced at a time when traditional anti-tank guns were becoming unwieldy. Although towed anti-tank guns had grown in caliber from between 35 and 47 millimeters in 1940 to between 90 and 100 millimeters in the immediate post-war period, the weight of anti-tank guns grew disproportionately. Whereas the American 37-millimeter anti-tank gun standard at the beginning of the Second World War weighed 950 lbs (430 kilograms), the 90-millimeter gun put into service after the war weighed 7,750 lbs (3,500 kilograms), an eightfold increase. The

British equivalent to the American 90-millimeter anti-tank gun was the 32-pounder. However, this system never entered service because the Second World War ended before it entered production.

Because of their weight, towed anti-tank guns became too cumbersome for infantry to employ in battle and most European armies abandoned their further development after the Second World War. This left infantry with only comparatively short-range and inaccurate recoilless rifles and unguided anti-tank rockets with which to repel enemy tanks. In the competition between tanks and the weapons designed to destroy them, the period following the Second World War saw the technical balance shift decisively in favor of the tank. For a certain time, only tanks possessed the requisite mobility and firepower to combat a tank offensive.

See Steve Zaloga, *US Anti-tank Artillery, 1941-45* (London: Osprey, 2005), 43; Chris Henry, *British Anti-tank Artillery, 1939-45* (London: Osprey, 2004); and R. M. Ogorkiewicz, *Design and Development of Fighting Vehicles* (Garden City, New York: Doubleday and Company, 1968), 68-69.

⁹² The weight was between 25 lbs (11 kilograms) and 216 lbs (98 kilograms) for the first generation systems. The lightest of the early systems was the Swiss Mosquito, while the heaviest was the Malkara, jointly developed by Australia and the United Kingdom. Needless to say, ATGMs cost much less than the tanks they were designed to destroy. PRO DEFE 15/2220 A1 Branch, RARDE, Tank and Anti-Tank Armament 1970/85: a discussion of present and future problems in the field of Armoured Warfare, n.d. (1965).

⁹³ In fact, the first two British ATGMs were not the product of published Army requirements or government funded research. Rather, the Malkara missile had begun as an Australian Army project, while the Vigilant missile was originally a private venture by the Vickers Corporation.

⁹⁴ Zuckerman, 291.

⁹⁵ The cost and effectiveness of ATGMs suggested that, “The doctrine of the tank as the primary anti-tank weapon needs serious re-examination in view of some of the weapon developments previously mentioned. The tank, like all other arms, must be able to contribute its fire-power to the purely armoured battle, but *there are other and probably better ways of carrying out the purely defensive anti-tank task* [emphasis added]”. PRO DEFE 15/2220 A1 Branch, RARDE, Tank and Anti-Tank Armament 1970/85: a discussion of present and future problems in the field of Armoured Warfare, n.d. (1965).

⁹⁶ Because the vast majority of British tanks were stationed in the BAOR, the sixty tanks employed for Exercise *Iron Duke* represented the largest armored force that could be assembled for maneuvers in the United Kingdom.

⁹⁷ Michael Tillotson, *Dwin Bramall: The Authorised Biography of Field Marshal the Lord Bramall* (Stroud, the United Kingdom: Sutton, 2005), 99-101.

⁹⁸ *Ibid.*, 105-07.

⁹⁹ Healy stated that elements in the British Army felt that “If you wait until you lost the conventional battle, then the advantages [of using tactical nuclear weapons] would be lost.” Denis Healey, interview, cited in Christoph Bluth, *Britain, Germany and Western Nuclear Strategy* (Oxford: Clarendon Press, 1995), 190.

¹⁰⁰ During this period, the BAOR did not possess distinct armored and infantry divisions or brigades. Rather, each division was identically composed of two brigades. These brigades, in turn, combined tanks and infantry. See Watson and Rinaldi, 74-85.

¹⁰¹ Much of this description of “mobile linear” battle is based on Colin McInnes’ research. However, fragmentary archival evidence tends to challenge some of McInnes’ assertions. A 1971 document on NATO strategy postulated that the main battle would begin 100 kilometers to the west of the demarcation line with East Germany, rather than at the demarcation line as claimed by McInnes. A 1973 study of Warsaw Pact air operations against British 1st Corps claims that the mobile defense would occur over a depth of 30 kilometers and, when the main defensive position was penetrated, the reserve division would counterattack the penetration, rather than hold a defensive line to the rear as claimed by McInnes. What explains these apparent discrepancies? Because the 1971 document describes strategy at the beginning of the period, it is possible that British policy subsequently changed to true forward defense. As for the discrepancies between McInnes and the 1973 study, it is likely that the belief in leap-frogging echelons backwards had already been discarded. See Colin McInnes, *Hot War, Cold War: The British Army’s Way in Warfare, 1945-95* (London: Brassey’s, 1996), 56-57; PRO DEFE 31/153 DOAE Project 147.5, R.F. Conyers, A Comparison of Air Support at Various Depths from the FEBA for Warsaw Pact Aircraft v 1 BR Corps, October 1973; and PRO DEFE 25/299 DPS Central Region Study/DOAE Project 147, June 30, 1971.

¹⁰² According to a June 1971 analysis, “The WP [Warsaw Pact] forces could be faced by logistic difficulties in resupply if the conventional action lasted for more than a couple of days and if NATO’s air attacks were successful in limiting WP resupply to the hours of darkness alone.... WP planners, in deploying a higher proportion of available manpower in the teeth formations, may be running some risks in their re-supply organization.” PRO DEFE 25/299 DPS Central Region Study/DOAE Project 147, June 30, 1971.

¹⁰³ PRO DEFE 31/153 Increase in the Capabilities of Soviet General Purpose Ground and Air Forces 1967-72, July 18, 1973.

¹⁰⁴ The reinforcements designated for the BAOR were of many different types, including both active military formations and mobilized reservists. Of the former, the 23 Special Air Service Regiment would be flown to Padeborn to provide intelligence behind

enemy lines. The United Kingdom's strategic reserve (the 3rd Division) could be sent to the BAOR, if not committed to one of NATO's flanks. Troops would also be withdrawn from Northern Ireland if time was available. Finally, Territorial Army formations would be mobilized.

¹⁰⁵ PRO CAB 148/130 Cabinet, Defence and Oversea Policy Committee, Programme Analysis and Review 1972: Reserve Forces, Memorandum by the Central Policy Review Staff, January 11, 1973.

¹⁰⁶ The BOAR's intelligence included the British Military Liaison Mission (BRIXMIS) in East Germany and the British 225 Signals Squadron. According to Major General Peter Williams, "In the DDR every unit had its own designated and fully prepared wartime deployment areas some kilometers from its peacetime location, from which it could be launched in a period of transition to war.... Another feature of many deployment areas tended to be a command bunker. These varied in their sophistication and size from small unguarded buried concrete structures... up to extensive and permanently manner high level bunker complexes with their own communications arrays and intruder alarms. The thing that all the bunkers had in common was that they were wired into the Soviet field telephone system. *This allowed the occupants to deploy from barracks on 'radio silence' and then communicate securely by telephone in a time of crisis without giving away their positions to listening Allied signals intercept units.*"

The 1968 Soviet intervention in Czechoslovakia provided a poignant warning. Although British and American intelligence detected most troop movements, the Soviets used repeated military exercises to confuse and desensitize Western observers and, thereby, surprise them with the timing of the invasion. The British Army later drew a similar lesson from the surprise Egypt and Syria achieved in the 1973 Arab-Israeli War. Richard Aldrich, "Waiting to be Kissed?: NATO, NORTHAG and Intelligence," (unpublished paper, 2007), 16; and Peter Williams, *BRIXMIS in the 1980s: The Cold War's "Great Game": Memoires of Liaising with the Soviet Army in East Germany*, Parallel History Project on Cooperative Security, www.php.isn.ethz.ch, accessed on 3 July 2007.

¹⁰⁷ On several occasions, BRIXMIS patrols spotted Soviet "break-out drills" wherein entire divisions rapidly exited their barracks and deployed to combat zones under conditions of radio silence. Aldrich, 9.

During the 1968 Czechoslovakia Crisis, an entire Soviet tank division was even moved by rail from the Murmansk Military District, north of Leningrad, to the Czech border without using radio communications and thereby advertising its presence to Western intelligence. Tillotson, 139.

¹⁰⁸ Ibid.

¹⁰⁹ Ibid., 141.

¹¹⁰ PRO DEFE 31/153 Increase in the Capabilities of Soviet General Purpose Ground and Air Forces 1967-72, July 18, 1973.

¹¹¹ As Major-General Michael Tillotson succinctly put it, “The most effective use of armour was not to charge at the opposition... but to position one’s own armour on ground where the enemy would be forced to attack.” Manned by professional soldiers, as opposed to conscripts, the Royal Armoured Corps believed that its tanks would be able to outmatch more numerous enemy tanks provided they were employed correctly. Tillotson's tactical views echoed British tank design philosophy. For historical and institutional reasons, British tank design philosophy favored the production of heavily armored tanks armed with large caliber guns, rather than the lighter, more mobile vehicles favored by other powers. The historical and institutional reasons for British tank design philosophy dated from the Second World War.

The principal British tank of the period discussed here was the Chieftain, which entered service in 1966. It was armed with the rifled 120 mm L11 gun, which remained the most potent NATO tank gun until the 1980s and outclassed the 100mm and 115mm guns equipping contemporary Soviet tanks. Because of its comparatively heavy weight (55 tons) and remarkably effective ballistic configuration, the Chieftain was also the best armored tank in the world until the 1980s. For example, the front glacis plate of the Chieftain provided the equivalent of 388 mm of armored protection against a horizontal shot (which was more than the 258 mm provided by the heavier Conqueror). In fact, the Chieftain’s a real density of armor, 3 tons per square meter, has never been surpassed. On the negative side, the Chieftain was expensive and equipped with an extremely unreliable engine. Although there were undeniable trade-offs to the practice, the British Army considered that the superior armor and firepower of its tanks would pay dividends in battle. According to an intelligence assessment of the performance of the most numerous Warsaw Pact tank, the T-54/55, against British built Centurions, “T-54 tanks were no match for modern Western tanks with better guns, thicker armour and gun stabilization.” Tillotson, 140; Richard Ogorkiewicz, “Armoured Fighting Vehicles,” *Cold War, Hot Science: Applied Research in Britain’s Defence Laboratories, 1945-1990* (Amsterdam: Harwood, 1999), 118-32; and PRO DEFE 31/153 Increase in the Capabilities of Soviet General Purpose Ground and Air Forces 1967-72, July 18, 1973.

¹¹² In shifting from counter-attacks delivered by armored battle groups to one based on employing tanks defensively in the anti-tank role, Bramall adapted the British war plan to the tactical consensus of the Armoured Corps. Numerous writings from this period highlight the exceptionally defensive nature of British thinking about the use of tanks. According Major R.S. Evans, who played a major role in the 1975-1976 restructuring of BAOR, “We have seen in it [the tank] the only chance of destroying sufficient enemy armour to effect a check on their advance: this has led us to spread our tank units across the front tied to largely static fire positions: here the tanks will fight with small opportunity for maneuver until, by sheer weight of enemy numbers, they are forced to withdraw or risk being overrun.” In a similar vein, Carnegie argued, “There are two methods of producing Shock Action:

(a) By the fear induced by the sight of being borne down upon by enemy tanks.

(b) By surprise fire: from an unexpected direction, at an unexpected time and with an unexpectedly heavy volume.

We cannot afford to accept the ratio of casualties likely in the first method when fighting other enemy tanks. Instead we must concentrate on the second method.” See R.S. Evans, “The Need for Offensive Operations on Land,” *The RUSI Journal* 121, no. 3 (September 1976): 30-33.

¹¹³ Described by Lieutenant-General Allan Taylor in 1971, the Royal Armoured Corps’ vision of tank tactics conflicted with those prescribed in the mobile linear defense and practiced by other armies, “There is a feeling abroad that by swanning round the place continually and at great speed, the tank is imbued with a magical new property that it did not have before, and is thus able to defeat a numerically superior enemy.... Any firepower element whether tanks, infantry or guns is relatively useless while on the move.... It follows therefore that *mobility means only one thing, the ability to move from one good battle position to another*. In the first and second position something can be done; the time in between is wasted.... It is sometimes thought that an effective counter attack can be mounting by charging into an unprotected flank of the enemy and destroying him on the move. This is nonsense.” Allan Taylor, quoted in Patrick Cordingley, “Armoured Forces and the Counter Stroke,” *The British Army and the Operational Level of War* (London: Tri-Service Press, 1989), 103.

¹¹⁴ Tillotson, 140-41.

¹¹⁵ PRO DEFE 31/153 DOAE Project 147.5, R.F. Conyers, A Comparison of Air Support at Various Depths from the FEBA for Warsaw Pact Aircraft v 1 BR Corps, October 1973; and R.S. Evans, 29-30.

¹¹⁶ Tillotson, 134.

¹¹⁷ An official British Army study of armored battles in both the Second World War and the October 1973 Arab-Israeli War accelerated the process, convincing a critical mass of planners and higher echelon commanders about the merits of the concepts developed by Bramall, Carnegie and Inge. The October 1973 Arab-Israeli War confirmed the validity of much of the new British doctrinal thinking. In the initial period of the war, ATGMs in Egyptian hands proved extremely effective in disrupting poorly coordinated Israeli tank attacks in the Sinai. Meanwhile, in the Golan Heights, two Israeli armored brigades using British materiel (Centurion tanks) and employing similar defensive tactics (tanks fighting hull-down), succeeded in repelling the attacks of five Syrian divisions, which possessed an enormous numeric superiority (900 Soviet-built tanks). Tillotson, 140.

¹¹⁸ Evans, 30-32.

¹¹⁹ Ibid.

¹²⁰ Watson and Rinaldi, 75.

¹²¹ For Bramall, “We do have in mind something in the nature of an Alam Halfa type battle in which the enemy armour and armoured personnel carriers were encouraged to run on to our own tanks and guided weapons, all firing at realistic ranges from carefully selected and concealed fire positions with as much depth and mobility as we can afford in relation to our allies on the flanks.” Edwin Bramall, “British Land Forces: The Future,” *The RUSI Journal* 127 no. 2 (June 1982): 18.

¹²² As Bramall put it, “If every one of our tanks... were to take out four or five enemy with them before succumbing, we would have triumphantly accomplished, or rather be able to accomplish, the job we are put there to do; and I see no reason why this should not be the case.” *Ibid.*

In his depiction of the Third World War, former NORTHAG commander, General Hackett, painted a similar picture. In Hackett’s fictional battle, “Its [the British 1st Corps’] anti-tank defences had been its salvation.... Small infantry detachments manning ATGW [anti-tank guided weapons, another term for ATGM] were still lying up in built-up or hilly country, waiting for the vulnerable flank.... One guided missile could destroy one tank.” Hackett et al., 180.

¹²³ The only major difference between the strategic objectives defined by Carver in 1960 and supported by Bramall in 1982 was the prospective of allied conventional reinforcements. In 1960, there was little prospect of NORTHAG receiving additional combat units once a war had begun. However, by the late 1970s, there had emerged the possibility of either French or American forces being sent to NORTHAG. In 1979, the French Army created the 3rd Army Corps, based near Paris at Saint-Germain-en-Laye, with the mission of intervening against a Soviet breakthrough in the NORTHAG sector. In the late-1970s, the United States Army also laid plans to transport its 3rd Corps (not to be confused with the French 3rd Corps just mentioned) to NORTHAG. The corps’ combat equipment was pre-positioned in Europe, so that only the personnel would have to be flown out from the United States. One of the corps’ combat brigades was also permanently deployed to Europe. Thus, if NORTHAG managed to hold out for at least a week and the proper political and logistic decisions were made in time, NORTHAG could hope for substantial reinforcements from American or French troops.

¹²⁴ . According to Bramall, British operational goals were that, “There can be no opportunity for him [the Soviet Union] to win the prizes he wants by a conventional blitzkrieg before a realistic, considered decision on nuclear weapons could and might be taken by the West, to his irreparable disadvantage. *That means having the capacity in the course of, perhaps, a long week to stop and hold the first echelon force of the Warsaw Pact.* After which American and French reinforcements, the imminent threat of nuclear escalation and many extraneous factors might persuade wiser counsels to prevail all round and the warring powers, even at that late hour, to pull back from the brink, if they were not to blow themselves to pieces [emphasis added].” Bramall, “British Land Forces: The Future,” 17.

¹²⁵ Robert Citno, *Blitzkrieg to Desert Storm: The Evolution of Operational Warfare* (Lawrence, Kansas: University of Kansas Press, 2004), 254-64.

¹²⁶ For example, see PRO DEFE 31/153 Increase in the Capabilities of Soviet General Purpose Ground and Air Forces 1967-72, July 18, 1973; and PRO CAB 186/17 Cabinet, Joint Intelligence Committee, Soviet Defence Policy and Strategy, May 17, 1974.

¹²⁷ Interview with General John Kiszely, July 14, 2006.

¹²⁸ As one research associate at the Soviet Studies Centre put it, “There must be no letup in the attack or later in the pursuit.... Momentum is maintained by accepting heavy casualties where necessary—the loss of men and equipment is more acceptable than the loss of time—and by organizing the attack in-depth.... Such pressure is confidently expected... to destroy an overextended defense lacking strong reserves.” Charles Dick, “Soviet Operational Concepts: Part 1,” *Military Review* 65, no. 9 (September 1985): 37-38.

¹²⁹ The Soviet concept of operations in the enemy rear was far from new when discovered by Western professional officers. The Soviet equivalent to blitzkrieg was developed in the 1930s and revealing termed “deep battle.”

¹³⁰ Explaining this difference, Christopher Donnelly of the Soviet Studies Centre wrote that, “The [Soviet] term *desant* [meaning delivering troops to the enemy rear] embraces an entire concept of tactical and strategic thinking that does not exist in the West.... The confusion and effect on morale of fighting in the rear, the Russians love to point out, is of exceptional value.”

The United States, the United Kingdom and West Germany all had airborne forces and the British and Americans maintained amphibious units. However, they did not intend to use these forces for opposed landings in a major war. For the Soviets, the psychological impact of operations in the enemy rear outweighed the danger to the forces employed for such purposes. C.L. Donnelly, “The Soviet Concept of the Desant,” *The RUSI Journal* 116, no. 3 (September 1973): 52.

¹³¹ Explaining Soviet successes in the Second World War, Charles Dick asserted, “The Soviets made the correct strategic and operational decisions.... Tactically successful German units and formations were simply swallowed up in operational catastrophes such as the giant encirclements in Byelorussia (28 divisions) or Jassy Kishinev (21 divisions).” According to General Kiszely, “We realized that we were thinking very small. For British officers, a brigade was a large unit and its movement constituted a major maneuver. When we learned that the Soviets thought in terms of corps and armies, and massive movements, it shook our confidence in the way we fought.” Dick, 31; and Interview with General John Kiszely, July 14, 2006.

¹³² The OMG revelation generated a large number of articles on the subject and significant high-level attention. Days after the appearance of Donnelly’s article, the

Supreme Commander of Allied Forces Europe (SACEUR) General Bernard Rogers made a speech confirming its content. As a result, mainstream Western media soon brought abbreviated analyses of OMGs far larger publics. Christopher Donnelly, "The Soviet Operational Manoeuvre Group – A New Challenge for NATO," *International Defense Review* no. 9 (1982): 1177-1186; C.J. Dick, "Soviet Operational Manoeuvre Groups: A Closer Look," *International Defense Review* no. 6 (1983): 769-776; and John Hines and Phillip Peterson, "The Warsaw Pact Strategic Offensive: The OMG in Context," *International Defense Review* no. 10 (1983): 1391-95.

¹³³ It is debatable whether German Army and SS units were still operationally more skillful than their Red Army equivalents during the later stages of the Second World War. Soviet units, especially the armored and motorized forces, improved dramatically over the course of the war as a result of experience and the emergence of competent officers. Meanwhile, attrition led the Wehrmacht to call upon less-than-ideal classes of military manpower, such as older and younger men, and individuals with physical problems. For example, an entire division was formed from individuals with stomach ailments. However, until the end of the Cold War, much of what was known in the West about the Eastern Front was came from biased German accounts of the fighting. Interview with General John Kiszely, July 14, 2006.

¹³⁴ Speaking of the perceived lack of individual initiative within Soviet Army, Donnelly informed his audience that, "One of the main problems is the Russians' tendency to sit and do nothing until an order is given. Making preparations in advance of an order is just not generally done.... The problem of initiative is a thorny one; but a traditional lack of it in Soviet life at any level other than the very top certainly increases adherence to stereotype and to rules, and increases dependence on contact with a senior commander." C.N. Donnelly, "Tactical Problems Facing the Soviet Army: Recent Debates in the Soviet Military Press," *International Defense Review* no. 9 (1978): 1410.

¹³⁵ Donnelly commented that within Soviet headquarters, "Too much time is spent trying to reach a decision; and too much time is spent in the drawing up and conveyance of orders. Furthermore, orders are often imprecise and confusing." According to him, "The increase in troop mobility and the effectiveness of weapons will result in frequent, rapid and radical changes in battle situations.... Commanders and staffs will have to do a lot more work in a lot less time." *Ibid.*, 1409.

¹³⁶ More than 60 percent of the commanders of Soviet armored battalions were under 30 years old, whereas their NATO counterparts attained similar responsibilities in their late thirties.

¹³⁷ Combined arms tactics have, since the First World War, been a major factor in the success or failure of armies at the tactical level. Combined arms tactics means the ability to combine different types of units, such as infantry, armor and artillery, or weapons.

¹³⁸ Accordingly to Charles Dick, “They [regimental and battalion commanders] tend to adhere rigidly to the scheme of manoeuvre laid down by their superiors even when the development of battle has rendered it inappropriate. Alternatively, they will often refer their problems upwards and wait passively for fresh orders.” C.J. Dick, “Soviet Battle Drills: Vulnerability or Strength?,” *International Defense Review* no. 5 (1985): 665.

¹³⁹ Richard Simpkin, “The Last Decades of the Dinosaurs,” *Weapons and Warfare: Conventional Weapons and their Roles in Battle* (London: Brassey’s, 1987), 169; and Richard Simpkin, *Race to the Swift: Thoughts on Twenty-First Century Warfare* (London: Brassey’s, 1985), 20.

¹⁴⁰ Simpkin, *Race to the Swift: Thoughts on Twenty-First Century Warfare*, 297-309.

¹⁴¹ *Ibid.*, 159-61.

¹⁴² According to General Kiszely, “Among many British Army officers it [Simpkin’s *Race to the Swift*] has gained for manoeuvre theory a reputation as being impenetrably obscure.” Kiszely, “The British Army and Approaches to Warfare since 1945,” 193.

¹⁴³ The 1943 Dnieper Bend (Kharkov) counter attack and the crushing of the 1944 Soviet thrust into Romania therefore became illustrations of how outnumbered, but better trained British forces could triumph over the superior numbers of the Soviet Army. According to Stone, Bagnall made a personal study of the Eastern Front before assuming command. Stone, 118.

¹⁴⁴ Diego Ruiz Palmer, “Countering Soviet Encirclement Operations: Emerging NATO Concepts,” *International Defense Review* no. 11 (1988): 1413-14.

¹⁴⁵ Interview with General John Kiszely, July 14, 2006.

¹⁴⁶ Kiszely makes the argument that the British Army lacked terms in English capable of describing the phenomena encapsulated in these German terms. However, the German terms were “bandied about... with little understanding of their underlying meaning or implications.” Kiszely, “The British Army and Approaches to Warfare since 1945,” 198.

¹⁴⁷ The criticisms and arguments made in the 1970s and 1980s were not entirely new and had been previously advanced by other authors. Second World War veterans of the German Army had long argued for basing NATO’s defense on a mobile defense, conducted by armored divisions, in a number of treatises and memoirs. For example, General F.W. von Mellenthin argued as far back as 1956 that, “It would be wrong to regard them [the Soviets] as invincible as long as the strength ratio is not fantastically unequal.... The Germans fought successful actions with a strength ratio of 1:5, as long as

formations remained more or less intact and adequately equipped.” For von Mellenthin, strong armored reserves and solid infantry were the key to achieving such results. Liddell Hart argued along similar lines in 1960 that, “The Germans often achieved an amazingly prolonged resistance against much superior numbers with armored divisions that were flexibly spread over a wide frontage.... The decisiveness of the Panzer thrusts of Guderian lay in producing paralysis after penetration, not in producing destruction of the enemy’s forces in battle.”

As early as 1951, Michael Carver, then a lieutenant-colonel, had argued for greater speed and flexibility in the British Army’s use of armor. He affirmed that, “The Germans and Americans both rightly accuse us of being ponderous in action.” Carver went on to contend that, “Success in these [armored] operations depends very much on speed, for it is only by superior speed that the initiative can be seized and maintained.... Speed on the battlefield is not solely, nor even primarily, dependent on the actual M.P.H. which tanks or other vehicles can achieve. It depends most of all on speed in acquiring and disseminating information, making decisions, issuing and transmitting orders and, most important of all, in translating them into action.”

F.W. von Mellenthin, *Panzer Battles* (New York: Ballantine, 1971, originally 1956), 365-66; Liddell Hart, 183-84; and Michael Carver, “Tanks and Infantry—The Need for Speed,” *Journal of the Royal United Services Institution* 95, no. 3 (August 1951): 452-56.

¹⁴⁸ From 1981 until 1983, he commanded the British 1st Corps in West Germany. Immediately following this command, he assumed command of the BAOR and NORTHAG between 1983 and 1985, after which he became Chief of the General Staff from 1985 until 1988. In the post-war British Army, Bagnall was the first officer to successively occupy the positions of commander of British 1st Corps and commander of the BAOR / NORTHAG, and only the second officer to occupy both positions.¹⁴⁸ He was the fifth to progress from commander of BAOR / NORTHAG to Chief of the General Staff (out of 17) and the third commander of British 1st Corps (out of 16) to become Chief of the General Staff. The officers who had become CGS after commanding the BAOR / NORTHAG were Bernard Montgomery, John Harding, James Cassels and Peter Hunt. The officers to eventually accede to CGS after commanding 1st Corps were James Cassels and Roland Gibbs. Watson and Rinaldi, 143-44; and Bill Jackson and Dwin Bramall, *The Chiefs: The Story of the United Kingdom Chiefs of Staff* (London: Brassey’s, 1992).

¹⁴⁹ This is especially true if it is considered that other significant reformers had only held commands in the BAOR for comparatively short durations. Bramall, for example, had never served in the BAOR before being given command of an armored division. Carver’s experience was likewise limited. He served on Montgomery’s staff when the latter was CINCENT in the early 1950s and later commanded a brigade in the early 1960s. Neither Carver nor Bramall served as commander-in-chief of the British 1st Corps or the BAOR / NORTHAG, although both eventually became CGS.

¹⁵⁰ The highest ranks in the British Army produced several individuals of outstanding intellectual credentials before Bagnall. Besides Bagnall, General John

Hackett was a classical scholar and edited a book on ancient warfare. Field Marshal Bernard Montgomery considered himself an intellectual and wrote both personal memoirs and a history of warfare. Field Marshal Michael Carver was an accomplished writer, who left excellent two excellent histories of the Desert War, memoirs, a book on British defense politics and several edited volumes on British military history. General Frank Kitson wrote several important works on counterinsurgency. Despite these counter-examples, most British officers consider the officer corps as a whole to be un-intellectual and relatively poorly read about military history or theory. It is not clear to this writer whether the British officer corps was in fact less intellectual than foreign counterparts during the Cold War, or whether it merely viewed itself in this fashion, perhaps as an extension of the so-called British amateur tradition. Interview with General John Kiszely, July 14, 2006; and Interview with Major-General Kenneth Perkins, September 19, 2007.

Other would-be reformers frequently criticized the British Army for precisely this shortcoming. Brigadier Richard Simpkin acerbically remarked that, “Soldiers’ blood and courage have proven more readily available [in the British Army] than generals’ brains,” while Brigadier Shelford Bidwell, claimed that “British officers are not much given to philosophizing” and only those few “eccentric enough to study their profession” read Clausewitz or Jomini.” Shelford Bidwell, *Modern Warfare* (London: Allen Lane, 1973), 105, 193; and Simpkin, *Race to the Swift: Thoughts on Twenty-First Century*, 20.

¹⁵¹ In a passage on the Carthaginian Army on the eve of the First Punic War, Bagnall revealed his thoughts about the British Army of his own era. According to Bagnall, “The peacetime officer corps training cannot have been well founded or rigorous. One suspects that they may have been more concerned with low-level colonial wars against a relatively unsophisticated enemy, than studying for a longer and more complex conflict—an *Imperial situation not unknown to the British Army during the 20th Century* [emphasis added].” General Kiszely is categorical that this statement encapsulates Bagnall’s view of the Cold War British Army.

Nigel Bagnall, *The Punic Wars: Rome, Carthage and the Struggle for the Mediterranean* (London: Pimlico, 1990), 99; and Interview with General John Kiszely, July 14, 2006.

¹⁵² In a passage on the Carthaginian Army on the eve of the First Punic War, Bagnall revealed his thoughts about the British Army of his own era. According to Bagnall,

The peacetime officer corps training cannot have been well founded or rigorous. One suspects that they may have been more concerned with low-level colonial wars against a relatively unsophisticated enemy, than studying for a longer and more complex conflict—an *Imperial situation not unknown to the British Army during the 20th Century* [emphasis added].

General Kiszely is categorical that this statement encapsulates Bagnall’s view of the Cold War British Army. Nigel Bagnall, *The Punic Wars: Rome, Carthage and the Struggle for*

the Mediterranean (London: Pimlico, 1990), 99; and Interview with General John Kiszely, July 14, 2006.

¹⁵³ Akehurst, *Generally Speaking: 'Then Hurrah for the Life of a Soldier,'* 180.

¹⁵⁴ Bagnall's views on armored operations bore similarities to criticisms Carver had made in 1951 about the ponderousness of British tactics and the need for a faster pace of operations. Tillotson, 140-41; Jackson and Bramall, 434; and Carver, "Tanks and Infantry—The Need for Speed."

¹⁵⁵ Quickly, Bagnall's collection of interlocutors referred to themselves as the "Tactical Doctrine Committee," but soon became known as the "Ginger Group," after the color of Bagnall's hair. Markus Mäder, *In Pursuit of Conceptual Excellence: The Evolution of British Military-Strategic Doctrine in the Post-Cold War Era, 1989-2002* (Brussels: Peter Lang, 2004), 87; and Interview with General John Kiszely, July 14, 2006.

¹⁵⁶ Interview with General John Kiszely, July 14, 2006.

¹⁵⁷ According to Kiszely, "At Barnall's corps conferences, briefings and post-exercise wash-ups a lot of these maneuver warfare ideas came out, which were then written down and formalized in his Corps doctrine." Interview with General John Kiszely, July 14, 2006.

¹⁵⁸ Kiszely, "The British Army and Approaches to Warfare since 1945," 199.

¹⁵⁹ This is the definition approved by the Army Command and Staff Course in 1994. However, Bagnall introduced the concept of maneuver warfare into the Army and created the Army Command and Staff Course. According to General Kiszely, the 1994 definition of maneuver warfare accurately reflects Bagnall's thoughts on the subject. Kiszely, "The British Army and Approaches to Warfare since 1945," 199.

¹⁶⁰ Interview with General John Kiszely, July 14, 2006.

¹⁶¹ Kiszely, who served with a covering force brigade, recalls that, "It was fully accepted that our battle would only delay, maybe 24 hours, before the [Soviet] 3rd Shock Army reached the main defensive position." Interview with General John Kiszely, July 14, 2006.

¹⁶² C.J. McInnes, "BAOR in the 1980s: Changes in Doctrine and Organization," *Defense Analysis* 4, no. 4 (1988): 384.

¹⁶³ According to General Kiszely, who was a member of the Tactical Doctrine Committee, "The main defensive position would not be entirely static, but prepared to maneuver—what the Germans call *beweglichkeit*, maneuverability." Interview with General John Kiszely, July 14, 2006; and McInnes, 385.

¹⁶⁴ In theory, the counter-stroke should have involved a whole armored division. However, one of its constituent brigades was involved in airmobile experiments until 1988. In practice, Bagnall's counter-stroke would have therefore probably consisted of a more modest two brigades. McInnes, "BAOR in the 1980s: Changes in Doctrine and Organization," 385.

¹⁶⁵ Bagnall described the purpose of this mobile strike as disrupting, dislocating and, eventually, destroying the enemy. According to the Tactical Doctrine Note about the counter-stroke, "Timing is the key. Whenever possible the counter-stroke should be launched when the enemy is fully extended presenting an exposed flank." Cordingly, "Armoured Forces and the Counter Stroke," 99.

¹⁶⁶ The more traditional views of the Royal Armoured Corps are detailed in the section on doctrine during the 1970s. For a simple comparison in tactics, "Mobility means only one thing, the ability to move from one good battle position to another. In the first and second position something can be done; the time in between is wasted.... It is sometimes thought that an effective counter attack can be mounting by charging into an unprotected flank of the enemy and destroying him on the move. This is nonsense." Allan Taylor, quoted in Cordingly, "Armoured Forces and the Counter Stroke," 103.

¹⁶⁷ Cordingly, "Armoured Forces and the Counter Stroke," 101.

¹⁶⁸ According to General Kiszely, doctrine before Bagnall was, "Very defensive, very static and very ground-orientated, with no depth and with no maneuver above the tactical level, and no real consideration of anything between tactical and strategy." Interview with General John Kiszely, July 14, 2006.

¹⁶⁹ Tillotson, 141.

¹⁷⁰ In a 1984 speech before the Royal United Services Institute, Bagnall highlighted precisely these dangers. According to Bagnall, "To adopt a static defense requires an approximately even dispersal of strength along the Army Group front, whereas the Soviets can concentrate to attack at selected points, and you do not have to be a military genius to see the likely consequences." Imperial War Museum Oral History Archive, Document 16197, Nigel Bagnall, "Concepts of Land-Air Operations in the Central Region: A British Perspective," May 25, 1984.

¹⁷¹ PRO DEFE 48/769 Major P.M. Will, DOAE Study No. D7504, Warsaw Pact Land Threat, October 1975.

¹⁷² Imperial War Museum Oral History Archive, Document 16197, Nigel Bagnall, "Concepts of Land-Air Operations in the Central Region: A British Perspective," May 25, 1984.

¹⁷³ Bagnall was not the only general to recognize the danger posed by artillery to British units deployed far forward. General John Akehurst recalls that he feared in 1979 that, “One of the Soviet Forces’ strengths was their artillery and with our deployment so close to the border they could employ this with potentially devastating effect before even leaving their own territory. Add to this my conviction that there were so many opportunities for their efficient espionage system to obtain details of our planned deployment that it was very likely to be compromised, thus pinpointing our every position.” See Akehurst, *Generally Speaking: ‘Then Hurrah for the Life of a Soldier’*, 173.

To illustrate this point to subordinates and audiences, Bagnall used a slide and handouts demonstrating that the Soviet divisions facing NORTHAG could produce an artillery barrage several times as dense as that delivered by the nearly 900 canons of the British 8th Army at the beginning of El Alamein against an enemy front only 65 kilometers long.” Imperial War Museum Oral History Archive, Document 16197, Nigel Bagnall, “Concepts of Land-Air Operations in the Central Region: A British Perspective,” May 25, 1984.

¹⁷⁴ McInnes, *Hot War, Cold War: The British Army’s Way in Warfare, 1945-95*, 67.

¹⁷⁵ According to Kiszely, “People said to him [Bagnall] that it’s [forward defense] is impossible to change. But he was not the type of person who would take that as an answer if it seemed to him to be some form of intellectual compromise.” Interview with General John Kiszely, July 14, 2006.

¹⁷⁶ West German General Leopold Chalupa proved particularly critical of Bagnall’s doctrine. McInnes, *Hot War, Cold War: The British Army’s Way in Warfare, 1945-95*, 61.

¹⁷⁷ By the time he gave his speech in 1984, Bagnall considered that his case against “forward defense” had been won. He stated, “Off the record, there’s no political problem because I’m not doing anything like giving up a vast area of West German territory. All I’m saying is that we can’t defend at the IGB [Inter-German Border] and that we’ve got to have a more sensible use of forces in the battle area.... There’s nothing that I’m proposing that’s outside of the political guidelines. The difficulty is that it’s been accepted judgement that we should fight in a certain way.” Imperial War Museum Oral History Archive, Document 16197, Nigel Bagnall, “Concepts of Land-Air Operations in the Central Region: A British Perspective,” May 25, 1984.

¹⁷⁸ Bagnall once told an audience, “Let us be quite clear that there is no alternative to us attempting to seize the initiative. Unless we achieve this, we will be reacting to Soviet moves and as a greatly numerically inferior force, we will inevitably be ground down in a battle of attrition that we could never hope to win.” Imperial War Museum Oral History Archive, Document 16197, Nigel Bagnall, “Concepts of Land-Air Operations in the Central Region: A British Perspective,” May 25, 1984.

Imperial War Museum Oral History Archive, Document 16197, Nigel Bagnall, "Concepts of Land-Air Operations in the Central Region: A British Perspective," May 25, 1984; and Interview with General John Kiszely, July 14, 2006.

¹⁷⁹ According to Bagnall, "The risks are high in a battle of maneuver. But so is the payoff high if successful. Whereas a static concept, resulting as it does in a battle of attrition, can only end, if not sooner than later, in disaster." Imperial War Museum Oral History Archive, Document 16197, Nigel Bagnall, "Concepts of Land-Air Operations in the Central Region: A British Perspective," May 25, 1984.

¹⁸⁰ . Recapitulating Bagnall's view on skills needed for maneuver warfare as opposed to those cultivated under the British Army's previous attritional way of war, "The attritional approach requires commanders to have a few qualities in large measure: physical courage, tenacity, discipline, and the ability to plan in detail, but with limited amounts of imagination (too much imagination being dysfunctional). The maneuverist approach, by contrast, requires a commander who is focused above all on mentally outmaneuvering his opponent." Kiszely, "The British Army and Approaches to Warfare since 1945," 181.

¹⁸¹ According to Brian Holden Reid, whom Bagnall appointed as the first civilian member of the Staff College's Directing Board (in 150 years), "Not their [the British Army's] least interesting feature is the emphasis placed on the study of history as a form of vicarious experience. Brian Holden Reid, "Introduction," *The British Army and the Operational Level of War*, 10.

¹⁸² Mäder, 92; and Interview with General John Kiszely, July 14, 2006.

¹⁸³ *Design for Military Operations* is sometimes lauded as the British Army's first formal doctrine. McInnes, *Hot War, Cold War: The British Army's Way in Warfare, 1945-95*, 71.

¹⁸⁴ According to Kiszely, Farndale was not an intellectual in the same mold as Bagnall. Moreover, whereas Bagnall cultivated a casual and relaxed ambiance, Farndale preferred the formality more typical of the British Army. Interview with General John Kiszely, July 14, 2006.

¹⁸⁵ Amongst the one-time members of his Tactical Doctrine Committee were: Rupert Smith, who commanded the British 1st Armored Division during the 1991 Gulf War and UNPROFOR in the former Yugoslavia; Patrick Cordingly, commander of the 7th Armored Brigade in the 1991 Gulf War; Jermie Mackenzie, commandant of the British Army's Staff College and the first commander of NATO's Allied Command Europe Rapid Reaction Corps; and John Kiszely, who commanded British forces in Iraq (2004), before becoming the head of military higher-education in the United Kingdom.

¹⁸⁶ Cordingly, 94-105.

¹⁸⁷ By 1985, semi-official articles were appearing in the Soviet press arguing that the Warsaw Pact's armed forces should adopt a "non-offensive structure." In 1986, the Warsaw Pact's Budapest Appeal called for conventional arms reductions in Europe. In 1987, the Warsaw Pact both began planning for defensive warfare and publicly declared that its military doctrine had a defensive character. Finally, in 1988, Premier Mikhail Gorbachev announced large-scale cuts in the Soviet armed forces. Kimberley Zisk, *Engaging the Enemy: Organization Theory and Soviet Military Innovation, 1955-1991* (Princeton: Princeton, 1993), 151-77.

¹⁸⁸ This is especially true when compared to the United States Army's more ambitious (and flawed) Pentomic concept.

¹⁸⁹ For example, Field Marshal Montgomery facilitated Michael Carver's career despite the fact that Carver argued, in print, that Britain's (i.e. Montgomery's) style of warfare was ponderous and needed reform. Edwin Bramall assisted Nigel Bagnall's accession to the most important commands in the Army despite the fact that Bagnall fundamentally reformulated the war plans that Bramall had helped develop ten years previously.

¹⁹⁰ In the cases of Liddell Hart in the early 1960s and Simpkin in the 1980s, their impact depended exclusively on their intellectual influence on interlocutors in the Army's high command.

¹⁹¹ W.A. Willcocks, "Airmobility and the Armoured Experience," *The British Army and the Operational Level of War*, 108-26.

¹⁹² Much political science literature on military doctrine suggests that military organizations prefer offensive doctrines, for resource, ideational and military reasons, if given a choice. In light of the British Army's unchallenged authority over doctrine, one would expect its doctrines to exhibit such an offensive proclivity. However, the data is inconclusive on this point. Of the four major doctrines under question, only two had significant offensive components—the atomic air interdiction doctrine (1958 to 1964) and the maneuver warfare doctrine, especially once it was applied at the Army Group level (1983 to 1989). Thus, the British Army went through most of the period guided by defensive doctrines. It is arguable, however, that the military balance was so unfavorable to NATO that it is exceptional that a concept as offensive as launching an operational counter-stroke into East Germany could have ever been contemplated.

Chapter V:

Weapons Procurement in France

I. Introduction

In peacetime, arms procurement is the facet of defense policy most subject to political pressure. By expending large sums of money on high technology products, armed forces play a role in the economy. Decisions about weapons acquisition impact employment, technological development and the health of industries, prompting political leaders to intervene. Armed forces seek to both buy the most military power possible and advance the narrow institutional agendas of important platform communities. In any procurement decision, purely economic considerations conflict with military desiderata.

Striking the wrong balance between military and economic arguments can be disastrous. A military dominated "garrison state" can consume excessive quantities of a state's financial resources, scientists and engineers, draining the civilian economy of its vitality. Should the armed forces of such a state favor importing weaponry, then an exodus of foreign exchange and dependence on another state will follow. At the opposite extreme, armies equipped with weapons produced merely to keep factories open and develop dual-use technologies will fail at war.

Added to the military and economic arguments, a third, diplomatic, dimension intrudes into most procurement decisions. Choosing to import a weapon implies dependence on the exporting state for spare parts and equipment modernization. Opting to build a weapon nationally implies striving for arms exports, to extend production runs and amortize development costs. The third possibility, developing a weapon in collaboration entails a long term relationship with partner countries. In some cases, collaboration can be considered a good in and of itself, as collaboration

amongst European states is sometimes seen. When today's partners are unreliable or may be tomorrow's competitors, the advantages of collaborations must be weighed against the risks.

Three distinct groups are involved in weapons procurement. Armed forces will ultimately use the weapon acquired and, therefore, strive to define the quantity and technical characteristics of the system in question. Civilian governments allocate funds to procurement programs and decide whether weapons will be produced domestically, collaboratively or imported. Finally, industry must develop weaponry and produce it at a profit.

Research indicates that the relative influence wielded by each these groups shapes the characteristics of the weapons a state acquires. Military professionals believe that they need weapons individually superior to those of their opponents. Each armed service concentrates disproportionate efforts acquiring weapons considered vital to the dominant platform community, such as fighter aircraft for air forces, aircraft carriers for navies and tanks for armies. When they are cheaper or more capable, military professionals prefer foreign imports to their domestic equivalents.

While military commanders favor acquiring sophisticated weapons regardless of their origin, civilian leaders face a wider set of constraints. Whereas professional soldiers underline the need for technical military superiority in the rare event of war, political leaders are responsible for the economic viability and technological independence of a state during the much longer intervals of peace. This leads them to "satisfice" in terms of military capabilities and keep procurement expenditures within national boundaries, but prefer international collaboration to importing weaponry. Arguments about potential technological "spin-offs" from military procurement programs to the civilian economy also have more sway over civilian than military authorities.

Arms manufacturers obey the concrete logic of economic survival. The primary objectives of arms producers are maximizing current profits and long-term competitiveness. They must

acquire contracts, and then develop and produce weapons at a profit. To retain qualified personnel and remain commercially competitive, military industries also need to sustain a constant degree of design and manufacturing activity. Profitability and sustaining production runs pushes manufacturers to favor weapons sales and developing arms that are exportable. When possible, private industries attempt to limit the technological risk they assume and which may rebound, damaging their future competitiveness.

In short, military officers demand cutting-edge weaponry from whichever supplier can provide the most combat power at the least cost, civilian leaders use defense procurement as a means of advancing economic and employment objectives, and industrialists oppose importing weaponry and favor producing arms that are exportable. Table I, below, illustrates the differences between military, political and industrial views on procurement.

Table I:		
Civilian, Military and Industrial Preferences		
Civilian Leaders	Military Commanders	Defense Industries
Sustain national manufacturing base	Maximize combat power	Maximize profitability
Maximize technological spin-offs	Pursue cutting-edge technology	Minimize technical risk
Protect employment	Acquire most combat power for money	Sustain activity of design bureaus and production lines
Export to allies and cooperate with strategic partners	Privilege weapons dear to dominant platform community	Maximize exports

Because soldiers, civilians and industrialists view defense procurement differently, their relative power shapes the weapons states acquire.

Until the Fifth Republic, armed forces dominated the weapons development process. Each armed service possessed its own technical department that either directly designed or managed the procurement of the weapons requested by the high command. This system functioned adequately, albeit imperfectly, until the First World War, when deficiencies became apparent. The absence of heavy artillery at the outbreak of the First World War was imputed to a high command deficient in technical judgment and imbued with an ethos favoring the infantry offensive, which only field guns could support. Thereafter, traditional branches (infantry and cavalry) bent French tank development to their own agendas, leading to a dispersion of effort and the creation of distinct "infantry" and "cavalry" tanks. After the Second World War, the military-controlled technical departments accorded scant attention to nuclear weapons or their delivery mechanisms, despite the priority successive French governments accorded them.

After civil-military crises destroyed the Fourth Republic in 1958 and the armed forces resisted the new government's emphasis on nuclear deterrence, de Gaulle divested the armed services of their procurement role and vested authority in a new technocratic structure directly subordinate to the Defense Minister.¹ De Gaulle and his contemporaries were disenchanted with the armed services' dubious loyalty, conservative judgment and a doubtful technical track record. As de Gaulle confided to his son, "[The military] always seeks to perpetuate its existing fighting order.... Everything that one day modified the nature of warfare, all new ideas, came from outside and if they came from inside, they were just as quickly criticized or combated by the high command."²

De Gaulle's solution was the Ministerial Delegation for Armament (DMA, renamed the DGA in 1977), which he created in the Spring of 1961. Initially concentrating the armed services' technical directorates under a new central authority, the DMA/DGA gradually merged into a cohesive ensemble, motivated by a technocratic ethos and bereft of residual service loyalties. The

balance of power between technocrats and operational commanders shifted further with the creation of a distinct professional group of "armament engineers" to manage the DMA/DGA. Because of their comparatively small numbers--between 1,500 and 2,200--and their recruitment from France's premier engineering school (Ecole Polytechnique), armament engineers are homogeneous and cohesive. In their dealings with the armed services, armament engineers benefit from military rank and accelerated promotions, with over 10 percent holding the rank of general.³

Concretely, the DMA/DGA derives its authority from its direct access to the Defense Minister, its control over every stage of the weapons development process from basic research to series production, and its custodianship over France's state arsenals and research facilities, which employed 50,000 at the time of the DMA's creation.⁴ On detached service, DMA/DGA personnel play a major role managing private defense contractors as well. For example, Dassault Aviation, a private family-owned enterprise, featured 16 armament engineers occupying key posts in 1990 and had drawn its last two Directors of International Affairs (i.e. exports) from the DGA.⁵

Because of the DMA/DGA's custodial role over defense industries, its technocratic "engineering" culture and its direct relationship with the Defense Minister, it can be expected to privilege industrial and political concerns, over military considerations. Given this balance of authority, one expects French procurement policy to favor national military-industrial autonomy, arms exports and technological spin-offs. Purely military considerations, such as pursuing cutting-edge military technology, catering to dominant platform communities and importing arms, if necessary, are likely to receive short shrift.

The remainder of this chapter will test these hypotheses on the record of French combat aircraft procurement. Of France's many programs, this chapter will examine three specific cases--upgrades to the Mirage III, and the development of the Mirage F1 and Mirage 2000. These cases

embrace French combat aircraft activities from the creation of the DMA until the end of the Cold War, stretching over the administrations of four presidents. The combat aircraft sector was chosen to examine because it poses particularly acute technological challenges and civil-military dilemmas. Developing combat aircraft is one of the most expensive and technically demanding tasks facing states and air combat is one of the domains of warfare most sensitive to the relative capabilities of opposing hardware. Because of perceived spin-offs from the combat aircraft sector to civil aviation industries, the combat aircraft sector is also subjected to greater industrial pressures than other sectors.

II. Improving the Mirage III

In many respects, the Mirage III's operational debut in 1960 marks a watershed in French aviation history. For the first time since the defeat of 1940, France had developed a world-class fighter aircraft. With a solid design, innovatively blending foreign technologies--the delta wing and "area rule" fuselage--the Mirage III was set for the burgeoning lightweight fighter market. However, the Mirage III was handicapped by poor French subsystems, including its radar, missiles and jet engine. If only the French aircraft could be built with superior British or American subsystems, the French Air Force and Dassault Aviation reasoned that it would be the premier aircraft of its genre. However, in one of its first acts, the new Ministerial Delegation for Armaments (DMA) blocked efforts to marry the Mirage III's superlative airframe with the best engines, radars and missiles available. The DMA's policy sacrificed French combat power and Dassault's sales in order to protect France's engine (SNECMA), radar (Thompson CSF) and missile (MATRA) manufacturers.

First flying in 1956, the Mirage III prototype heralded a new age in French aviation. Although the arrowhead-shaped fighter drew heavily on technology already in service aboard American and British aircraft, the Dassault company did a sublime job improving and integrating delta wings, an "area rule" fuselage and transonic shock-cones into a bi-sonic lightweight fighter. Almost miraculously, the French Air Force acquired the Mirage, despite its preference for more exotic aircraft, after two prototypes of its favored Trident fighter crashed or exploded in mid-air.⁶

From the outset, French and international and international experts lauded the Mirage III's basic characteristics. A British mission (rarely flattering to French aircraft) reported back to London in 1960 that the Mirage III was "extremely impressive," "virtually foolproof and delightful to fly," "easy to fly and viceless," and destined "to be one of the leading supersonic fighters."⁷ For the British as well as other foreign observers, the Mirage III's basic aerodynamics were simply unrivalled.

For a variety of reasons, the Mirage III commercially debuted at an ideal moment. Falsely optimistic about beyond visual range engagements and collision-course interceptions, the United States and the United Kingdom had invested their resources in heavy, expensive and sophisticated fighters, such as the F-4 Phantom II and Lightning. Because British and American fighters were too costly and technically arduous, the Mirage III was the only counter to Soviet MiGs that most countries could afford. Only two American private ventures--the Lockheed F-104 and Northrop F-5--provided any competition in the lightweight fighter market.⁸

Unfortunately, while the Mirage III's overall design was world-class, the same could not be said for its subsystems and, in particular, its engine, radar and air-to-air missile. Despite enormous efforts, French subsystems manufacturers had not recovered from the technological lag their country accumulated after its defeat in 1940. France's best engine, the SNECMA built ATAR 9B--was still

a direct development of the Second World War German BMW 003. Although improved by French and German engineers, the ATAR was still old technology and approximately 25 percent less powerful and fuel-efficient than newer British and American designs.⁹ French radars were even worse, with the Cyrano Ibis prone to frequent technical failures. Perhaps worst of all, the Mirage III's only missile--the Matra R.530--barely ever worked, leading French pilots to nickname it "good for what." Even the meticulous Israelis, who shot down over 282 Arab aircraft with their Mirage IIIs, only claimed a single kill (0.3 percent) with the R.530.¹⁰

Clearly, the French subsystems limited both the Mirage III's combat power and commercial prospects. Dassault and the French Air Force longed to equip the Mirage III with better foreign subsystems; the Air Force to improve its military potential and Dassault to enhance its commercial attractiveness. Dassault and the Air Force approached the United Kingdom, whose radars and engines were superior, but which lacked an indigenous lightweight fighter on the market and in competition with the Mirage III.

Discreet discussions revealed that the Ferranti Airpass Mk2C radar and Rolls Royce Avon RB.146 turbojet could be substituted for their French equivalents, drastically increasing the Mirage III's combat potential.¹¹ Without a lightweight fighter of their own to market, the British were enthusiastic about a match that could only benefit their sales. Dassault, too, hoped that an anglicized Mirage III could win the enormous European lightweight fighter competition looming on the horizon. In one of the most important fighter competitions in history, the Mirage III would square off against the Lockheed F-104 for a grand total of 1,300 aircraft orders from West Germany, Belgium, the Netherlands and Italy. Political and technical criteria would determine victory or defeat, and Dassault hoped that an anglicized Mirage III would have superior performance to the French version and could be presented as a Franco-British alternative to American aircraft. Table II,

below, compares the Mirage III's original French subsystems with the British alternatives discussed in 1961, and later variants demanded or produced by export customers.

Table II:

Proposed and Implemented Mirage III Improvements

Subsystem	Original French Sub-System	Proposed (1960s) British Alternatives	Later Improvements
Radar	Cyrano Ibis	Ferranti Airpass	Hughes TARAN(for Swiss) No Radar (Israel) Elta 2001 and 2032 (for Israel and S. Africa) Cyrano II (from 1965) Cyrano IV (from 1979)
Jet Engine	ATAR 9B and C	Rolls-Royce Avon	General Electric J79 (for Israeli Kfir) ATAR 9K50 (from 1979)
Missile	Matra R.530		Falcon (for Swiss)

The DMA saw matters differently from Dassault or the Air Force. Being responsible for France's defense industries, the DMA feared that incorporating foreign subsystems into the Mirage III would cripple French manufacturers. Jet engines, radars and missiles were strategic industries with both defense and civilian economic ramifications and whose importance would grow over the long term. Choosing foreign over French subsystems would deny French manufacturers critical orders and shatter the reputation of French engines and radars. Therefore, the DMA categorically refused improving the Mirage's performance with foreign subsystems.

When the Mirage III entered the lightweight fighter competition with its French subsystems, it predictably lost. As a consequence, Lockheed, rather than Dassault, received Europe's largest combat aircraft contract of the 1960s.

If not for the Mirage's French subsystems, there are strong reasons for believing that it might have won. West Germany explicitly cited the Mirage's inferior radar as the reason for its rejection, while Belgium and the Netherlands judged the aircraft's technical characteristics lacking. Besides compromising the technical quality of the subsystems, the DMA's choice penalized the Mirage III politically. An all-French Mirage had poorer chances of defeating an American fighter for NATO orders than a Franco-British aircraft, which would have greater appeal as a "European" fighter. Otherwise, the Mirage III came closer to meeting European requirements for a multi-role aircraft than the F-104, which was a dedicated interceptor. Used in the air-to-ground mode, West Germany lost 270 F-104s to accidents, winning the aircraft the dubious nickname of "the widow-maker."¹² Dissatisfied with their F-104s, Belgium purchased a Mirage III variant (the Mirage V) seven years after ordering F-104s and continued flying them more than a decade after scrapping its last F-104s.¹³

Loosing the European lightweight fighter competition robbed Dassault of the opportunity to establish itself as Europe's dominant aircraft manufacturer and guarantee the Mirage's place as the world's premier export fighter. Nevertheless, the Mirage's sound basic design attracted many buyers. Ultimately, France sold 950 Mirage IIIs and derivatives (Mirage 5 and 50) to 19 foreign clients. Although most Mirage clients were small and fewer aircraft were exported than either the American F-4 or F-104, the Mirage III served in more foreign air forces (19 for the Mirage III versus 14 for the F-104 and 11 for the F-4) and a higher percentage of the production run was exported (66 percent) than any contemporary fighter, save the F-104.¹⁴

Throughout its commercial life, poor or unreliable subsystems dogged the Mirage III. To compete against the F-104 in Australia, the DMA exceptionally permitted Dassault to offer the aircraft with a Rolls-Royce Avon engine.¹⁵ Later, at Swiss insistence, France presented the Mirage III with an American Hughes radar and Falcon missile. Unfortunately, integrating entirely new

subsystems into an existing aircraft is a costly affair if undertaken over a small production run. Australia opted for the original French engines rather than bear these added costs, while Switzerland's insistence on superior American radars and missiles led to massive cost overruns, as the Swiss struggled with systems integration.¹⁶

Other customers with less market clout were obliged to make due with French subsystems. Particularly dissatisfied with French radars, the Israeli Air Force removed many Mirage III radars and replaced them with concrete ballast.¹⁷ When it came time to procure more aircraft, the Israelis demanded a radar-less Mirage, which would carry more fuel in place of the aircraft's worthless air-to-air radar. Surprised at this request, the DMA approved Israel's demand.¹⁸

Ready by 1967, the radar-less Mirage (termed the Mirage 5) became an instant success. Without the Mirage III's unreliable but costly radar, the Mirage 5 was cheaper than its forbearer and could carry 57 percent more fuel. As a testament to the prowess of the basic Mirage design and poor capacity of its radar-equipped Mirage III. Ultimately, France sold 531 Mirage 5s to 13 states, making it the most successful variant ever. Israel also manufactured 68 Mirage 5 copies, of which it sold some to Argentina.¹⁹

That so many states opted for a radar-less aircraft highlights the paucity of good alternatives. If offered with a better radar and weapons system, the Mirage III family would have won many more sales. Unwilling to produce a standardized Mirage with foreign subsystems, the DMA sacrificed this opportunity. Dassault was only able to market improved Mirage IIIs once French manufacturers had developed a new generation of radars and engines. However, by this time it was too late for the Mirage III to dominate the market the way it might have, had it been allowed to have recourse to imported components. When Dassault finally offered a Mirage III variant--the Mirage 50--with an improved engine (ATAR 9K50) and radar (Cyano IV or Agave) the basic design was

nearly 20 years old and no longer as remarkable as it once had been. Introduced in 1979 (versus 1960 for the Mirage III) Colombia and Venezuela nevertheless purchased the Mirage 50, which continues to serve to this day.²⁰

Meanwhile, several states tried to improve the Mirage on their own. One major Mirage user, Israel, developed a derivative, the Kfir, powered by the J79 engine that powered the American F-104.²¹ Later, South Africa rebuilt its Mirage IIIs with Israeli radars and newer French engines (ATAR 9K50). With its last converted Mirage IIIs, named Cheetahs, assembled in the mid-1990s, the South Africans introduced the ultimate evolution of the Mirage III design more than three decades after its forbearer entered service.²² Table III below details the late Mirage III variants and derivatives, produced between 1975 and 1995.

Country of Origin	Designation	New Subsystems	Clients
Israel	Kfir (1975)	J79 Jet Engine (USA) EL 2021 / 2032 (Israel)	Israel Colombia Ecuador Sri Lanka US Navy
France	Mirage 50 (1979)	ATAR 9K50 Jet Engine Cyrano IV or Agave Radar	Chile Venezuela
South Africa (with Israel)	Cheetah (1986, 1993 for Cheetah C)	ATAR 9K50 EL 2001 / 2032 (Israel) Israeli Heads-Up-Display	South Africa
Chile (with Israel)	Pantera 50C (1993, upgrade of Mirage 50)	EL 2001 (Israel) Israeli Avionics	Chile

That countries were still rebuilding or purchasing Mirage III variants two to three decades after the series debuted bears testimony to the aircraft's phenomenal design. The Mirage III's longtime rival, the Lockheed F-104, ended production and was withdrawn from service long before its long career, the Mirage's strong design was counterbalanced by its faulty subsystems. Viable alternatives existed all along, but the DMA limited Dassault's ability to offer foreign subsystems on export Mirages and prohibited the French Air Force from using them on its own aircraft. As a result, the Mirage III never achieved its operational or commercial potential. Instead of dominating contemporary lightweight fighters in sales and air combat, the Mirage III was reduced to a form of parity, wherein a superior airframe was compromised by inferior engines, armaments and avionics.

However, the DMA accomplished its primary goal of fostering a broad-based defense industry and guaranteeing France's military-industrial autonomy. Sacrificing significant export orders, dominance in the airframe sector and better combat aircraft, the DMA provided a significant boost to French producers of jet engines, radars and missiles. Hitherto a minor engine manufacturer, building only 1,778 turbojets between 1945 and 1960, engine production for the Mirage III provided SNECMA with 2,090 turbojet orders (ATAR 9B and C).²³ This windfall in engine production permitted SNECMA to expand from a second-rate engine producer, with unprofitable production runs and obsolete technology, to the free world's fourth jet engine producer. As a direct result of Mirage III engine production, SNECMA financed its first indigenous (i.e. not based on the German technology) engine development program beginning in 1966 and established a strategic alliance with General Electric to build commercial jet engines in 1971.²⁴

France's radar and missile manufacturers also used the Mirage III program to advance from their previous status as struggling industries to established, albeit second-tier, arms producers. Building 184 Cyrano Ibis radars for the Mirage III between 1960 and 1965, Thompson CSF drew on

its growing experience and reinvested its profits to develop the improved Cyrano II from 1965.

Equipping a further 487 Mirage IIIs with the Cyrano II, Thompson CSF continued its technological apprenticeship, gradually filling the technological gap separating it from first-order radar producers.²⁵ Like SNECMA and Thompson CSF, France's air-to-air missile producer, Matra, rode the Mirage III's coattails to technical respectability. The existence of a large Mirage III fleet provided a captive market for Matra to supply with improved missiles. Fielding the Matra Magic 550 from 1972 and the Super 530 from 1979, France could finally offer viable air-to-air missiles over a decade after the Mirage III debuted with the useless R.530.²⁶

In short, the DMA fostered a broad-based defense industrial base at the expense of achieving commercial dominance in the airframe sector, equipping the Air Force with improved aircraft and earning even greater revenues on aircraft exports. Table IV, below, illustrates the trade-offs imposed by the DMA.

Table IV:	
Advantages and Disadvantages of DMA Policy Towards Mirage III	
Advantages	Disadvantages
<p>2,090 turbo jets produced</p> <ul style="list-style-type: none"> - financed SNECMA's development of next generation engine from 1966 - provided basis for SNECMA to conclude strategic partnership with General Electric <p>671 radars produced</p> <ul style="list-style-type: none"> - gave Thompson CSF experience - permitted development to Cyrano II and, later, the Cyrano IV <p>Continued development of French missiles</p>	<p>Dassault's market position compromised</p> <ul style="list-style-type: none"> - lost European lightweight fighter competition (for 1,300 aircraft) - lost other export orders as well <p>French combat power sacrificed</p> <ul style="list-style-type: none"> - French Air Force does not possess a viable air-to-air missile until 1972 and a capable radar guided missile until 1979 - Radars, especially the Cyrano Ibis, virtually worthless - Engines inefficient (25% less than competition)

As may be seen, apparently technical choices were weighty in consequences for both French combat power and the future of France's and Europe's aircraft industries. The French Air Force was obliged to make do with inefficient fuel-guzzling engines, unreliable radars and without a viable air-to-air missile until the 1970s. On the industrial side, France sacrificed an opportunity to establish Dassault as Europe's premier military airframe manufacturer in order to develop a broader-based autonomous military-industrial complex.

III: The Mirage F1

After acquiring a remarkable, but basic lightweight fighter in the Mirage III, the French Air Force longed for something more. New roles, such as long-range interception and low-altitude bombing, required larger aircraft with sophisticated electronics. The Air Force also pushed for investment in emerging technologies, such as vertical take-off and landing (VTOL) and variable geometry wings. The DMA and French manufacturers opposed the Air Force's projects. The export craved more lightweight fighters, rather than the expensive, complicated and specialized aircraft that military professionals considered necessary in Europe. Moreover, many of the Air Force's schemes would have relied on foreign partners or components, undercutting the DMA's strategy of fostering a broadly based defense industrial base, which would partly fund itself through exports or spin-offs. After prolonged bureaucratic battles, the DMA and industry imposed another lightweight fighter on the Air Force. Unwanted by the Air Force, the Mirage F1 permitted the expansion of France's aviation industry.

One weakness of the Mirage III was its requirement for runways much longer (1,850m) than other fighters to take-off.²⁷ Because French planners predicted that the Soviet Union would begin a war with massive attacks against airfields, the long distances needed to take-off raised concerns lest

the French Air Force be grounded on damaged airfields.²⁸ The Air Force therefore wanted its next aircraft to take-off from short runways or dispense with runways altogether.

The French Air Force also wanted its next acquisition to penetrate enemy air defenses with nuclear and conventional bombs. Conventional wisdom in the early 1960s dictated that a tactical bomber should be capable of flying fast (high transonic speeds), at low level, and for substantial distances. The French Air Force's performance goals were 300 nm (345 miles), at low level, with the final 80 nm (93 miles) flown at Mach 0.9.²⁹ Meeting the Air Force's range and payload goal demanded an aircraft much larger than the Mirage III.³⁰

Finally, although the French Air Force wanted an aircraft that could carry a tactical nuclear weapon or a large conventional payload, it also wanted its next combat jet to function as a long-range interceptor. The Mirage III's limited endurance and poor radar limited its ability to roam the battlefield destroying enemy aircraft. For this reason, the Air Force demanded that its new aircraft should be optimized to employ "collision-course" (i.e. forward sector) radar guided air-to-air missiles.

After the Mirage III's debut, the French Air Force issued a requirement for an aircraft capable of all of these feats. The aircraft's primary mission was specified as interception, however it should also be capable of penetrating enemy air defenses at high speeds and low altitudes to deliver nuclear and conventional bombs on well-defended targets. Finally, the new aircraft should be able to take off and land either vertically or at least using short runways.

Two revolutionary new technologies appeared to solve the technical problem of operating from short runways. Vertical Take-Off and Landing (VTOL) emerged from the efforts of designers in the United States, the United Kingdom and West Germany to develop a jet combat aircraft that could take-off and land vertically, without a runway. At almost the same time as VTOL, variable

geometry wings also matured technologically. Variable geometry developed as a response to the conflicting aerodynamic requirements of low speed and high speed (transonic and supersonic) flight. Simply put, straight wings are needed to take off from short runways and carry heavy payloads over maximum distances, but swept wings are required for aircraft to achieve transonic and supersonic speeds. By pivoting an aircraft's wings around a joint, it would be possible to change from one configuration to the other.

During the early 1960s, the French Air Force was attracted to both new technologies, but did not know which one would prove more valuable. Therefore, it demanded *either* VTOL *or* variable geometry on its next aircraft.

NATO's decision to launch a VTOL competition in June 1961 preempted the French technological debate. The hope of winning large NATO orders encouraged the DMA to favour VTOL over variable geometry.³¹ In 1961, the DMA examined proposals from French manufacturers for a VTOL aircraft, accepting Dassault's to adapt its successful Mirage III design by adding eight Rolls-Royce lift jets under fuselage.³²

Because Dassault's proposal relied on existing technology, it alone would permit France compensate for its late entry in the VTOL field and offer NATO a credible design. Dassault swiftly transitioned from a design proposal to assembling a prototype, modifying the first Mirage III prototype for vertical flight barely 16 months after NATO announced its VTOL competition. The French VTOL prototype's rapid development from paper design to flying prototype attracted considerable support, worrying the British Defense Minister that Western European states were rallying to Dassault's design, despite the United Kingdom's significant lead in VTOL technology.³³ Moreover, Dassault was already working on an improved version of the VTOL Balzac. For its next

prototypes, Dassault added lift jets to two production Mirage IIIs, creating the Mirage III-V (V for VTOL).

Despite Dassault's success in assembling prototypes, France's VTOL ambitions began to unravel. It appeared increasingly unlikely that NATO member states would procure the winner of the international competition, but each would buy national aircraft instead.³⁴ Moreover, the costs of giving an aircraft VTOL capability proved increasingly prohibitive, leading Dassault Vice-President Bruno Revellin-Falcoz to conclude, "A vertical take-off aircraft is really very specialized and that other more conventional configurations are better suited to the budgets of our customers."³⁵ Since the prospect of large international orders was the reason France gave a high priority to VTOL, the shattering of this hope led the DMA and the Air Force to reevaluate their options.³⁶

Faced with the high costs and technical problems afflicting Dassault's VTOL projects, the DMA shifted research efforts to variable geometry wings in the autumn of 1964. Because Dassault Aviation's design bureau was occupied with VTOL, the DMA confided feasibility studies to two competitors. Upon learning of this shift in focus, Dassault Aviation also formed a variable geometry design team. As with its VTOL experiments, Dassault limited the costs and risks of new technology by employing as many existing components as possible. This meant retaining the Mirage III's overall aerodynamic configuration and concentrating design efforts on the wing and mechanisms permitting it to pivot. Dassault's approach paid off and the DMA designated it prime contractor for a national variable geometry aircraft, the Mirage G.³⁷

Because of the heavy costs of producing a variable geometry aircraft, the French government decided to collaborate with the United Kingdom. On 17 May 1965, the two governments agreed to develop an Anglo-French Variable Geometry Aircraft (AFVG).³⁸ Although SNECMA, Dassault, Rolls-Royce and the British Aircraft Corporation (BAC) were identified as the airframe and engine

companies that would collaborate on the AFVG, the industrial division of labor was not specified at the outset, permitting both airframe manufacturers to independently study their options, while the two air forces harmonized their requirements.

This arrangement disturbed the DMA. Producing an aircraft with the United Kingdom meant that one of France's national champions—SNECMA or Dassault Aviation—would be denied prime contractor status. To sabotage collaboration with the United Kingdom, the DMA charged Dassault in October 1965 with developing an entirely French variable geometry aircraft that would be powered by a license-built American (Pratt and Whitney TF-306) engine, which SNECMA could manufacture under license.³⁹ By encouraging this parallel variable geometry project, the DMA worked at cross-purposes to French political leaders, who wanted to build an aircraft in collaboration with the United Kingdom.

In addition, the DMA pressured the Air Force to accept a conventional aircraft, without variable geometry wings, but employing a similar fuselage and using the same license-built engine as France's national variable geometry project.⁴⁰ The new project, entitled the Mirage F2, was launched in mid-1965 and was designed to meet less exacting standards than the variable geometry aircraft.⁴¹ However, to meet the Air Force's long-range strike mission, the Mirage F2 would still be substantially larger than the Mirage III, with an empty weight fifty-percent heavier than its predecessor and carrying a two man crew.⁴²

Meanwhile, Marcel Dassault doubted the commercial viability of both variable geometry aircraft and large conventional designs, which would be too costly and complicated for foreign customers. At the end of 1965, Marcel Dassault came to the conclusion that France's new aircraft had to be in the same weight class as the Mirage III and should rely on proven technologies, but

would need to perform better than its predecessor.⁴³ By undertaking the Mirage F1 as a private venture, Dassault prevented the armed forces from monitoring the program.

Thus, in late 1965 Dassault was involved in four distinct projects, illustrated in Table V below, to provide the French Air Force with its next combat aircraft.

Table V:

French Aircraft Projects Post-Mirage III-V

<u>Project</u>	<u>Characteristics</u>	<u>Date Initiated</u>	<u>Prototype</u>	<u>Max Weight (kg)</u>
AFVG	variable geometry	May 1965	none	17,285
French VG	variable geometry	October 1965	November 1967	
Mirage F2	swept wings	mid-1965	June 1966	18,300
Mirage F1	swept wings	late-1965	December 1966	14,900

One program, the AFVG, responded to the French government's preference for a joint program with the United Kingdom. Two programs, the AFVG and the national variable geometry aircraft, met the Air Force's initial demand for either variable geometry or VTOL. Two other programs, France's national variable geometry aircraft and the Mirage F2, were favored by the DMA because they would fulfill the French Air Forces revised requirements with entirely French-built aircraft. Finally, Dassault Aviation initiated the Mirage F1 to sell to states that had already purchased its predecessor, the Mirage III, but lacked the financial resources to acquire the Mirage F2 or any of the variable geometry designs. Table VI below depicts the institutional actors and preferences involved in France's future combat aircraft program.⁴⁴

Table VI:
Actors and Preferences

Actors	Policy Preferences	Program Opinions
Air Force	Large sophisticated multi-mission aircraft incorporating variable geometry or VTOL	favored: AFVG, Mirage G opposed: Mirage F1
Dassault	Retain prime-contractor role Produce aircraft with export appeal	favored: Mirage F1 opposed: AFVG
SNECMA	Retain role developing engines	favored: Mirage F1, AFVG opposed: Mirage G, Mirage F2
Government	Support European collaboration	favored: AFVG
DMA	Support broad-based defense industry	opposed: AFVG

The first program to encounter serious problems was the Anglo-French Variable Geometry (AFVG) aircraft that both Dassault and the DMA opposed, but which French political leaders considered vital for Europe's long-term ability to compete with the United States.⁴⁵ The AFVG's development progressed glacially because of divergent air force requirements, and continuing negotiations over the division of labor.⁴⁶ Only on 8 May 1967, did the British and French Air Staffs agree on a definitive set of performance specifications. However, this agreement on requirements coincided with a deal whereby the British (BAC) were prime contractors for the airframe and the French (SNECMA) for the engine. Dassault Aviation and Bristol Engines would serve in subsidiary roles on the airframe and engine.

Dassault's leadership viewed a subordinate position as disastrous and decided to sabotage the AFVG project.⁴⁷ To convince the French government to cancel the AFVG, Dassault attempted

to prove that it could produce a cheaper and better variable geometry aircraft alone. With DMA approval, Dassault built a prototype of a national variable geometry aircraft, without reference to the Air Force. By employing as many existing components as possible and concentrating most engineering efforts on the wing's pivoting mechanism, Dassault produced a variable geometry prototype, entitled the Mirage G, in 16 months and at the low cost of \$35 million.⁴⁸

On 28 May 1967, less than three weeks after the United Kingdom and France signed the agreement on AFVG collaboration, Dassault unveiled the Mirage G prototype. Flying at the Paris Air Show, the Mirage G disrupted the AFVG, exciting the French press and outraging the British.⁴⁹ Political leaders were impressed by Dassault's ability to deliver a prototype in less time than it took France and the United Kingdom to agree on requirements and a division of labor. Swayed by the Mirage G prototype and lobbying by the DMA, the French government withdrew from the AFVG on 22 June 1967.⁵⁰

By November 1967, the Mirage G was ready for flight testing. Meanwhile, at the same time as the French Air Force and elected leaders followed the progress of the two variable geometry projects (the AFVG and Mirage G), Dassault proceeded with work on the two conventional swept-wing projects, the DMA sponsored Mirage F2 and the privately funded Mirage F1. Employing the same fuselage and engine as the Mirage G, the Mirage F2 prototype debuted on 12 June 1966, approximately one year before its more sophisticated variable geometry cousin. Flight tests demonstrated that the Mirage F2's swept wings delivered better take-off and low-level performance than the Mirage III's delta wings.⁵¹

By December 1966, the Mirage F1 prototype was also ready for flight testing. To produce a cheaper aircraft, Dassault designed the Mirage F1 to be 25 percent lighter than the Mirage F2. Because its fuselage had similar dimensions to that of the Mirage III, the prototype Mirage F1 was

fitted with Mirage IIIE avionics and a SNECMA ATAR 9K engine, the latest refinement of the ATAR 9B and C employed on Mirage IIIs.⁵²

The only significant new technology incorporated into the Mirage F1 was its thin wing. American aircraft manufacturers introduced thin wings for supersonic flight in the early 1960s. Examining recently introduced technologies, Dassault engineers focused their efforts on perfecting thin “honeycombed” wings and the welding techniques needed to attach them to a Mirage III-style fuselage. Although a private Dassault venture, the DMA facilitated its development with scientific advice and testing facilities.⁵³

When the Mirage F1 prototype flew on 23 December 1966, SNECMA rallied to its cause. In contrast to both the Mirage G and the Mirage F2, which were powered by an American engine, the Mirage F1 featured a SNECMA ATAR.⁵⁴ SNECMA’s desire to continue developing its own jet engines clashed with the Air Force’s desire for larger aircraft.⁵⁵ SNECMA therefore preferred the two programs—the Mirage F1 and the AFVG—that gave it a significant role, over the two programs—the Mirage F2 and Mirage G—that relied on American motors.

Because the Mirage F1 was the only aircraft project to fulfill the needs of both Dassault and SNECMA, the DMA lobbied elected leaders to procure it.⁵⁶ Convinced by the DMA, the government decided to purchase 100 Mirage F1s in June 1967.⁵⁷ When the Air Force argued that the Mirage F1 did not respond to its requirements and was not needed because it already possessed a large fleet of Mirage IIIs, the Defense Minister countered by rewriting the Air Force’s requirements around the Mirage F1 prototype.⁵⁸ A government order for three Mirage F1 prototypes followed in September 1967 and the aircraft became France’s next combat aircraft despite the Air Force’s objections.⁵⁹ Thus, the DMA saddled the Air Force with another lightweight fighter despite military officers’ demands for something larger and different.

The Mirage F1 was an evolutionary development of the Mirage III, but improvements to each of its major subsystems meant that the aircraft was significantly enhanced. It mounted an engine and radar that were incremental advances on their predecessors. By substituting more efficient cast turbine blades for the previous models' forged blades and incorporated electronic systems designed to regulate the engine's performance, the ATAR 9K50 was 14 percent more powerful without afterburner and 20 percent more powerful with afterburner than its predecessor, the 9C.⁶⁰ Likewise, the Thompson-CSF Cyrano IV radar was a development of the Mirage III's Cyrano II. Lacking the look-down capabilities of contemporary pulse-doppler radars, it at least achieved an acceptable level of reliability through integrated circuitry and revised cooling arrangements.⁶¹

The Mirage F1's layout likewise benefited from the Mirage III's decade of operational service. Lessons communicated by Israeli pilots following the 1967 Arab-Israeli War prompted Dassault Aviation to re-design the Mirage F1's cockpit in order to lighten and rationalize pilots' workloads.⁶² The Mirage F1's fuselage also incorporated integral construction techniques for the first time in French aviation history. By machining airframes from solid slabs of metal, integral construction permits the fabrication of lighter airframes that are less prone to drag and fatigue.⁶³ For the Mirage F1, this permitted the aircraft to carry 43 percent more fuel than the Mirage IIIE at a cost of increasing the aircraft's empty weight by only five percent.⁶⁴

Finally, perhaps the most dramatic changes in the Mirage F1's performance vis-à-vis the Mirage III were a result of its thin swept wing. The Mirage F1's swept wings permitted it to take-off and land at lower speeds and therefore using shorter runways. For the French Air Force, which worried about Soviet attacks on its airfields, this ability to operate from 23 percent shorter runways could be crucial during a war.⁶⁵ The aircraft's thin swept wings also enhanced its sustained turn rate.

One disadvantage of the Mirage III's tailless delta wings was rapid deceleration when engaged in sustained turns. By adopting thin swept wings, the Mirage F1's designers enhanced its sustained turn rate by 80 percent.⁶⁶ Nevertheless, by abandoning delta wings, the Mirage F1 increased wing loading vis-à-vis the Mirage III by 54 percent, decreasing the aircraft's instantaneous turn rate and diminishing its low-speed combat capabilities.⁶⁷

Together incremental improvements rendered the Mirage F1 more capable than the Mirage III. Table VII below illustrates the Mirage F1's many advances over its predecessor.

Table VII:	
Evolutionary Development from the Mirage III to Mirage F1	
Mirage F1 Developments	Performance Improvements
ATAR 9K50 Turbo Jet Engine	14 percent more powerful without afterburner 20 percent more powerful with afterburner
Integral Construction	43 percent more fuel for 5 percent more weight
Cyrano IV Radar	Reliable
Thin Swept-Wings	23 percent shorter take-offs 80 percent better sustained turn rates

Although the combat value of an aircraft is notoriously difficult to measure, the South African Air Force (SAAF) conducted extensive one-on-one dogfight simulations between its Mirage III and Mirage F1 squadrons in 1977. The result of these simulations was a 7-to-1 exchange rate in favor of the Mirage F1, with 58 Mirage F1 victories declared against eight Mirage III victories.⁶⁸

With greatly improved air combat performance and a fifty-percent greater range than the Mirage III, the Mirage F1 cost only 20 percent more than the latest Mirage III variants.⁶⁹ As a

result, the Mirage F1 proved a success on the international market, as Dassault intended. Ultimately, 480 Mirage F1s were exported to ten states. From an industrial point of view, the Mirage F1s export success was crucial for the French aviation industry, with foreign orders accounting for 65 percent of Mirage F1s produced.⁷⁰ Nevertheless, the Mirage F1 failed to achieve the same international success as the Mirage III, whose export figures in terms of both aircraft sold (950) and clients (19) were nearly double those of the Mirage F1.

The explanation for the Mirage F1's moderate success vis-à-vis its predecessor lay with the international environment rather than with the aircraft's intrinsic characteristics. Whereas the Mirage III was exported in an environment largely devoid of American competition, the Mirage F1 competed against a dedicated light-weight fighter, the General Dynamics F-16. Designed to a similar weight and cost as the Mirage F1, the F-16 incorporated revolutionary technologies, including fly-by-wire avionics, variable camber wings and an all-glass bubble canopy.⁷¹ The F-16's jet turbofan likewise gave the aircraft better performance in the vertical maneuvers and a lower rate of fuel consumption than the Mirage F1.⁷² Although it had known about the F-16, Dassault anticipated that technical problems would derail the American program.⁷³

From the moment the F-16 appeared on the international market, the Mirage F1 lost almost every export contract where it competed directly with the American aircraft. When the F-16 competed with an improved version of the Mirage F1 for a contract to sell 348 combat aircraft to Belgium, Denmark, the Netherlands and Norway in 1974, the technological gap between the two aircraft became apparent.⁷⁴ Even retired French Air Force Chief of Staff General Paul Stehlin felt obliged to inform French ministers in writing that the F-16 was superior to the Mirage F1 in almost every performance category.⁷⁵ Following the Mirage F1's loss to the F-16 in this multi-national

competition, the Mirage F1 capitalised on the United States' reticence to sell high performance combat aircraft to Jordan, Iraq, Kuwait, Libya, Ecuador and Greece.⁷⁶

Once exposed to battle, the Mirage F1 proved an operational as well as commercial success.⁷⁷ The Mirage F1 outclassed the most recent Soviet single-engine fighter, the MiG-23 Flogger, in almost every category, except sheer speed and acceleration. Compared to the Mirage F1, the MiG-23 was twice as heavy, had a miserable turn rate and suffered from mechanical defects, including a wing box that was prone to cracks.⁷⁸ The Iraqi Air Force, which operated both aircraft in equal numbers, scored twice as many air-to-air victories with the Mirage F1 and preferred it for ground attack missions as well.⁷⁹ Besides outperforming the MiG-23, the Mirage F1 was also superior to its predecessor, the MiG-21. During air combat over Angola, South African Mirage F1s shot down three Cuban MiG-21s, discouraging Cuban aircraft from interfering with ground attack missions, and escorted South African bombers deep into Angola.⁸⁰

Although Mirage F1s proved their air combat value in peripheral conflicts, the aircraft gained even greater notoriety for its employment in ground attack and strike missions. Because of its comparatively small thin wings, the Mirage F1 quickly proved apt at high-speed low-level penetration missions.⁸¹ From 1985 onwards, Iraqi Mirage F1s employed Exocet anti-ship missiles to attack merchant shipping and oil rigs in the Persian Gulf, inflicting grievous loss on Iranian oil exports.⁸² From March 1986, laser-guided air-to-ground missiles complemented the Exocets, permitting Iraqi Mirage F1s to precisely attack high-value Iranian targets.⁸³ In another theater and using more conventional munitions, South African Mirage F1s carried 22 bombs apiece on ground attack missions, virtually annihilating two Angolan brigades in 1985.⁸⁴

Although the French Air Force did not want the Mirage F1, the French Air Force nevertheless came to appreciate it. According to General Pascal de Chasse, multi-mission

capabilities, a reliable radar and sufficient fuel meant that, “The Mirage F1C was really the aircraft that we did not hesitate to send on the most difficult missions and when weather was awful.”⁸⁵ Over time, the French Air Force employed its 246 Mirage F1s in air superiority, photographic reconnaissance and conventional ground attack missions. During the 1980s, the aircraft proved especially valuable for France’s exterior interventions, where multi-mission capabilities, long range and high serviceability were crucial.

As the South African Air Force proved with its long-range missions over Angola, the Mirage F1 had “fuel for Africa.”⁸⁶ During France’s interventions in Chad, this increased autonomy compared to the Mirage III was crucial. Because France’s logistic effort in Chad depended heavily on transport aircraft, which were themselves vulnerable to Libyan fighters, the French government decided in August 1983 to base Mirage F1s in Chad—the only aircraft in the French arsenal with both the range needed to escort transports over Chad’s long distances and the ability to defeat Libyan fighters in air combat.⁸⁷ After successful service in Chad, Mirage F1s were also dispatched to Djibouti to counter the spread of Soviet fighters to Ethiopia and South Yemen.

Despite its operational and commercial successes, the Air Force's leadership doubted whether the Mirage F1 fulfilled its needs. With most of its assets dedicated to preparing for war in Europe, Air Force commanders worried about the particular requirements for fighting in this challenging theatre. Although capable of operating from slightly shorter runways than the Mirage III, the Mirage F1 still lacked the ability to use the extremely short airfields and improvised runways that would permit France to keep fighting after its airbases were damaged. As a one-man lightweight fighter, the Mirage F1 was also wholly inadequate for the challenging mission of penetrating enemy air defenses to deliver tactical nuclear weapons, leading one general to remark, “Our [French] losses will be heavy and the results of our attacks uncertain.”⁸⁸ Without a specially

designed low-level attack aircraft, the air force would continue to use modified Mirage IIIE variants for strikes and air defense suppression until the early 1990s. Unsited for either role, Mirage variants were particularly handicapped in air defense suppression, where they "set a record for overloading a pilot" whose "tasks were at the limit of the humanly possible."⁸⁹

Industrially, however, the Mirage F1 fulfilled the DMA's objectives. With 731 produced and the majority exported, the aircraft filled Dassault's order books and permitted the company to invest in its increasingly popular line of business jets and next generation combat aircraft technology. Likewise, producing the Mirage F1's engine (the ATAR 9K50) fueled SNECMA's assembly lines and financed its design bureau in the critical decade between SNECMA's concluding a strategic partnership with General Electric (1971) and the first deliveries of their jointly-built commercial engine (1979). Furthermore, almost all clients purchased the standard version of the Mirage F1 with the Cyrano IV radar, rather than roughly half of the Mirage III's customers, meaning that Thompson CSF actually built more radars for Mirage F1s than Mirage IIIs (683 versus 671).⁹⁰

Improving the Mirage F1's capabilities provided even greater impetus to French weapons systems producers. The large captive market of Mirage F1 users spurred Matra to improve on its air-to-air missiles. Based on lessons drawn from the Mirage III's failed R.530 and demand from Mirage F1 users, Matra unveiled its first successful radar-guided missile, the Super 530, in 1979. Unlike its forbearer, which scored only one kill during its long combat career (involving at least seven wars and hundreds of engagements), the Super 530 proved deadly and reliable. During the Iran-Iraq War, the Super 530 revealed itself to be the best air-to-air missile in the Iraqi inventory, scoring 35 kills out of 100 missile launches.⁹¹ Requirements to attack ground and maritime targets drove sales of French guided weapons. Iraq alone purchased over 770 Exocet anti-ship missiles during the Iran-Iraq War, mostly for use by Mirage F1s. France also exported large numbers of AS-

30L missiles for use with Iraqi Mirages, while French technical teams gained invaluable experience modifying South African and Iraqi aircraft to use a variety of foreign armaments.⁹²

In short, the DMA guided the procurement process such that France produced another lightweight fighter, in the same category as the Mirage III. Equipped entirely with French subsystems and destined for a broad export market, the Mirage F1 fueled the continued expansion and independence of France's defense industrial base. While the Mirage F1 did not represent the same windfall for Dassault as its predecessor, it critically permitted French subsystems producers to transition from being substandard state-supported industries to increasingly dynamic, competitive and profitable producers of high technology products. True profitability for SNECMA began with the joint-venture CFM56 and Matra's missile business became respectable with the Super 530. Introduced in 1979, both developments owed much to the Mirage F1. The major loser in this process was the Air Force, whose operational requirements were ignored. As the Air Force's embittered Chief of Staff reflected, French procurement "was more often than not motivated by the desire to create and support an important industry rather than concern for the operational value of weaponry." The DMA and Dassault also manipulated political leaders into renouncing their ambition to create a European arms industry through Franco-British collaboration.⁹³

IV. The Mirage 2000

The institutional demands and posturing so characteristic of the Mirage F1 procurement process repeated themselves during the debate about France's next combat aircraft. Having reluctantly acquired the Mirage F1, the French Air Force still lacked the mixture of aircraft considered necessary for a European war. It therefore demanded an aircraft twice as large as its current lightweight fighters and capable of technological prowess such as low-level penetration,

long-range interception and much higher speeds (Mach 2.5) than existing French aircraft. If France could not produce such an aircraft, Air Force officers favored importing one from the United States or the European Panavia consortium. Struggling to support France's defense industries, the DMA (renamed the DGA in 1977) thwarted efforts to import a foreign aircraft and opposed technical requirements judged too costly. With Dassault's complicity, the DMA imposed yet another lightweight fighter--the Mirage 2000--because this category of aircraft corresponded to the desiderata of the largest number of export customers. The choice proved judicious from an industrial perspective, permitting French manufacturers to spin technologies off into the civilian market and improve their profit margins through exports. However, the French Air Force was once again denied the type of aircraft it considered necessary.

As was the case prior to the Mirage F1 procurement decision, the Air Force believed it needed a comparatively heavy aircraft capable of either intercepting enemy aircraft at long ranges or penetrating enemy airspace at low level to precisely deliver conventional and nuclear munitions. As before, the Air Force also believed that only the latest cutting-edge technologies would give French pilots a reasonable chance of survival against numerically superior Warsaw Pact aircraft.

Conscious of how it lost control over France's last aircraft procurement decisions, the Air Force hoped to prevent the proliferation of officially sanctioned programs and the resultant uncertainty over procurement goals by specifying its technological objectives from the outset and overseeing aircraft development via officers integrated into program management teams. If all worked according to plan, the Air Force would shape the procurement process and obtain the cutting edge aircraft it deemed necessary for the 1980s.

The Air Force's high command still remained convinced that variable geometry was the technology of the future and reiterated its need for a variable geometry aircraft capable of long-

range interception and low-level ground attack. Having learnt from experience with the Mirage G and Mirage F2 that SNECMA would oppose any engine it had not developed, the Air Force specified that the new variable geometry project should be powered by SNECMA-designed French engines. Unfortunately, SNECMA lacked an equivalent to the Pratt and Whitney engine and two SNECMA engines and more fuel were needed to replace the Mirage G's TF-30.⁹⁴ This meant that a SNECMA-powered variable geometry aircraft would be larger and more expensive.

To meet the Air Force's new requirement, the DMA commissioned Dassault Aviation to build two prototypes, which were developed rapidly despite Dassault Aviation's simultaneous commitment to the Mirage F1's full-scale development. However, while the Air Force's variable geometry prototypes took form, the project was undermined by developments both within and outside the scope of the program. Economically, the high costs of developing a variable geometry aircraft larger than the Mirage G, which was itself considered too expensive, raised serious doubts within the DMA.⁹⁵ The Air Force also came to doubt its military value after American General Otto Glasser the next American aircraft (the F-15) would mount a conventional wing.⁹⁶

In 1969, French Air Force Chief of Staff General Gabriel Gauthier began to elaborate new aircraft requirements with the assistance of the DMA. Although it took time to determine exactly what characteristics future French warplanes must have, Gauthier and the DMA favored increasingly conventional layouts.⁹⁷ The Air Force's new aircraft requirement, entitled the Avion de Combat du Futur (ACF or Combat Aircraft of the Future), was transmitted to the DMA and Dassault on 1 July 1972. Although the ACF program was designed to generate an aircraft cheaper than the two-engine variable geometry aircraft previously explored, the Air Force's requirements remained technically formidable.⁹⁸

The Air Force demanded a two-engine aircraft capable of dog-fighting, yet able to conduct long combat air patrols. For longer range engagements, the ACF needed a much larger radar than any previous French aircraft. Because it was also supposed to deliver precise air strikes at low altitudes and in all weather conditions, the ACF needed specialized avionics. In terms of performance, the Air Force demanded that the ACF rival the world's fastest fighter with a maximum speed of Mach 2.5 and a high degree of maneuverability. At the same time, the aircraft had to use the same airfields as the Mirage F1, and therefore needed to be able to land at speeds not exceeding 150 knots. To achieve these impressive performance objectives, the Air Force specified that two new SNECMA M53 engines should power the new aircraft.

After receiving the Air Force's new requirements, a design team at Dassault Aviation began work. As development work progressed, it quickly became apparent that the ACF would necessarily be heavy and expensive.⁹⁹ Because the temperature caused by skin-friction on an aircraft's leading edges is a function of the square of an aircraft's Mach number, the heat that would be inflicted on the ACF at Mach 2.5 would be significantly higher than the those experienced by either the Mirage III or F1 at Mach 2.2. The economic aluminum alloys employed on previous French aircraft would not suffice and significant portions of the ACF had to be built of titanium alloys, which cost 10 to 20 times more.¹⁰⁰

While titanium components and their fabrication contributed to the ACF's cost, Dassault engineers discovered that achieving the ACF's range and payload objectives would only be possible if the aircraft was exceptionally large. According to Dassault calculations, the ACF would weigh 14,187 kilograms empty, or 16 percent heavier than the American F-15 Eagle making it the world's heaviest air superiority fighter.¹⁰¹ ¹⁰² Because the mass of an aircraft is a significant factor in its cost, the French National Assembly's Defense Commission likewise concluded that, "From a

financial point of view, it [the ACF] is very onerous.... Either the Air Force will have to forgo replacing other aircraft or its budget must be increased.”¹⁰³

In response to the ACF's growing cost and the inability of potential customers to afford the aircraft, Dassault Aviation launched two less ambitious aircraft programs on its proper initiative in 1974. Dassault's new programs were designed to respond to the demands of what the company perceived to be two distinct warplane markets—a high-end market for two-engine multi-role aircraft and a middle market for single engine combat aircraft to replace existing Mirages and F-104 Starfighters.¹⁰⁴ Having exported large numbers of lightweight fighters, Dassault's leadership feared that the ACF would prove too costly for its traditional customers.¹⁰⁵ Although Dassault would prefer to build an economical single-engine aircraft, a two-engine aircraft went further to meeting the Air Force's desiderata and might find export clients in the oil-rich Middle East. Although the DMA did not directly subsidize Dassault Aviation's private ventures, it arranged for SNECMA to “loan” Dassault the engines needed for prototypes.¹⁰⁶

To render its two new aircraft more affordable, Dassault Aviation reduced speed requirements from Mach 2.5 to Mach 2.2, eliminating the need for titanium, and returned to its practice of building aircraft with delta wings.¹⁰⁷ Although Dassault's new aircraft drew heavily on previous Dassault designs, the company incorporated Active Control Technology (ACT), which had been the secret of the F-16s victory over the Mirage F1 in the 1975 “competition of the century.”¹⁰⁸ ACT technology impressed Dassault engineers so much that they determined that French aircraft needed to incorporate the new technology as quickly as possible if they were to remain commercially viable.

As French engineers knew from prior development projects, the easiest way to rapidly master a technology was to integrate it into a proven airframe. The Mirage 1000 program, later

renamed Mirage 2000, incorporated ACT technology into an airframe aerodynamically identical to the Mirage III. The larger Mirage 4000 program, which also featured ACT, employed an enlarged but similar airframe and featured maneuverable canards mounted forward of the aircraft's delta wing.

By 1975, mounting costs threatened the ACF program. Despite planned increases in the Air Force's budget, the ACF was simply too expensive.¹⁰⁹ The prospect of the ACF's cancellation prompted the Air Force's high command to explore purchasing the American F-15 or the Anglo-West German Multi-Role Combat Aircraft (MRCA, renamed Tornado). Preferring a European solution, French political leaders favored arrangements whereby France would either join the MRCA consortium or purchase MRCA's in exchange for the United Kingdom importing French lightweight fighters.¹¹⁰ Thus, by 1975, the French government was facing a choice between five aircraft, which are detailed in the Table below.

Table VIII:

Competing Aircraft Under Evaluation in 1975

Aircraft	Description	Reaction of Actors
ACF	Domestic, two-engines and most expensive program	Favored by Air Force Opposed by DMA and Dassault
Mirage 4000	Domestic, two-engines and cheaper than ACF (slower speed and delta wings)	Favored by Dassault
Mirage 2000	Domestic lightweight fighter, single-engine (cheapest option of all)	Favorite Dassault option Opposed by Air Force
F-15	American import, two-engines Comparable to ACF but cheaper	Favorite Air Force option Opposed by DMA, government and Dassault
Tornado	European import or collaboration two-engines	Favored by government provided exchange or participation could be negotiated

To head off the undesirable alternatives, the DMA persuaded President Valerie Giscard d'Estaing to replace the costly ACF with the Mirage 1000, renamed the Mirage 2000.¹¹¹ From the DMA's perspective, importing an aircraft would destroy decades of patient work rebuilding France's defense industries. In the eyes of the DMA, only a single-engine aircraft could be procured and exported in sufficient numbers for French aircraft production lines to achieve adequate economies of scale.¹¹² Once again, the DMA and Dassault Aviation succeeded in imposing an aircraft on the French Air Force that was designed to maximize the French aviation industry's financial dynamism rather than meet the armed forces' operational requirements.

Even after Giscard approved the Mirage 2000's development, the Air Force wanted a larger and more sophisticated aircraft. In April 1976, the French Air Force dispatched a delegation to discuss purchasing American F-15s.¹¹³ However, the DMA and industry joined forces to rapidly quash the Air Force's hopes of procuring F-15s. The first Mirage 2000 prototype successfully flew in 1978 and series production began thereafter, the aircraft entering operational service with the French Air Force in 1984. In many respects, the Mirage 2000 borrowed heavily from previous Dassault aircraft. The Mirage 2000 featured a similar wing planform and fuselage to the Mirage III, including the latter aircraft's distinctive delta wings and area-rule fuselage. However, introduction of computer assisted design (CAD) technology permitted Dassault's engineers to improve the aircraft's aerodynamics, slightly shortening the fuselage and increasing the surface area of the aircraft's wings.¹¹⁴ The integral construction techniques of the Mirage F1 were also used to lighten Mirage 2000's airframe.

Although the Mirage 2000 showed remarkable design continuity with Dassault's earlier aircraft and bore a strong resemblance to the Mirage III, the aircraft's performance was dramatically improved. Dassault's significant investment in ACT paid off in terms of effective flight controls. With the Mirage 2000 Dassault went further than General Dynamics had in exploiting the potential of ACT for designing an aircraft that would otherwise be unstable.¹¹⁵ As a result of ACT, the Mirage 2000 is twice as maneuverable as the Mirage III and can maintain speeds 25 percent faster at low levels, yet has the same take-off and landing characteristics as the Mirage F1.¹¹⁶

The aircraft benefited from many other improvements as well. By mounting the SNECMA M53 jet engine, the Mirage 2000 benefited from 31 percent more thrust than the Mirage F1 and 49 percent more thrust than the Mirage III.¹¹⁷ Because the M53 engine was also lighter than its predecessors, the Mirage 2000 featured a greatly improved thrust-to-weight ration of 0.87.¹¹⁸

Moreover, greater fuel reserves due to integral construction and an efficient engine enable the Mirage 2000 to remain airborne for three times the duration of a Mirage III and longer than a Mirage F1.¹¹⁹ Besides its new motor, the Mirage 2000 also witnessed Dassault Aviation's first use of Carbon Fiber Composite (CFC) materials, permitting elements of the airframe to be built 20 percent lighter.¹²⁰

By incorporating selected new technologies while retaining a maximum number of existing design features, Dassault Aviation managed to economically develop a new fighter aircraft with improved capabilities. The Mirage 2000's many technical improvements over its predecessors are detailed in Table IX below.

Table IX:	
Improvements of Mirage 2000 over Earlier Mirages	
<u>New Technologies</u>	<u>Changes</u>
Active Control Technology (ACT)	Twice as maneuverable as Mirage III Same take-off and landing characteristics as Mirage F1
SNECMA M53 Jet Engine	31% more thrust than Mirage F1's ATAR 9K50 49% more thrust than Mirage III's ATAR 9C 25% faster at low levels than Mirage F1 Better thrust to weight ratio made Mirage 2000 more maneuverable
Carbon Fiber Construction (CFC)	Components 20% lighter than predecessors
Computer Assisted Design (CAD)	Improved aerodynamics and maneuverability

Options that would have added significantly to the Mirage 2000s cost, such as variable geometry, two-engines and a speed of Mach 2.5 were excluded during the design process. As intended, the

Mirage 2000 remained within the budgets of foreign clients and became an export success, with approximately 321 aircraft—over half of the aircraft produced—eventually exported to eight foreign air forces.

Although the Mirage 2000's commercial success fell short of its predecessors, it competed in a more challenging market. Despite its being designed for low cost, the Mirage 2000 never benefited from the same economies of scale as its primary commercial rival during the 1980s, the American F-16. While the United States Air Force's procured an average of 133 F-16s per year between 1988 and 1992, the French Air Force's procurement of Mirage 2000s averaged 29 orders per year.¹²¹ This significant difference in economies of scale was reflected in the export costs of each aircraft, with the Mirage 2000 systematically selling for a third more than an equivalent F-16.¹²² Although more expensive, the Northrop F-18 also beat the Mirage 2000 in Swiss and Spanish competitions.

Compared to their American rivals, early production Mirage 2000s also suffered from inadequate radars. The first Mirage 2000s relied on the Thompson RDM radar—France's first mass-produced pulse doppler radar—which was obsolescent by American standards when it entered service in 1984. The Greek Air Force was so dissatisfied with the RDMs on its early Mirage 2000s that it suspended deliveries after 28 aircraft had been delivered out of an order for 40.¹²³ Other potential clients viewed the RDM radar as a positive disincentive to purchasing the aircraft.¹²⁴ Only in 1987, four years after Mirage 2000 deliveries began, did newly produced Mirage 2000s receive an up-to-date radar, the RDI.¹²⁵

However, almost as soon as an improved RDI radar was available, the aircraft was forced to contend with even greater competition. Whereas the superpowers had been reticent to export sophisticated combat aircraft to states other than politically important allies, the end of the Cold War

in 1989 loosened their inhibitions. The United States abandoned its traditional policy of restricting arms exports to South America and the Persian Gulf. Faced with bankruptcy, Russia's aviation industries were forced to take even more desperate measures and soon attempted to sell combat aircraft to virtually any state with currency available.¹²⁶ MiG-29 Fulcrums and Su-27 Flankers soon became available at discount prices to states that never before purchased Soviet aircraft.¹²⁷ To make matters worse, three traditional Mirage customers, South Africa, Libya and Iraq, became international pariahs and suffered from arms embargos, preventing them from purchasing French aircraft.

That Dassault managed to export over 300 Mirage 2000s between 1984 and 2006 is a remarkable testimony to the soundness of technical choices in the mid-1970s. Crucially, Dassault's prescience in embracing ACT and incorporating it into an airframe with familiar aerodynamic characteristics ensured that the Mirage 2000 became the world's third production aircraft featuring electronic flight controls and artificial stability, leading its Soviet competitors by a decade and other European states by two. Because of its comparatively reasonable price and its precocious integration of ACT, the Mirage 2000 proved more commercially successful than rival non-superpower fighters.

By way of comparison, the variable geometry Anglo-German-Italian Tornado was more complicated and expensive than the Mirage 2000. Only 72 Tornados were exported and all of these went to a single client—Saudi Arabia. Although designed to be cheaper than the Mirage 2000, the Italo-Brazilian AMX was only exported to a single state, Venezuela, which purchased 12. Meanwhile, Sweden utterly failed to sell its Viggen. If Mirage 2000 exports failed to match those of previous Dassault aircraft, the aircraft was exported in larger numbers and served in more foreign air forces than all other contemporaneous non-superpower combat aircraft put together.

Although French defense industries had developed profitable non-military products, the Mirage 2000 nonetheless remained vital to their continued viability. Because of reductions in domestic defense expenditures and the vagaries of the business jet market, Dassault only avoided bankruptcy in the 1990s because of its Mirage 2000 exports to Taiwan and India. Later, technologies mastered during the Mirage 2000 program--such as Computer Assisted Design (CAD) and Active Control Technology (ACT)--proved crucial to Dassault's return to a high degree of profitability in the business jet market. For SNECMA, development of military engines funded the company's design activities, while production of the commercial CFM 56 filled its order book and underwrote its capital expenses. Meanwhile, providing better capabilities and armaments for Mirage 2000 customers drove French radar and weapons system developments.

V. Military Exports and Commercial Spin-Offs

At the onset of the French Fifth Republic, France's aviation industries lagged behind their British counterparts in terms of the size of their labor force and the quality of their technology. British factories had three times the capacity of their French counterparts and British products were firmly ensconced in foreign markets. While Vickers Viscounts dominated commercial transport markets and the Hawker Hunter became perhaps the most commercially successful combat aircraft of the late 1950s, French designers struggled to produce a commercially viable civil or military aircraft. British firms led in most technological domains as well. They developed functioning jet engines prior to the Second World, introduced the world's first jet airliner in 1952 and pioneered VTOL, swing-wings and delta wings in the 1950s. British engines and radars were light-years ahead of their French counterparts, which still suffered from the defeat of 1940. By the late 1950s, all indicators pointed to the United Kingdom remaining Europe's premier aircraft producer.

However, this situation changed rapidly after the creation of the DMA. Although the United Kingdom retains a sizeable and technologically innovative aviation industry, French firms have overtaken them. By the end of the Cold War, France's aviation sector was larger than its British counterpart and French exports of combat aircraft dwarfed their British counterparts. The resurgence of France's aviation sector was stimulated by combat aircraft exports. As the Table below illustrates, France exported 60 percent of the aircraft it produced under the Fifth Republic to a total of 26 foreign states, while British combat aircraft exports amounted to only 14 percent of the French total.¹²⁸

Aircraft	Year Operational	Total Produced	Total Exported	Foreign Clients
Mirage III/5/50	1961	1412	939 (66%)	19
Mirage IV	1963	62	0 (0%)	0
Mirage F1	1974	731	457 (63%)	10
Mirage 2000	1984	636	321 (50%)	8
Total		2841	1717 (60%)	26
Comparison with United Kingdom		1221	246 (20%)	5

Ultimately, France became the world's third largest exporter of combat aircraft, trailing only the superpowers, and managed to sell a larger proportion of the aircraft it produced to foreign clients than any other state. During certain years, combat aircraft exports accounted for two-thirds of Dassault's cash flow as the prime contractor for French combat aircraft.¹²⁹

The primary factors contributing to the international success of French combat aircraft were the intrinsic characteristics of the aircraft themselves. The vast majority of states demanded lightweight multipurpose aircraft that they could afford to both acquire and maintain. Three successive generations of French combat aircraft, the Mirage III/5, the Mirage F1 and the Mirage 2000, fit this description, while none of their British competitors did. British aircraft were either too large and expensive, such as the English Electric Lightning and Panavia Tornado, or too reliant on niche capabilities, such as the subsonic VTOL Harrier.

The DMA played a critical role in ensuring that the aircraft designs ultimately produced fulfilled the requirements of potential foreign customers. In each case, the DMA undermined Air Force efforts to procure larger and more sophisticated, yet less marketable aircraft. As Table XI below illustrates, the aircraft France actually produced were substantially smaller and cheaper than the ones the Air Force demanded.

Table XI:

Aircraft Procured Versus Initial Air Force Projects

Aircraft Procured	Empty Weight	Air Force Project	Empty Weight
Mirage F1	7,400 kg	AFVG	approx. 9,000 kg
		Mirage F2	9,800 kg
Mirage 2000	7,500 kg	ACF	14,187 kg
		MRCA (Tornado)	15,000 kg

Although French aircraft manufacturers, particularly Dassault Aviation, lobbied to produce lightweight fighters that could be easily exported, it is doubtful whether aircraft producers would

have gotten their way had the DMA/DGA not existed to argue their case and support their initiatives. British aircraft companies understood the same market realities as their French counterparts and bombarded the United Kingdom's Ministry of Defense with proposals to build economic lightweight combat aircraft. However, the Royal Air Force's incessant demands for large and sophisticated aircraft trumped commercial lobbying. The difference between the French and British cases lies in the existence of a powerful mediating organization, the DMA/DGA, that shifted the balance in favor of affordable aircraft in France. Product architecture therefore played the preponderant role in the comparative success of French combat aircraft on international markets rather than any supposedly greater willingness of French governments to export sophisticated military hardware.

At the DMA's insistence, French aircraft also incorporated exclusively French subsystems, even when the latter were substandard compared with foreign alternatives. The DMA opposed attempts to power the Mirage IV with a Pratt and Whitney engine, blocked the incorporation of Rolls-Royce turbojets into export Mirage IIIs and combated attempts to produce a French aircraft incorporating a license-built Pratt and Whitney TF-30 engine. As a consequence, France's jet engine manufacturer, SNECMA, was able to improve the capabilities of its design bureau and enhance its manufacturing skills by developing and producing engines for French combat aircraft. As the table below demonstrates, France's captive domestic combat aircraft market provided SNECMA with a large number of orders, which its commercially uncompetitive engines would not otherwise have won.¹³⁰

Table XII:

SNECMA Engines and Dassault Aircraft

<u>Engine</u>	<u>Year Introduced</u>	<u>Number Produced</u>	<u>Aircraft</u>
ATAR 9B	1959	419	Mirage IIIB/C
ATAR 9C	1960	1671	Mirage IIIE/V
ATAR 9K	1962	256	Mirage IV
ATAR 9K50	1969	1020	Mirage F1/50
M53-P2	1981	650	Mirage 2000

Considering that SNECMA's first successes in producing jet engines for commercial aircraft came in the 1970s, with the company establishing itself as a significant non-military jet engine producer in the 1980s, the development and production of jet engines to accompany Dassault combat aircraft was essential to France's acquiring the capacity to compete in the market for commercial jet engines. Without the DMA's intervention, Dassault and the French Air Force would have happily substituted better American and British engines for inferior French ones, which Dassault judged 20 percent less capable.¹³¹

Because of its success in the combat aircraft market, Dassault Aviation and SNECMA both managed to spin products off into the commercial sector. Prior to their successes in the military sphere, neither company was present in the non-military aviation sector. However, by the 1980s each had developed profitable commercial activities. Since the end of the Cold War and the concomitant decline in French defense budgets, non-military sales have provided greater revenues to both Dassault Aviation and SNECMA than their traditional defense activities.

For Dassault, the process of spinning off technologies and design expertise began in early 1962. With the Mirage III in full production, Marcel Dassault decided to invest a portion of the firm's profits to develop a commercial business jet. Employing engineers freed from Mirage III development, Dassault Aviation elaborated a plan for a business jet capable of carrying ten passengers and powered by two Pratt and Whitney JT-12 jet engines.¹³² Technology and expertise developed for Mirage fighters, notably the firm's aerodynamic experience with transonic flight and its production of state-of-the-art servomotors to power control surfaces, contributed directly to Dassault's ability to enter the emerging business jet market with a formidable product.¹³³

With exceptional rapidity, Dassault engineers constructed a prototype business jet, called the *Mystère 20*, which flew in May 1963. After Charles Lindbergh, as an advisor to Pan Am Airlines, visited Dassault Aviation that same year, Marcel Dassault signed a contract to deliver 40 of his new *Mystère 20*s to Pan Am, with an option for a further 120 at an agreed price. At Lindbergh's suggestion, Dassault Aviation adopted a General Electric engine and renamed the aircraft *Falcon 20* to enhance its marketing potential with American audiences. Dassault Aviation then drew on its contacts with Boeing, developed when Boeing attempted to license produce the *Mirage III*, to get the *Falcon 20* certified for the United States civil aviation market in record time.¹³⁴ Soon four aircraft rolled off Dassault's production line every month.

Although business jets remained a complementary activity to Dassault's primary occupation of building combat aircraft, the business jet market remained significantly lucrative for Dassault Aviation to continually elaborate new models—the *Falcon 10*, *Falcon 50*, *Falcon 900*, *Falcon 2000* and *Falcon 7X*. Dassault methodically applied technologies and processes recently acquired for combat aircraft programs to each successive generation of business jet. For example, after Dassault made its first investment in computer assisted design (CAD) technologies in 1965 to assist with the

company's two variable geometry combat aircraft programs, CAD was next used on Dassault's abortive Mercure regional jet and the successful Falcon 10 business jet.¹³⁵ After even greater investments in CAD to develop the Mirage 2000 and Rafale fighters, Dassault engineers employed their CATIA design software to render the Falcon 2000 the world's first aircraft to enter mass production without passing through a prototype phase. Approved for the American market on 2 February 1995, Dassault was able to deliver a production aircraft to the first Falcon 2000 client on 16 February.¹³⁶ Table XIII, below, details the many technologies Dassault spun-off from its lightweight fighters to business jets.

Table XIII:

Aircraft Technologies Spun-Off into Business Jets

Technology	Military Program	Business Jet
wing aerodynamics	Mystère 4 (1954)	Falcon 20 (1963)
servo motors	Mirage III (1960)	Falcon 20 (1963)
Computer Assisted Design (CAD)	Mirage G (1965)	Falcon 10 (1971)
CATIA	Mirage 2000 (1984)	Falcon 2000 (1993)
Carbon Fiber Composites (CFC)	Mirage 2000 (1984)	Falcon 2000/900 (2000)
Fly-by-Wire	Mirage 2000 (1984)	Falcon 7X (2007)

Over time, Dassault acquired a commanding 50 percent of the world business jet market. After the end of the Cold War, this once complementary activity became vital for Dassault's survival. Dassault's defense activities plummeted in the late-1990s, during the interval between the French Air Force's last Mirage 2000 orders and its first Rafale deliveries. For these years, business

jets provided the majority of Dassault's revenues, representing 45 percent of Dassault earnings in 1996, 68 percent in 1999, 71 percent in 2000 and 76 percent in 2001.¹³⁷ By 2005, with Rafale deliveries in full swing, defense activities once again contributed 52 percent of Dassault's earnings.¹³⁸ In Dassault's case, a combat aircraft producer, with no prior experience in civil aviation, entered and eventually dominated a niche commercial aviation sector, the business jet market, using technologies acquired through combat aircraft programs. In due course, Dassault's commercial and military activities proved complementary, as recessions in one market were counterbalanced by growth in the other.

Besides its conquest of the business jet market, Dassault has profited from another major spin off of military technology into the commercial marketplace. While struggling to design the airframes of the Mirage 2000 and the cancelled Mirage 4000, Dassault Aviation charged a small team of engineers in 1977 with developing an improved CAD software program. The new software, named CATIA (an acronym for interactive three dimensional design assistant), was the first computer program in the world to permit designs to be rotated and modified in three dimensions. After assisting in the design of the Mirage 2000, Dassault Aviation formed a joint venture with IBM to market CATIA. The Dassault subsidiary charged with improving and marketing CATIA, Dassault Systems, has expanded considerably since its creation with a staff of ten engineers in 1981. By the mid-1990s, CATIA dominated the CAD market and Dassault Systems employed 1,000 personnel. CATIA has been sold to Boeing, Lockheed, BMW, Fiat, Volkswagen, Rover and Chrysler, bringing Dassault Systems regular profit margins in excess of 20 percent.¹³⁹

At the same time as Dassault spun Falcon business jets and CATIA software off into commercial markets, SNECMA accomplished an even more spectacular transformation from a substandard producer of military jet engines to a world class manufacturer of commercial jet

engines. In order to improve the performance of the ATAR turbojets that powered French combat aircraft prior to the Mirage 2000, SNECMA engineers continually attempted to develop lighter, cheaper and sturdier turbine and compressor blades. After developing hollow and solid, titanium and aluminum alloy, forged and cast turbine and compressor blades to eek increased power out of a fundamentally obsolete design, SNECMA had acquired an undeniable expertise in the design and construction of turbines and compressors.¹⁴⁰ Thanks to the comparatively larger number of engines produced to power Mirage fighters, SNECMA also built-up the manufacturing facilities and labor force needed to mass-produce engines.

In view of these resources and its earnings from military turbojet production, SNECMA had the capacity to negotiate with both General Electric and Pratt and Whitney about jointly developing a commercial jet engine with either of the American jet engine giants. Finally, SNECMA and General Electric signed an accord at the end of 1971, stipulating that the two companies would jointly finance and collectively produce a new jet turbofan for commercial airliners—the CFM 56. While General Electric produced the high-pressure sections of the engine and its combustion chamber, SNECMA designed and built the low-pressure sections of the compressor and turbine, in addition to the fan and thrust-reverser. By 1974, a CFM 56 prototype had been completed and the engine was certified for commercial aircraft in 1979.¹⁴¹

Since the introduction of the CFM 56, the engine has progressed through multiple versions and proven a remarkable commercial success. From the early 1980s until present, 16,237 CFM 56 engines have been produced, powering approximately half of the world’s airliners with over 100 seats, including over 6,200 Boeing and Airbus aircraft. Due to the CFM 56’s success alone, SNECMA has emerged as the world’s fourth largest commercial jet engine producer, trailing General Electric, Pratt and Whitney and Rolls-Royce. Comparing the over 16,000 commercial

turbofan engines produced since 1980 to the approximately 4,500 military turbojets and turbofans manufactured since 1960, SNECMA's commercial sales have overtaken the firm's traditional military activities in terms of economic value. Building on the success of their CFM 56 engine, SNECMA and General Electric have launched a new joint venture to produce an engine to power the next generation of jumbo jets, the Airbus A380 and Boeing 787.

In short, SNECMA has managed to transform itself from a technologically uncompetitive military engine producer reliant on Second World War German technology to a profitable and internationally competitive commercial engine manufacturer. SNECMA's ability to spin technologies developed for its military projects off into the commercial sector owes much to the DMA/DGA's interventions during successive aircraft development programs. Because SNECMA engines performed less well than foreign counterparts, the Air Force and Dassault Aviation repeatedly proposed building French aircraft around foreign engines.

Proposals ranged from equipping Mirage IIIs with Rolls-Royce Avons, French Mirage IVs with Pratt and Whitney J75, and Mirage Gs and F2s with Pratt and Whitney TF-30s. The DMA opposed all of these efforts to power aircraft with British or American engines, forcing the Air Force to make due with the inferior products of French industry. However, if not for the technology and manufacturing capacity acquired by producing 3,366 ATAR turbojets to power Mirage combat aircraft, SNECMA would have never been able to launch the CFM 56 in partnership with General Electric.

The French experience contradicts conventional logic, which holds that military spin-offs into the commercial sector are exceedingly rare.¹⁴² Both Dassault Aviation and SNECMA are clear-cut cases of companies with no prior commercial aircraft activities successfully spinning technologies from defense projects off into the commercial sector. Dassault's diversification—

already 40 years old—has proven that a single firm can sustain commercial and military aircraft development capabilities over an extended period of time.

Why have French aviation companies been more successful at adapting defense-related technologies for the commercial sphere than their foreign counterparts? A primary factor is, once again, the DMA/DGA's role in combat aircraft programs. By systematically opposing Air Force requirements for technologies judged too sophisticated or uncertain, the DMA/DGA ensured that a smaller portion of French aircraft development efforts were invested in expensive capabilities with no commercial application—such as VTOL, variable geometry wings and the titanium construction technologies needed for aircraft designed to fly at speeds above Mach 2.2. Contrarily, a greater proportion of French efforts went to technologies and processes that could be applied to commercial programs as well, including integral manufacturing, computer assisted design (CAD), active control technology (ACT) and carbon-fiber composites (CFC). The DMA/DGA's constant preoccupation with limited defense budgets also probably accustomed French aircraft companies to design aircraft with development and operational costs in mind, an attitude differing sharply from British and American military aerospace firms habituated to massive cost overruns in the pursuit of advanced technology.¹⁴³

As a consequence of the DMA/DGA's influence, France emerged as the world's third largest exporter of combat aircraft by the end of the Cold War, dwarfing the United Kingdom. As a consequence, France has, since the 1980s, been the only state besides the United States and the Soviet Union/Russia capable of designing and producing a modern combat aircraft out of entirely indigenous components. Commercially, French companies have branched out from their state-sponsored military activities to conquer commercial markets as well. France has progressed from having an aerospace industry one-third the size of the United Kingdom's at the advent of the Fifth

Republic, to possessing Europe's largest today.¹⁴⁴ Technological spin-off was critical to this process, but did not just happen. Led by the DMA/DGA, the French procurement process took civil-military synergies into account at every stage of the development process, orienting investments towards technologies with the most commercial and dual-use potential, rather than the greatest military importance.

VI. Conclusion

By creating a powerful, autonomous procurement agency--the DMA/DGA--de Gaulle fundamentally changed the shape of French military procurement. Rather than obeying the dictates of the armed services, the DMA/DGA has come to view itself as the custodian of France's military-industrial base. As a consequence, it has favored programs and activities that guarantee the competitiveness of French defense industries, rather than fulfilling specific military requirements.

The combat aircraft sector is an exemplar in this regard. Not one French combat aircraft began with a formal Air Force requirement. While the Air Force issued requirements for large combat aircraft incorporating exotic technologies, the DMA/DGA collaborated with defense industries to impose smaller and simpler designs. Thus, instead of long-range interceptors, twin-engine fighter-bombers or vertical take-off aircraft, France built one generation of lightweight fighter after another.

Calculated to satisfy a maximum number of foreign customers, France exported the majority of the lightweight fighters it produced. This export windfall permitted French manufacturers to lengthen their production runs, amortize development costs and offer regular improvements to their basic designs. As a consequence, the French Air Force managed to sustain a fleet of 450 modern, nationally-produced, combat aircraft at a high degree of readiness.

Pursued over time, the DMA/DGA policy of producing lightweight fighters at regular decade intervals-- Mirage III development beginning in 1955, Mirage F1 in 1965, Mirage 2000 in 1974 and the Rafale in 1983--enabled French manufacturers to accumulate unprecedented experience with a single category of combat aircraft.¹⁴⁵ This gradual specialization in lightweight fighters brought commercial advantages as, “experience—i.e. the steady buildup and maintenance of expertise over time through constant ‘learning by doing’—is critical in the cost-effective design and development of military aircraft.”¹⁴⁶

In terms of technology policy, the DMA/DGA eschewed heavy investments in risky or exclusively military research and development and instead concentrated on perfecting proven military technologies and developing dual-use technologies and process innovations that would have wider ramifications on non-defense sectors. Over time, the DMA/DGA policy bore fruit in a number of technologies spun-off from defense industries into the civilian economy, such as Falcon business jets, CATIA software and CFM engines. In France's case, spin-off was the deliberate result of a defense procurement process that enshrined it as a central value, rather than the haphazard result of heavy defense spending, as American advocates frequently claim.

When the DMA/DGA did invest in military technologies, it followed the safe route of developing technologies that other states had already shown were viable. In fact, all of the key technologies or construction techniques that made successive generations of French aircraft more capable were developed elsewhere. As Table XIV illustrates below, the DMA/DGA and Dassault were content to be technological followers, appropriating and improving on proven technologies.

Table XIV:

French Fighters and Borrowed Technology

<u>French Aircraft</u>	<u>New Technologies</u>	<u>Originally Introduced</u>
Mirage III (1961)	Area Rule Fuselage Tailless Delta	F-102 (USA - 1954) F-102 (USA - 1954)
Mirage F1 (1974)	Thin Wing (honeycombed) Integral Construction	F-104 (USA - 1960) late 1950s
Mirage 2000 (1984)	Active Control Technology Carbon Fiber Composites	F-16 (USA - 1978) 1966 in laboratory (UK)

* Dates given for aircraft are in-service dates

appropriate and exploit new technologies in a timely manner. France was the second state to field a fly-by-wire fighter and incorporated carbon composites into its designs before the United Kingdom, which originally developed the technology. In perhaps the most telling example, France took delta-wing aircraft to their technical and commercial pinnacle, despite having been a latecomer onto the market.

The DMA/DGA accomplished its objectives by moderating between the competing preferences of different actors. As Table XV illustrates, the ultimate product of French procurement did not correspond to any single group's favourite scenario, but to a coherent DMA/DGA policy.

Table XV:

Actors, Preferences and the DMA/DGA Solution

Actors	Preferences	DMA/DGA Solution
Air Force	Acquire cutting-edge technology Import superior foreign weapons	
Political Leaders	Maintain national technological base Collaborate with European partners	Produce "cheap" exportable aircraft Construct aircraft nationally Develop aircraft evolutionarily
Dassault	Produce "cheap" exportable aircraft Minimize technological risk Retain prime-contractor status Use superior imported sub-systems	Equip aircraft with French sub-systems Use proven technology
SNECMA/ Thompson	Keep role in developing key sub-systems	

The DMA/DGA blocked repeated Dassault and Air Force efforts to outfit French aircraft with superior foreign sub-systems (engines and radars), thereby favoring domestic producers of sub-systems at the expense of greater military capabilities or further airframe exports. The DMA/DGA also sabotaged political efforts to foster European armaments collaboration, whether promoted by nationalists like Messmer, conservatives such as Pompidou or convinced Europeans like Mitterrand. Whenever politicians subscribed to a collaborative program, such as the AFVG in the 1960s or the Eurofighter in the 1980s, the DMA/DGA subverted collaboration by sponsoring rival national projects and making unacceptable demands of partners.¹⁴⁷

The group whose preferences were satisfied the least often was the Air Force's high command. Instead of fulfilling the Air Force's requirements for diverse and sophisticated aircraft, the DMA/DGA supplied one lightweight fighter after another. During the 1960s and 1970s, the

DMA/DGA frustrated the Air Force's search for vertical take-off or swing-wing aircraft capable of continuing operations from damaged runways. With equal assuredness, the DMA/DGA ignored later Air Force requirements for twin-engine interceptors with long-range radars and twin-engine fighter-bombers able to penetrate enemy air space at low altitudes. Until the end of the Cold War, Air Force generals feared that their fleet of lightweight fighters would fail in the event of war, grounded by attacks on aerodromes or unable to penetrate thick air defenses.

Contrary to the traditional image of a military-industrial complex wherein military professionals and industrialists collude to shape foreign policy and foist unneeded weaponry on a state's leaders, the French DMA/DGA led system of defense procurement entailed maximizing industrial and political outcomes by imposing unwanted armaments on the military establishment. The result was victories that can be measured in terms of export orders, technological spin-offs and France's virtually unique capacity, amongst medium powers, to develop combat aircraft autonomously. However, French leaders may count themselves fortunate that the Air Force's fears about their preparedness for a full-scale war were never put to the test.

Endnotes

¹ When de Gaulle returned to power in 1958, he and Defense Minister Pierre Messmer quickly collided with the armed services over procurement. Especially concerning the aerospace sector, de Gaulle and Messmer reproached the armed services for seeking technological sophistication to the detriment of military efficiency, according too little priority to the development of missiles capable of carrying French nuclear warheads and being unresponsive to ministerial directives. Dominique Pestre, “Innovation technique, fonctionnement des institutions et politique: créer la DMA et concevoir les missiles de la force de frappe française,” Maurice Vaïsse, ed. *Armement et Ve République: fin des années 1950 – fin des années 1960* (Paris: CNRS, 2002), 9-10.

² Philippe de Gaulle, *De Gaulle, mon père, vol. 2* (Paris: Plon, 2004), 199.

³ Anne Rasmussen, “Les corps d’ingénieurs militaires et les débuts de la Délégation ministérielle pour l’armement (1961-1968)” in Vaïsse, ed. *Armement et Ve République: fin des années 1950 – fin des années 1960*, 14-15.

⁴ The DMA dispenses 80 percent of France’s military research, development and procurement budget, which in turn accounts for 35 to 40 percent of France’s overall scientific research expenditures. Louis Gautier, *Mitterrand et son armée, 1990-1995* (Paris: Grasset, 1999), 346-47.

⁵ In 1990, in the aeronautical sector, 60 armament engineers occupied positions in Thompson, 55 in Aérospatiale, 40 in SNECMA, 18 in Matra and 16 in Dassault. Jean Guisnel, *Les généraux: Enquête sur le pouvoir militaire en France* (Paris: La Découverte, 1990), 254-55.

⁶ Like the Mirage III, the Durandal also featured delta wings, an “area rule” fuselage and the SNECMA ATAR 9B turbojet. The advantages of the Mirage III over the Durandal were that the Mirage mounted a full-fledged radar while the Durandal only carried a ranging-radar, and the Mirage displayed better supersonic performance, due largely to its moveable shock cones. See Jean Cuny, “SE 212 Durandal: La brève histoire d’une grande famille,” *Le Fana de l’Aviation* no. 254 (January 1991): 12-21; Robert Jackson, *Cold War Combat Prototypes* (Marlborough, United Kingdom: Crowood, 2005), 64-70; and Déplante, 147-58.

⁷ PRO AVIA 18/3250 Aeroplane and Armament Experimental Establishment, Marcel Dassault Mirage 3A, Evaluation by a Team of A.&A.E.E. at Istres in January 1960.

⁸ Of course, political realities strongly influenced aircraft choice. For example, few states actually chose between the Mirage III and the MiG-21. Clients and satellites of the Soviet Union frequently received the MiG-21 at a fraction of its market value, while other potential customers avoided purchasing an Eastern Bloc aircraft for political reasons. Only in a few limited markets, such as India and Peru, were Western and Soviet aircraft in direct commercial competition. The Mirage III’s major commercial rivals were therefore American and British aircraft. According to a 1973 RAND Corporation study, “It cannot be gainsaid that the company has been favored by the coincidence of several outside circumstances. The foremost has probably been the dearth of

effective competition for the Mirage in its various models.... The only other low price competitor to the MiG-21 available through most of the 1960s was the F-5A, which was handicapped by inferior speed and a fire control system that left something to be desired.” Dassault Vice-President Bruno Revellin-Falcoz evaluated the Mirage III’s competitive environment slightly differently. According to Revellin-Falcoz, “The choice [for potential clients] was not very large: the short-ranged Lockheed F-104; the remarkable two-engine Phantom II, which was visually unattractive and comparatively expensive; and the Draken, which the Swedish government virtually refused to export.... The British had practically nothing to offer.” Robert Perry, *A Dassault Dossier: Aircraft Acquisition in France* (Santa Monica: The RAND Corporation, 1973), 28; Bruno Revellin-Falcoz, “La genèse des programmes Mirage,” *Actes du Colloque, 1986, Commémoration des anniversaires des premiers vols du premier avion à réaction français: SO-6000 Triton (11 novembre 1946) du premier vol du Mirage III (17 novembre 1956) du premier vol du Mirage F-1 (23 décembre 1966)*, 6.

⁹ The ATAR 9C delivered less thrust and consumed more fuel than its American and British contemporaries—for example, General Electric’s J79 produced 27 percent more thrust with a specific fuel consumption rate 22 percent lower than the ATAR.

¹⁰ The semi-active radar guided missiles deployed during the 1960s proved extraordinarily unreliable. However, the R.530 / Cyrano II combination appears to have been particularly useless. While the Israelis scored only 1 out of 282.5 kills, or 0.35%, with the R.530, the United States Air Force and Navy scored 24 out of 86 kills, or 28%, recorded between 1965 and 1968 with radar guided missiles (Sparrow and Falcon). The percentage of American radar-guided missiles that hit their targets was 8.9% and 9.3% respectively for the Sparrow and the Falcon. Similar data for the Israeli missile kill rate is lacking. South Africa’s refusal to deploy the R.530 on combat missions is perhaps the greatest condemnation of the missile’s value. During air combat over Angola in 1987 and 1988, Cuban MiG-23s proved capable of launching AA-8 missiles in head on (forward sector) engagements, whereas South African Mirages had to maneuver to a position behind the MiGs to launch Matra 550 heat-seeking missiles. The R.530 was the only weapon in the South African arsenal that could have given South African Mirages the ability to fire missiles head on against the MiGs. However, the missile’s reliability was considered so inadequate, that the South Africans decided to do without it. Frédéric Lert, *Mirage F1, tome 1: F1C et F1B* (Paris: Histoire et Collections, 2007), 54; Aloni, 15; Stevenson, 9-10; and See Dick Lord, *Vlamgat: The Story of the Mirage F1 in the South African Air Force* (Weltevreden Park, South Africa: Covos Day, 2000), 163-64.

¹¹ PRO AVIA 18/3250 *Aeroplane and Armament Experimental Establishment, Marcel Dassault Mirage 3A, Evaluation by a Team of A.&A.E.E. at Istres in January 1960*; and Déplante, 154.

¹² Jim Upton, *Lockheed F-104 Starfighter* (North Branch, Minnesota: Specialty Press, 2003), 77-78.

¹³ John Pacco, *The Belgian Air Force* (Averbode, Belgium: J.P. Productions, 1996), 91-101.

¹⁴ The Northrop F-5 is not included in these figures because it is a more rudimentary aircraft. Roughly 89 percent of the Lockheed F-104s went to foreign clients, however many of the 2,578 Lockheed F-104s produced were manufactured under license. See Dominique Breffort and André Jouineau, *Mirage III: Mirage 5, 50 et dérivés de 1955 à 2000* (Paris: Histoire et Collections, 2004), 82; and Upton, 73-82.

¹⁵ Importantly, the initiative to export the Mirage III to Australia came from Rolls-Royce. Because of the English Electric Lightning's greater cost and more specialized role, Rolls-Royce concluded that its only possibility of providing the engine for Australia's next combat aircraft would be to join forces with Dassault. Otherwise, the Australians would purchase the Lockheed F-104. Marcel Dassault himself doubted the likelihood of exporting the Mirage III to Australia, which had traditionally acquired American or British aircraft. He only explored the Australian market at Rolls-Royce's instigation. According to Déplante, the Australian Air Force had a negative opinion of the Avon because of how earlier Avon versions performed incorporated in F-86 Sabers. Occasionally, the firing of the F-86s guns produced a flame-out on the Avons. This phenomenon was also experienced on the RAF's early Hawker Hunters, which were also powered by earlier versions of the Avon. In the Hunter, the problem was eventually resolved. Also according to Déplante, the rushed incorporation of the Avon into a Mirage III fuselage changed the aircraft's aerodynamic characteristics, counteracting many of the Avon's basic advantages. In a production Mirage III with Rolls-Royce Avons, this problem would probably have been solved. Claude Carlier, *Serge Dassault: 50 ans de défis* (Paris: Perrin, 2002), 84-86; and Henri Déplante, *A la conquête du ciel* (Aix-en-Provence: EDISUD, 1985), 159.

¹⁶ The "Mirage Affair" proved politically significant in Switzerland. The Swiss Mirage III exceeded its budgetary envelope by 66 percent, with each aircraft costing 15 million instead of 8 million Swiss Francs. Within Switzerland, considerable political energy was devoted to identifying who was responsible for this cost overrun. Ultimately, it was concluded that the difficulties experienced by the Swiss contractor in integrating the American subsystems into the French aircraft was to blame. Fiona Lombardi, *The Swiss Air Power: Wherefrom? Whereto?* (Zurich: VDF, 2007), 50-51; and Déplante, 155-56.

¹⁷ Very few Israeli kills resulted from a proper radar lock-on. Shlomo Aloni, *Israeli Mirage and Nesher Aces* (London: Osprey, 2004), 10.

¹⁸ Aloni, *Israeli Mirage and Nesher Aces*, 63-65; Breffort and Jouineau, 41-43.

¹⁹ *Ibid.*, 82.

²⁰ Breffort and Jouineau, 72-73.

²¹ The Kfir never entirely lived up to its potential. Being the first and only combat aircraft designed and produced in Israel, the poor integration of the J79 into an airframe based on the Mirage III annulled many of the theoretical advantages to be gained from combining an aerodynamically excellent airframe with a more power engine. Because the center of gravity of the new aircraft was further to the rear of the aircraft than on the Mirage III, the Kfir proved more sluggish in dogfights.

The modifications to the airframe and air intakes to accommodate the J79 also added to aerodynamic drag, counteracting the advantages of higher thrust. Shlomo Aloni, "L'avion du désespoir: Israel Aircraft Industries 'Kfir'," *Le Fana de l'Aviation* no. 439: 54-61.

²² Breffort and Jouineau, 72-73.

²³ Alfred Bodemer and Robert Laugier, *L'ATAR et tous les autres moteurs à réaction français* (Riquewihr, France: J.D. Reber, 1996), 61-99.

²⁴ *Ibid.*, 116-18; 160-63.

²⁵ Breffort and Jouineau, 1-82.

²⁶ Thompson-C.S.F., "Les équipements de bord de Thompson-C.S.F.," *Actes du Colloque, 1986, Commémoration des anniversaires des premiers vols du premier avion à réaction français: SO-6000 Triton (11 novembre 1946) du premier vol du Mirage III (17 novembre 1956) du premier vol du Mirage F-1 (23 décembre 1966)*, 5-6.

²⁷ The Mirage III's need for long paved surfaces was a bi-product of its tailless delta. By way of comparison, the Soviet MiG-21 needed 800m to take off. *L'Atlas des avions de combat français: de la première guerre mondiale à nos jours*, 103.

²⁸ Many conflicts in recent memory had included coordinated strikes against enemy airfields, including Germany's early offensives in World War II, the United States Navy's air strikes against Japanese airfields in Formosa prior to the invasion of Okinawa in 1945, the British and French assaults on Egyptian airfields in 1956 and the Soviet attacks on Hungarian airfields in 1956. In retrospect, Cold War planners probably overestimated the ability of attacking aircraft to disable an airfield. When air strikes against enemy airfields caused significant damage, it was more as a result of aircraft destroyed on the ground than the disruption of the airfields themselves. More recent conflicts, such as the 1991 Gulf War, demonstrate that engineering units are generally successful at repairing even significant damage to airfields in a relatively short time.

²⁹ "Gallic Guardian: Dassault Mirage F1," *World Air Power Journal* 17 (Summer 1994): 49.

³⁰ The Republic F-105 Thunderchief represented the paradigm of the tactical nuclear bomber during the late 1950s and early 1960s. The aircraft had a combat weight of 15,850 kg (34,870 lbs), compared to the Mirage III's 7,975 kg (17,575 lbs). Fully loaded, the F-105 only had a range of 200 miles.

³¹ When NATO decided to launch a VTOL competition, France was bereft of VTOL designs that could be quickly developed into a competitive proposal. This is not to say that French designers or firms had been entirely uninterested in VTOL. The successful concept for vectored thrust that ultimately led to the United Kingdom's Hawker Harrier was pioneered by French engineer Michel Wibault, but was developed in the United Kingdom beginning in 1956 because French aircraft producers were initially uninterested. France's state-owned jet engine manufacturer, SNECMA, had

investigated VTOL in parallel between 1952 and 1959. However, the SNECMA prototype, the Coléopatre, proved incapable of transitioning to level flight once it had taken-off vertically. The project was abandoned after the prototype crashed during its ninth flight. Dassault Aviation had also already developed an aircraft concept, entitled Cavalier, that was to be powered by the same Bristol Pegasus motor that the Harrier later used. However, the colonel charged with evaluating new aircraft designs rejected the Cavalier as too dangerous for pilots in the late 1950s. See Bodemer and Laugier, 99-108; and Déplante, 175-77.

³² After Rolls-Royce demonstrated VTOL lift-off using a metal frame containing two vertically mounted Nene turbojets, Marcel Dassault told his engineers, “Don’t get excited, it is only a metal cage that flew.” Déplante, 175.

³³ PRO DEFE 13/305 Peter Thorneycroft to Julian Amery, 28 September 1962.

³⁴ PRO DEFE 13/305 Julian Amery to Peter Thorneycroft, 4 October 1962.

³⁵ Bruno Revellin-Falcoz, “Débats,” *Actes du Colloque, 1986, Commémoration des anniversaires des premiers vols du premier avion à réaction français: SO-6000 Triton (11 novembre 1946) du premier vol du Mirage III (17 novembre 1956) du premier vol du Mirage F-1 (23 décembre 1966)*, 5.

³⁶ Meanwhile, Dassault’s approach of combining an existing airframe with lift jets was showing its limits. With nine separate jet engines—eight for vertical lift and one for horizontal flight—the Mirage III-V would be more expensive to produce and suffer significant maintenance problems compared to British designs employing one jet engine for both vertical and horizontal flight. By 1964, the DMA was increasingly skeptical of the commercial and technical viability of a French VTOL aircraft. The first VTOL prototype, named the Balzac, crashed twice in 1964 and 1965, killing two pilots. One of the Mirage III-V prototypes was also destroyed in an accident. Moreover, The British Ministry of Defence’s Chief Science Advisor estimated the Mirage III-V’s production costs as 25 percent higher than the British P.1154 and as less reliable. PRO DEFE 13/305 “V/STOL – P.1154 versus Mirage III V,” Solly Zuckermann to Peter Thorneycroft, 15 October 1962; Déplante, 178-79; and Jackson, 144-46.

³⁷ Déplante, 181-82.

³⁸ PRO CAB 164/351 Anglo-French Cooperation in the Aircraft Field, Solly Zuckerman, 25 Sept 1967.

³⁹ Déplante, 182; Bodemer and Laugier, 150.

⁴⁰ Dassault’s first variable geometry prototype likewise led the company to conclude that, “In no case would these aircraft make good and agile fighters because of the penalties associated with the structure and installation of a [wing] pivot, which is a comparatively heavy addition to an aircraft.” Revellin-Falcoz, “Débats,” 5.

⁴¹ Déplante, 188-89.

⁴² “Gallic Guardian: Dassault Mirage F1,” 51.

⁴³ Déplante, 190-91.

⁴⁴ Déplante, 181-93; and “Gallic Guardian: Dassault Mirage F1,” 49.

⁴⁵ PRO PREM 15/1290 “Extract from meeting Prime Minister/Pompidou,” May 22, 1973.

⁴⁶ Given the fact that France ultimately acquired the comparatively inexpensive Mirage F1, while the United Kingdom went on to develop the much more costly Tornado in collaboration with West Germany and Italy, one of the main reasons it took so long for the British and French air forces to agree to AFVG requirements was that the French air force wanted a more expensive and sophisticated aircraft. According to an internal British memorandum, France needed interception capabilities in addition to low-level strike performance, whereas the RAF needed only the low-level strike capabilities. British estimates suggested that an aircraft meeting French requirements would carry a fly-away cost of £1.8 million, whereas one built to meet the less demanding British requirements would only cost £1.6 million. The compromise solution largely favored French requirements, entailing an aircraft with an estimated cost of £1.75 apiece. PRO CAB 148/32/35 AFVG Aircraft: Memorandum by the Secretary of State for Defence and the Minister of State for Technology, May 10, 1967.

⁴⁷ Déplante, 187.

⁴⁸ Perry, 20.

⁴⁹ The newspaper *Le Figero* commented that, “this aircraft is the finest, sleekest, most elegant and purest that one can see.” *Jours de France*, a newspaper owned by Marcel Dassault, also waxed eloquently about the Mirage G lyrically describing it as “rapid as an arrow, yet capable of landing [gently] as a flower.” Jean Guisnel, *Les généraux: Enquête sur le pouvoir militaire en France* (Paris: La Découverte, 1990), 214; and Jean-Pierre Bechter, Luc Berger and Claude Carlier, *L'épopée Dassault* (Boulogne, France: Timée-Editions, 2006), 49.

⁵⁰ PRO CAB 148/32/47 Cabinet-DOP Committee, “The Aircraft Programme,” 23 June 1967.

⁵¹ During flight tests, the Mirage F2 proved capable of landing at a speed of 140 kts, 30 kts less than the Mirage III, and coming to a halt within 480 m. “Gallic Guardian: Dassault Mirage F1,” 51.

⁵² “Gallic Guardian: Dassault Mirage F1,” 50-51.

⁵³ Déplante, 190-91.

⁵⁴ According to Déplante, “SNECMA’s leadership was not interested. Its [SNECMA] president even criticized it as ‘so little our own,’ disregarding his company’s role in developing the afterburner.” Déplante, 184.

⁵⁵ At the Air Force’s insistence, SNECMA began developing a French variant, entitled the TF-106, of the Pratt and Whitney JTF-10 engine in 1962. Interested in the greater performance of the TF-30 engine, developed for the American F-111, the Air Force pressured SNECMA to reorient its development work to produce a variant of the TF-30, entitled the TF-306, in 1965. Because civil aircraft engines do not have afterburners (with the exception of the Concorde and Tu-144), SNECMA’s leadership feared that being limited to developing afterburners would condemn it to being a niche supplier of military aircraft. Bodemer and Laguier, 148-50.

⁵⁶ Déplante, 184.

⁵⁷ “Gallic Guardian: Dassault Mirage F1,” 51.

⁵⁸ According to an Air Force Chief of Staff, “The F1 was imposed on the Air Force. The Air Force did not oppose the Mirage F1 because it doubted the aircraft’s viability, but because it did not represent enough of a technological advance over the Mirage III to justify the cost of acquiring and maintaining the new aircraft.” Years later, one of Dassault’s designers ironically stated that, “The Air Staff’s needs were addressed before they could even be expressed.” Cohen, 214; Frédéric Lert, *Mirage F1: Tome 1, F1C et F1B* (Paris: Histoire et Collections, 2007), 6.

⁵⁹ “Gallic Guardian: Dassault Mirage F1,” 51.

⁶⁰ Bodemer and Laguier, 91-98.

⁶¹ Look-down radar capability defines the ability of a radar to identify aircraft flying below the radar. Look-down was technically difficult because of the computing problem of isolating the radar signature of a low-flying aircraft from the much larger radar signature of the earth. The Cyrano IV radar was far from perfect. In South African service, the radar originally demonstrated a mean time between failures (MTBF) rate of 12.2 hours. After improvements in maintenance organization, the rate was raised to 16.3 hours. General Ward of the SAAF commented that that the Cyrano IV was still awkward to operate, but produced much better results than its predecessor. Pascal de Chasse, “Les Mirages III et F-1 dans l’Armée de l’Air française,” *Actes du Colloque, 1986, Commémoration des anniversaires des premiers vols du premier avion à réaction français: SO-6000 Triton (11 novembre 1946) du premier vol du Mirage III (17 novembre 1956) du premier vol du Mirage F-1 (23 décembre 1966)*, 8; Thompson-C.S.F., 6-7; and Ward, 13, 135.

⁶² Revellin-Falcoz, “Débats,” 3, and Ward, 31.

⁶³ Whitford, 99-100.

⁶⁴ “Gallic Guardian: Dassault Mirage F1,” 54.

⁶⁵ Expressing the prevailing view in the Air Force, General Pascal de Chassy observed that the Mirage F1's improved ability to take-off and land would be more important in the event of war than the aircraft's bi-sonic speed. de Chasse, 7-8.

⁶⁶ "Gallic Guardian: Dassault Mirage F1," 54.

⁶⁷ Instantaneous and sustained turn performance are both important for air combat. Instantaneous turn performance refers to the turning capability of an aircraft at any given moment. Sustained turn performance measures the ability of an aircraft to sustain a turn over an extended length of time. See de Chasse, 8; Robert Shaw, *Fighter Combat: Tactics and Maneuvering* (Annapolis: Navy Institute, 1985), 387-88.

⁶⁸ General Ward stated that the Mirage III dominated combat at low speeds, but that the Mirage F1 dominated in vertical maneuvers. The Mirage F1 could out-climb its opponent and take favorable positions from which it could then make high-speed firing passes. Ward, 37.

⁶⁹ The Mirage III remained in production well into the Mirage F1's production run. Therefore, it is possible to directly compare the costs of the two aircraft. In the early 1970s, Mirage F1Cs cost approximately \$4.2 million apiece, compared to \$3.5 million for the Mirage IIIE. See Perry, 29.

⁷⁰ "Gallic Guardian: Dassault Mirage F1," 77-78.

⁷¹ Comparing aircraft costs is extraordinary difficult because costs vary significantly as a result of avionics fits, contract terms, inflation, fluctuating exchange rates and profit margins. However, a Mirage F1C cost the French Air Force approximately \$4.2 million in 1972, while a F-16A was designed for a fly-away cost of \$4.5 million in 1975. Stevenson, 196.

⁷² The F-16's thrust/weight ratio was approximately 1, versus 0.69 for the Mirage F1. According to one French analysis, "Against the first generation F-16A, the French aircraft [the Mirage F1] is not laughable. However, there is a difference in modernity that is rapidly evident. When climbing or maneuvering in the horizontal plane, the [French] ATAR 9K50 provides too little thrust." de Chasse, 8; and Lert, 44.

⁷³ Déplante, 228.

⁷⁴ The major difference between the Mirage F1E offered for the international competition and the standard production Mirage F1C was that the Mirage F1E carried a new engine, the SNECMA M53. By providing more power, the M53 increased the Mirage F1's thrust-to-weight-ratio to 0.85, which was still inferior to the F-16.

⁷⁵ Vadepied, 293-300.

⁷⁶ "Gallic Guardian: Dassault Mirage F1," 88-95.

⁷⁷ Besides the General Dynamics F-16 and the Soviet MiG-21 and MiG-23, very few aircraft in production during the 1970s can be classified as being in the same category as the Mirage F1. Other American aircraft, the F-4, F-14 and F-15 were all substantially larger and, therefore, more expensive. The only British combat aircraft in production, the Hawker-Siddeley Harrier, was a specialized VTOL aircraft, with a short range and limited air-to-air capabilities.

⁷⁸ The United States Air Force (USAF), which operated several MiG-23s for air combat training, evaluated the aircraft's combat potential in the following terms, "The Flogger pilot was going to make one pass and run. If he tried to turn... you owned him." The USAF also evaluated the MiG-23 as "unstable and difficult to fly." Because of its maintenance problems and delicate handling, USAF pilots did not like to fly the MiG-23, leading an American colonel to remark that "they [the USAF pilots] were scared of them [the MiG-23s]." Peter Grier, "Constant Peg: A Tale of Purloined MiG Fighters, Secret Desert Airfields, and Double-Wide Trailers..." *Air Force Magazine* (April 2007): 86-89.

⁷⁹ Overall, 98 Mirage F1s accounted for over half of the Iraqi Air Force's confirmed air-to-air victories over the Iranian Air Force fighters between September 1981, when the Mirage F1 was declared operational, and the end of the war in 1988. By way of contrast, the Iraqi Air Force's larger fleet of MiG-23s accounted for less than a quarter of confirmed air-to-air victories during the same period. With air combat in general, but particularly with many wars in the Middle East, there is a significant gap between claimed air combat victories and verifiable results. Discrepancies in figures can be the result of multiple pilots claiming to have shot down the same aircraft, pilots claiming to have shot down aircraft that are only damaged, pilots of one side claiming to have shot down aircraft that the other side claims as downed by ground-based air defenses and outright lying, either by pilots or their governments. In one example, Major Moukhaled Abdoul Kareem of the Iraqi Air Force claimed to have shot down 14 Iranian aircraft with his Mirage F1. Iraqi intelligence services and the Iraqi Air Force were unable to corroborate 13 of the claimed victories, all having taken place deep in Iranian airspace (hence no wreckage of the enemy aircraft) and beyond visual range (hence no gun-camera footage of the victory). Adhering to strict criteria for counting aerial victories, it is possible to affirm that the Iraqi Air Force shot down 25 Iranian combat aircraft between September 1981 and the end of the war. Of these victories, 14 were won by Mirage F1s, six by MiG-23s, four by MiG-25s and one by a MiG-21. The ACIG Team, "Arabian Peninsula and Persian Gulf Database: Iraqi Air-to-Air Victories," September 2003, at *The Air Combat Information Group*, www.acig.org/artman/publish (consulted 24 June 2007); and Ahmad Sadik and Tom Cooper, "Les 'Mirage' de Baghdad: Les Dassault 'Mirage' F1 dans la force aérienne irakienne," *Fana de l'Aviation* no. 434: 20.

⁸⁰ Ward, 110-32.

⁸¹ One key necessity for low-level penetration missions is the ability of an airframe to resist turbulence, which increases as altitude decreases. The susceptibility of an aircraft to low-level buffeting is directly proportional to the velocity of an aircraft, but inversely proportional to its wing loading. Therefore, for an aircraft to fly fast, at low level, a high level of wing loading is preferable. In this context, the Mirage F1's 54 percent higher wing-loading than the Mirage III made it a better

aircraft for low-level attacks. de Chassey, 8; and John Law, *Aircraft Stories: Decentering the Object in Technoscience* (Durham: Duke University, 2002), 91-92.

⁸² Between January 1984 and August 1987, Iran and Iraq damaged or sunk merchant vessels on 463 occasions. Iraq damaged more merchant vessels than Iran and the Mirage F1 accounted for the majority of Iraqi successes. According to Huertas, Mirage F1s were credited with 37 out of 41 ships written off as a result of Iraqi attacks. Different figures are presented by Cooper, who claims that roughly 650 Exocet sorties were flown, of which 400 missiles were launched, hitting 257 ships of which 115 were written-off or sunk. During 1986, for which rough figures are available, Mirage F1s accounted for 60 out of 61 Iraqi attacks on vessels in the Gulf. By late 1985, Iranian oil exports were down by 40 percent. Several pilots of the Iraqi Air Force's 82 Squadron hit over a dozen oil-tankers apiece, leading to them being termed the "millionaires" for the millions of tons of oil they sunk. Nadia El-Shazly, *The Gulf Tanker War: Iran and Iraq's Maritime Swordplay* (London: MacMillan, 1998), 34; The ACIG Team, "Arabian Peninsula and Persian Gulf Database: Tanker War 1980-1988," September 13, 2003, at *The Air Combat Information Group*, www.acig.org/artman/publish/article_209.shtml (consulted 24 June 2007); Ahmad Sadik and Tom Cooper, "Les 'Mirage' de Baghdad: Les Dassault 'Mirage' F1 dans la force aérienne irakienne," *Fana de l'Aviation* no. 435: 71-72; Salvador Huertas, *Dassault Mirage: The Combat Log* (Atglen, Pennsylvania: Schiffer, 1996), 145; and Tom Cooper and Farzad Bishop, *Iran-Iraq Air War: 1980-1988* (Atglen, Pennsylvania: Schiffer, 2000), 185, 286

⁸³ Sadik and Cooper, 65, 72-73.

⁸⁴ Ward, 158-60.

⁸⁵ de Chassey, 7.

⁸⁶ Ward, 31.

⁸⁷ The Mirage III lacked the range needed for escort missions, while the Mirage 5 and Jaguar lacked the air combat potential. Ironically, the Libyan Air Force possessed Mirage F1s and Mirage 5s, as well as Soviet-built aircraft. Before France's intervention, Libya used Mirages, Su-22s and MiG-23s extensively to attack ground targets in Chad. The four Mirage F1s based at N'Djamena were viewed as essential for four reasons: 1) to escort French transports on both flights into and within Chad, 2) to protect N'Djamena (the logistic hub of the operation) from Libyan bombers, 3) prevent Libyan aircraft from supporting pro-Libyan rebels, and 4) escorting ground attack Jaguars. See Colonel Spartacus, *Opération Manta: Tchad 1983-1984* (Paris: Plon, 1985), 18-54; Yves Goutx, "Cachés par les 'Mirage', les 'Jaguar' attaquent: Au Tchad, en janvier 1987 l'Armée de l'Air utilisa la ruse pour détruire un radar," *Fana de l'Aviation* no. 369 (August 2000): 18-27.

⁸⁸ Etienne Copel, *Vaincre la guerre: Une autre defense, une autre armée* (Paris: Lieu Commun, 1984), 130.

⁸⁹ Michel Forget, *Puissance aérienne et stratégies* (Paris: Economica, 2001), 275.

⁹⁰ After the success of the Mirage V, Dassault marketed a radar-less version of the Mirage F1. However, only South Africa (32 aircraft) and Libya (16 aircraft) purchased the radar-less Mirage F1. All other Mirage F1s, including photo-reconnaissance and training versions, were equipped with Thompson CSF radars. Almost all were equipped with Cyrano IVs, however some Iraqi Mirage F1s were equipped with the Agave radar, optimized for use in maritime strike missions. On the other hand, Mirage III trainers and photo-reconnaissance aircraft were not equipped with radars. Moreover, 531 radar-less Mirage 5s were built, while Switzerland's 36 Mirage IIIEs incorporated American radars. "Gallic Guardian: Dassault Mirage F1," 59-95; Breffort and Joineau, 1-82; and Lert, 22-25.

⁹¹ The Iraqis also deployed the Soviet R-40R/T, R-23, R-23R/T and K-13R radar guided missiles. Cooper and Farzad Bishop, *Iran-Iraq Air War: 1980-1988*, 284.

⁹² *Ibid.*, 281-91.

⁹³ Stehlin, quoted in Vadepiéd, 298-99.

⁹⁴ The SNECMA TF-306 derivative of the Pratt and Whitney TF-30 weighed 1750 kilograms, compared to 1582 kilograms for the SNECMA ATAR 9K50. Therefore, two ATAR 9K50s weigh 89 percent more than one TF-306. In addition to adding weight, the ATAR 9K50 consumed more fuel for a given performance than the TF-306. The ATAR 9K50's specific fuel consumption was 0.97 kg/kg/h versus 0.65 kg/kg/h for the TF-306. Being 49 percent less fuel efficient than the TF-306 and adding significantly to the mass of the aircraft being propelled, the substitution of two ATAR 9K50s for one TF-306 imposed a significant increase in the aircraft's size. Bodemer and Laguier, 98, 159.

⁹⁵ Alexis Rocher, "Histoire d'un rêve: Les 'Super Mirage', de l'ACF au 4000," *Fana de l'Aviation* no. 416 (July 2004): 24.

⁹⁶ French experiments with the Mirage G prototype had already demonstrated that the heavy weight and high wing loading of variable geometry aircraft tended to reduce maneuverability. When he informed the French that the United States Air Force viewed maneuverability as critical for its next aircraft, General Glasser told them that American research also favored a conventional wing as more maneuverable. Déplante, 184.

⁹⁷ The two prototypes proved to be well designed and the Mirage G8 prototype successfully registered a speed of Mach 2.34, establishing a record that no European state (excepting the Soviet Union/Russia) has broken since. Déplante, 188.

⁹⁸ Alexis Rocher, "Histoire d'un rêve: Les 'Super Mirage', de l'ACF au 4000," 24-25.

⁹⁹ General Pierre Gallois, who worked for Dassault Aviation after his retirement from the French Air Force, counseled Marcel Dassault that the ACF requirements were too ambitious from the moment he saw them in 1972. Pierre Gallois, *Le sablier du siècle: mémoires* (Paris: L'Age d'homme, 1999), 457.

¹⁰⁰ Dassault calculated that 23 percent of the ACF would have to be built of titanium alloys. Rocher, “Histoire d’un rêve: Les ‘Super Mirage’, de l’ACF au 4000,” 30; and Whitford, 104.

¹⁰¹ Rocher, “Histoire d’un rêve: Les ‘Super Mirage’, de l’ACF au 4000, 1er partie,” 30.

¹⁰² A heavier interceptor aircraft, the Soviet MiG-31, was developed at the same time as the ACF. However, the Soviet aircraft was neither maneuverable nor was it exported to foreign clients. See R.A. Belyakov and J. Marmain, *MiG: Fifty Years of Secret Aircraft Design* (Annapolis: Naval Institute, 1994), 407-17.

¹⁰³ Rocher, “Histoire d’un rêve: Les ‘Super Mirage’, de l’ACF au 4000, 1er partie,” 34.

¹⁰⁴ Dassault Aviation always viewed itself as a producer of sophisticated warplanes and never designed an aircraft for the supposedly lowest end of the combat aircraft market. When met by new aircraft, the lowest end of the combat aircraft market has been filled by either advanced trainers with some strike capacity, such as the BAC Hawk, or deliberately unsophisticated combat aircraft such as the Northrop F-5, Fiat G-91, AMX-International and Soko Orao.

¹⁰⁵ Alexis Rocher, “Histoire d’un rêve: Les ‘Super Mirage’, de l’ACF au 4000, 2ième partie,” *Le Fana de l’Aviation* no. 417 (August 2004): 71.

¹⁰⁶ Déplante, 231.

¹⁰⁷ Because delta wings can be built comparatively thickly for a given speed, they can be built using large conventional spars to attach them to the fuselage, in contrast to the complicated welding arrangements required on swept wing aircraft. In some cases, delta wings can be built as an integral part of the fuselage. For all of these reasons, delta wings contribute to making aircraft easier and cheaper to produce. An early pioneer of delta wings, German aircraft designer Alexander Lippisch, stated that one of the reasons he chose to work on delta wing designs was that, “The structure [of delta winged aircraft] would be lighter and simpler, insuring reduced construction costs and lower aircraft weight at given payloads.” According to Déplante, Dassault longtime Technical Director, reduced production costs were a main motivating factor behind Dassault’s shift back to delta wings in 1974. Although the swept-winged Mirage F1 carried significantly (42 percent) more fuel than the delta-winged Mirage III at the cost of a nominal increase in aircraft weight (5 percent), this change in spite, rather than because of the abandonment of the delta wing. Integral machining permitted much more fuel to be carried in the fuselage. According to Déplante, the additional fuel capacity of delta wings was an important factor in France’s return to them. French jet engines, even the new M53, had higher (at least 20 percent) fuel consumption rates than equivalent American engines. Therefore, to obtain similar performance to American aircraft, a larger proportion of the interior volume of French aircraft had to consist of fuel tanks. This could be achieved with delta wings. See Déplante, 227-29; and Alexander Lippisch, *The Delta Wing: History and Development* (Ames, Iowa: Iowa State University, 1981), ix.

¹⁰⁸ Revellin-Falcoz, the project director of the Mirage F1 development team and later Dassault Aviation Vice-President referred to the Mirage 2000's ACT technology as Dassault's "revenge" for its defeat during the competition for the Belgian-Dutch-Norwegian-Danish order. See Revellin-Falcoz, "La genèse des programmes Mirage," 11.

¹⁰⁹ The 1977-1982 *loi de programmation* provided for an annual increase of defense spending by 0.09 percent of GNP. The Air Force's portion of the overall defense budget was slated to increase by 2.4 percent. Although the *loi de programmation* was not adopted until 1976, its characteristics were discussed intensely in 1975, when the previous *loi de programmation* terminated. See Jérôme de Lespinois, *L'Armée de terre français: de la défense à la projection, vol. I* (Paris: L'Harmattan, 2001), 256-58; and Guisnel, 219.

¹¹⁰ Rocher, "Histoire d'un rêve: Les 'Super Mirage', de l'ACF au 4000, 1er partie," 35.

¹¹¹ Work on the ACF prototype was immediately halted upon Giscard's decision. Following Dassault's 1974 decision to develop less complicated aircraft, engineers had already been diverted from the ACF program to the Mirage 1000 and Mirage 4000 projects. The ACF was scheduled to fly in July 1976, eight months after its cancellation. Alexis Rocher, "Dassault Mirage 4000," *International Air Power Review* 14 (2004): 115.

¹¹² As the French President's spokesman, Xavier Gouyou-Beauchamp, explained "This choice will permit the Air Force to acquire a larger number of aircraft than would have been the case if the two-engine design had been retained. The new 'Mirage' will feature the latest technical developments and outclass other aircraft in its category, opening the door for significant exports." Rocher, "Histoire d'un rêve: Les 'Super Mirage', de l'ACF au 4000, 1er partie," 35.

¹¹³ As an added touch, the F-15 used for the occasion had been repainted with French roundels to emphasize that the aircraft could soon fly French colors. *Ibid.*

¹¹⁴ Revellin-Falcoz, "Débats," 7.

¹¹⁵ Friedrich List, *French Deltas: The Dassault Mirage 2000 over Europe – Part I* (Erlangen, Germany: AirDoc, 2005), 8.

¹¹⁶ Jean-Paul Philippe, *Les Mirage 2000* (Suresnes, France: Jean-Pierre Tallandier, 1991), 52-53.

¹¹⁷ Bodemer and Laguier, 98, 118.

¹¹⁸ Thrust-to-weight ratios are a key parameter in an aircraft's dogfight performance because it measures the ability of a fighter to maneuver in the vertical dimension. A ratio of 1.0 is frequently considered ideal in dogfighters. Neither the Mirage III nor the Mirage F1 was particularly strong in this regard, exhibiting ratios of 0.67 and 0.70 respectively.

¹¹⁹ Jean-Paul Philippe, 55.

¹²⁰ Ibid., 55-57.

¹²¹ Jean-Paul Hébert, *Production d'armement: Mutation du système français* (Paris: Documentation Française, 1995), 76-78.

¹²² Aircraft prices are notoriously difficult to compare contracts vary widely in terms of the electronics included on an aircraft, whether completed aircraft are delivered or kits for assembly, what spare parts are included in the order, whether or not industrial offsets are part of the deal and the margin that the exporting state negotiated with a particular client. Nevertheless, on virtually all lists of aircraft prices, the Mirage 2000 comes out at least a third more expensive than the F-16. A list of published estimates of aircraft flyaway costs in 1991 evaluated the F-16C/D as \$18.4 million, while the Mirage 2000 as ranging between \$24 million and \$27 million. An online database of recent aircraft contracts lists the unit cost of F-16C/Ds sold to nine states as varying between \$27.5 million and \$37.5 million, while the unit costs of Mirage 2000s sold to four states vary between \$40 million and \$45 million. See Venik's Aviation, "Military Aircraft Prices," www.aeronautics.ru (last consulted 1 July 2007); and Yolande Simon, *Prospects for the French Fighter Industry in a Post-Cold War Environment: Is the Future More than a Mirage?* (Santa Monica: RAND Dissertion, 1993), 63.

¹²³ List, 10-11, 65.

¹²⁴ Even the Chief of Staff of the French Air Force, General Jean Fleury, recognized in his memoirs that the F-16's radar was clearly superior to those mounted on early Mirage 2000s. Jean Fleury, *Faire Face* (Paris: Jean Picollet, 1997), 243-44.

¹²⁵ List, 11.

¹²⁶ Yefim Gordon, *Mikoyan MiG-29 Fulcrum Multi-Role Fighter* (Shrewsbury, the United Kingdom: AirLife, 1999), 73.

¹²⁷ By all accounts, the prices Russian manufacturers have offered for MiG-29s and Su-27s are comparatively quite low for the size and capabilities of the aircraft concerned. For example, the Su-27 (and its derivative Su-30) are two-engine aircraft approximately twice the size of the Mirage 2000 and considered equivalent to the United States F-15. However, despite their greater size, the unitary cost of Su-30s sold to China in 2002 is estimated at \$35 million to \$37 million. In November 1996, India chose to purchase Su-30s, which were in direct competition with Mirage 2000s, for a unitary cost of \$36 million. The Indian Ministry of Defense cited price as the main reason for its decision. There are several reasons for the comparatively low price of Russian aircraft. Some aircraft exported were produced for the Russian Air Force, but never entered service. Sukhoi's aircraft factory is in Novosibirsk in Siberia, where labor costs are comparatively cheap. Finally, as with previous Russian aircraft, production techniques are deliberately simplified, involving extensive riveting. Global Security, "Su-30 Flanker: Sukhoi," www.globalsecurity.org (last consulted 2 July 2007).

¹²⁸ The British aircraft included in the figures are: the English Electric Lightning, the Hawker Harrier, the Panavia Tornado and the British Aerospace F3 Tornado ADV. This table excludes the SEPECAT Jaguar from both French and British calculations because the Jaguar was jointly produced by both states, each having half of the work share. Overall, 200 Jaguars apiece were constructed for the French and British air forces. Approximately 192 were exported to four foreign customers (India, Nigeria, Ecuador and Oman). Naval combat aircraft are similarly not included, although doing so would probably make little difference as the production runs for the French Super Etendard and British Sea Harrier were comparatively small and each was exported to only one state. Jet trainers, with a secondary ground attack capability, are also not included in this table. For the Panavia Tornado, the RAF's 228 ground-attack Tornados, 224 Air Defense Variants and the 62 Tornados exported to Saudi Arabia are included in the table.

¹²⁹ Perry, 1.

¹³⁰ Bodemer and Laguier, 98; and SNECMA, "La propulsion aéronautique militaire," www.snecma.com (last consulted 3 July 2007).

¹³¹ Déplante, 233.

¹³² Ibid., 166-67.

¹³³ Carlier, *Serge Dassault: 50 ans de défis*, 90.

¹³⁴ Ibid., 89.

¹³⁵ Déplante, 171-73, 206-08.

¹³⁶ Carlier, *Serge Dassault: 50 ans de défis*, 236-37.

¹³⁷ Carlier, *Serge Dassault: 50 ans de défis*, 237.

¹³⁸ Philippe Esper et al. *Défendre la France et l'Europe* (Paris: Perrin, 2007), 88.

¹³⁹ CATIA revenues are split evenly by IBM and Dassault Systems. Dassault Systems provides the software, while IBM provides hardware and uses its software distribution chains to market CATIA. In 1996, Dassault Systems had profits of 221 million French Francs for 1.13 billion FF of turnover. Carlier, *Serge Dassault: 50 ans de défis*, 238-39; 256-57.

¹⁴⁰ The ATAR engine series were all incremental improvements on the German World War II BMW 003 engine. Bodemer and Laguier, 85-94.

¹⁴¹ Bodemer and Laguier, 160-65.

¹⁴² Many recent studies of aerospace procurement have concluded that spin-off from military aviation programs to the commercial sector are rare. Mark Lorell of the RAND Corporation has

even argued that there is an inverse correlation between success in producing high performance combat aircraft and commercial transports. According to Lorell, Commercial airliners are large relatively slow transport aircraft optimized for safe, low-cost and efficient operation. Fighters are small densely packed aircraft optimized for high speed, maneuverability, and effective delivery of air-to-air and air-to-ground munitions.... The relationship between developing fighters and airliners is roughly comparable to that between developing a high-performance sports car and a city bus. Mark Lorell, *The Cutting Edge: A Half Century of United States Fighter Aircraft R&D* (Santa Monica: RAND Corporation,), 159-60; and Mark Lorell, *Troubled Partnership: A History of U.S.-Japan Collaboration on the FS-X Fighter* (Santa Monica: RAND, 1995), 56-57.

¹⁴³ In fact, Dassault was historically credited with being the combat aircraft producer with the best cost estimating techniques in the world. During the 1960s and early 1970s, Dassault initial cost estimates remained within 10 percent of final costs, whereas American estimates erred by between 40 to 80 percent. Perry, 9.

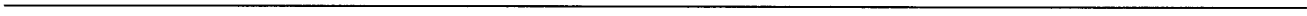
¹⁴⁴ In 2005, the earnings of French aerospace companies totaled 21€ billion, compared with 18€ billion for the United Kingdom. France also led the United Kingdom in the related domains of missiles and defense electronics. Philippe Esper et al., 83-85.

¹⁴⁵ Lockheed developed a lightweight fighter, the F-104, that was mass-produced in the 1960s, but did not obtain another lightweight fighter contract until it won the Joint Strike Fighter competition under the Clinton Administration. General Dynamic's major project before the F-16 was the two-engine F-111 bomber. Although North American dominated United States lightweight fighter development from the end of the Second World War until the early 1960s (with the P-51, F-86 and F-100), it failed to win contracts thereafter. Northrop comes closest to Dassault's design continuity, having designed an even lighter and cheaper aircraft than the Mirage III in the F-5 family, then moved onto its unsuccessful F-20 and successful F-18. The Soviet Mikoyan-Guryevich Design Bureau (MiG) abandoned the development of lightweight fighters after its successful MiG-15, 17, 19 and 21 designs. It then built heavier and more specialized interceptors (the MiG-25 and MiG-23), before returning to the lightweight fighter concept in the 1970s. See Lorell, *The Cutting Edge: A Half Century of United States Fighter Aircraft R&D*, 95; and Belyakov and Marmain.

¹⁴⁶ Lorell, *The Cutting Edge: A Half Century of United States Fighter Aircraft R&D*, xv.

¹⁴⁷ Between 1965 and 1967, the DMA opposed the AFVG because Dassault would have been subordinated to BAC over the airframe. To undermine the program, the DMA financed Dassault's effort to build the rival all-national Mirage G prototype. Later, when France negotiated with the United Kingdom, Italy and West Germany over a future joint aircraft, the head of the DGA, Emile Blanc, represented France. The DGA opposed participation in a European fighter for two reasons—SNECMA would inevitably be subordinated to Rolls-Royce and the other partner states favored an aircraft larger than the DGA thought could be exported. After half-heartedly attempting to reach a compromise, Blanc received Mitterrand's permission to withdraw France from the project that ultimately led to the EDF-2000 Eurofighter. Lamenting France's withdrawal from the common European fighter, Mitterrand told an audience at the IHEDN in 1988 that, "The failure of the

negotiations for a European aircraft was largely the fault of [French] industries that were not inclined to reach an accord.” Guisnel, 218.



Chapter VI:

Weapons Procurement in the United Kingdom

Introduction

The development of a modern combat aircraft is complicated, with multiple groups with different domains of expertise collectively determining the aircraft to produce. Nearly always greater performance entails higher costs, while failure to incorporate technologies can condemn an air force to defeat at war. These factors were as true for the United Kingdom during the Cold War as they were for France. As France, the United Kingdom lacked financial resources to sponsor competing prototypes or to offset poorly conceived aircraft by quickly developing replacements, as the superpowers could. Neither France nor the United Kingdom could rely on domestic orders for combat aircraft on the same scale as the superpowers; thus they sought economies of scale by exporting combat aircraft and/or by developing aircraft in collaboration with other states. However, importing aircraft undermines the future of this hi-tech sector of the economy, and because foreign aircraft are developed for specific needs of the home country, they usually fail to satisfy the needs projected by military planners. For the United Kingdom, purchasing another state's combat aircraft also represented a diminution in stature.

Aircraft producers in advanced, non-superpower states, as the United Kingdom, prefer to develop aircraft that will meet cost and mission requirements of prospective foreign clients as a means to offset initial costs of design and development. Because micro increases in performance contribute disproportionately to cost, manufacturers prefer aircraft whose performance falls short of what is achievable. The desire of air

forces for high performance technology and the countervailing aspiration of manufacturers to minimize risk and maximize market potential results in a tension between combat aircraft that producers prefer to design and those that air forces wish to receive.¹

Elements of a state's bureaucracy have their own, separate agendas. A Ministry of Finance often prefers to purchase foreign aircraft as cheaper to producing them, while ministries charged with economic planning often favor manufacturing domestic combat aircraft as a means of supporting civilian aircraft industries. Because of conflicting interests, the institutional arrangements whereby procurement decisions are made determine the groups that will control decisions. By empowering certain groups rather than others, the institutional structure of procurement decision-making ultimately shapes values and calculations embodied in a weapons acquisition program.

In the United Kingdom, structures mediating interactions between the British Royal Air Force (RAF) and aviation industries evolved according to the twin imperatives of responding to RAF requirements and optimizing the efficiency of the weapons acquisition process. Unlike French, stemming from the Second World War, when the RAF gained a reputation of making farsighted procurement choices, British political leaders view the armed forces as capable adjuncts of foreign policy and competent judges of technological trends.² Despite reforms in the United Kingdom's aircraft and weapons acquisition processes, the RAF's right to determine aircraft produced or purchased has not yet been fundamentally altered.

By the end of the Second World War³ when the United Kingdom's output of combat aircraft was inferior to that of only the United States,⁴ civil servants and central

planners were organizing the aircraft production industrial effort.⁵ Although accepting the RAF's prerogative to determine requirements, British government leaders during the Cold War constantly sought to improve how mediating institutions apply centralized bureaucratic power to generate military aircraft. Viewing civilian and military aircraft development as two functions fulfilled by a single industry, they decided in 1959 to amalgamate responsibility for managing military aircraft procurement and promoting civil aviation into a single Ministry of Aviation. Although the names and mandates of British institutions tasked with combat aircraft procurement have changed, their composition and powers remained constant. Unlike the French, British procurement institutions play no role in the formulation of requirements or the production of aircraft or components. Unlike the French, non-technically trained civil servants run British procurement institutions, which has created a disparity of technical expertise that has hindered the ability of British procurement officials to contest the technological demands of the armed services or the claims of industry.⁶ Throughout, British procurement institutions retained only the intermediary role of transmitting requirements to industry and overseeing industry's efforts to meet them.

Efforts to improve the process have focused on phasing procurement programs to moderate the financial burden on the British state, on improving cost-analysis techniques, on revising contracting procedures, and on coordinating RAF and Royal Navy requirements to encourage joint aircraft programs. Procurement institutions have advised elected officials on policy concerning aircraft manufacturers, such as when industrial consolidation was necessary and which contractors were most capable.

Because the RAF possesses more authority over procurement and because mediating institutions have comparatively less than their French counterparts, what predictions can be deduced about defense procurement in the United Kingdom? Firstly, the RAF's monopoly on operational expertise and exclusive authority to issue requirements should enhance its ability to obtain the weapons it desires. Secondly, because British procurement agencies are not directly involved in weapons production or exports, they are likely to be less sensitive to manufacturers' desires to minimize risk and maximize sales by designing combat aircraft for export markets, by being concerned with promoting civilian technologies and by sustaining employment. Third, meeting the specific technical demands of the RAF is likely to force British aircraft manufacturers to invest considerable resources and expertise into technologies with no foreseeable application to civilian aviation, resulting in a diversion of resources from civilian to military aerospace endeavors. And fourth, requirements for cutting-edge military capabilities will increase the unpredictability of time and the cost estimates of British aircraft.

This chapter's examination of combat aircraft procurement in the United Kingdom considers seven distinct, interconnected procurement programs from 1957 to 1998: the TSR.2, F-111, AFVG, UKVG, Jaguar, Tornado IDS and Tornado ADV, as it reveals the thinking among military, governmental and industry leaders during the Cold War. There are 10 sections:

- 1-3:** Replacing the Canberra bombers with the TSR.2 between 1957 and 1965,
- 4-5:** Searching for alternatives through a series of successor programs; the F-111, AFVG, UKVG, after the TSR.2's cancellation,

6-8: Examining three operational aircraft: the Jaguar, Tornado IDS and Tornado ADV, that entered RAF service after numerous previous programs had been cancelled,

9: Assessing the economic implications for the British aircraft industry of how weapons acquisition was managed, and

10: in conclusion, examining the comparative advantages and disadvantages of the institutional structure of weapons procurement in the United Kingdom.

I. “The Only Program” – Replacing the Canberra, 1957-1959

During the mid-1950s, the RAF issued requirements for sophisticated combat aircraft that embodied new technologies and promised capabilities beyond fighters then in use. Three were projected to enter service in the early 1960s: the Lightning, the SR.177, and the Fairey Delta III;⁷ at the same time the RAF projected the need to replace the Canberra medium-bombers and reconnaissance aircraft.⁸ The high cost of these four endeavors appeared as Sputnik demonstrated that missiles would replace bombers, prompting a new British White Paper that cancelled all projects but the Lightning and the Canberra replacement project. Table I illustrates the United Kingdom’s four combat aircraft programs and their fate following the 1957 defense review.⁹

Table I:
Combat Aircraft Programs (Excluding Strategic Bombers)
And Their Fate After the 1957 White Paper

Program	Projected Service Date	Fate	Role
E.E. Lightning	1960	Ordered	twin-engine point-defense interceptor
S.R. 177	1960	Cancelled	rocket / jet powered Mach 2.35 point-defense interceptor
Fairey Delta III	1962	Cancelled	all-weather long-range Mach 2.25 twin-engine interceptor
Canberra Replacement	1965	Development Continued (Became TSR.2)	all-weather low-level bomber and reconnaissance aircraft

The Canberra replacement became the only new aircraft project for which British aviation manufacturers could compete to produce. Phenomenal when it entered service in 1951, the Canberra bomber flew so high and fast that as to be virtually immune to Soviet air defenses.¹⁰ When the Soviet Union developed improved fighter aircraft and new surface-to-air missiles,¹¹ the RAF determined that high-altitude, subsonic bombers like the Canberra would not fulfill a meaningful military role after 1965.¹² It demanded new capabilities to conduct long-range strike and reconnaissance missions, which would fly at low altitudes and high speeds to avoid Soviet fighter aircraft guided by ground radars and surface-to-air missiles.¹³ As other Western air forces, the RAF anticipated that the Soviet Union would initiate war with massive air attacks on NATO airbases, necessitating British aircraft to operate from small-dispersed runways and taking-off from short sections of runways that survived. They also felt it was necessary for the

Canberra's replacement to operate from rudimentary grass runways throughout the British Empire and Commonwealth, to deliver its weapons accurately at day of night, in all weather conditions.

No aircraft yet produced or known to be in development combined the RAF's Canberra replacement requirements. Because of the costs involved and the possible diversion of funds from all armed serves to the Canberra replacement program, the requirements alarmed the Ministry of Supply, the Army and the Royal Navy. The Royal Navy and the Ministry of Supply urged the RAF to purchase a variant of the Navy's Blackburn Buccaneer strike aircraft poised to enter service in 1958. The Buccaneer, even with modifications, would be cheaper than an entirely new aircraft but it would fall short of the RAF's operational requirement.¹⁴ Endowed with the unquestioned authority to issue and modify operational requirements for aircraft, the RAF rejected these suggestions.¹⁵

After failing to convince the RAF to accept solutions other than a new aircraft,¹⁶ the Ministry of Supply invited nine British aircraft producers to compete for the Canberra replacement contract. It reasoned that aircraft firms which lost the design competition (most of the aviation industry) would be bankrupted if the contract were awarded to one firm and that no one company would have the talent to design and produce the new aircraft.¹⁷ On 16 September 1957, chief civil servant of the Ministry of Supply, Permanent Secretary Cyril Musgrave, informed the leaders of the nine aircraft manufacturers invited to compete that only proposals from groups of two or three firms working together would be considered. The hope was that consolidation would create larger firms that could offer a mix of military and civilian aviation products. Britain's

aircraft manufacturers were invited to determine the new corporate mergers and alliances.¹⁸ In the following months, the structure of the United Kingdom's aviation industry changed as companies combined in what has been characterized as government-enforced "shotgun marriages."¹⁹ Although the state imposed rationalization, it allowed industry to decide its own fate.

The two design proposals that received the most attention were a joint proposal from English Electric and Shorts Aviation, and from the Vickers-Armstrong Aircraft's submission. While English Electric and Shorts submitted a joint proposal, Vickers-Armstrong negotiated with de Havilland over a merger. Vickers-Armstrong Aircraft, known for management efficiency, was judged best able to design and produce the aircraft on schedule, with minimal cost overruns.²⁰ Vickers proposed a single engine aircraft, versions of which could be used for strike and reconnaissance missions, which it hoped would reduce cost and technical risk and have export potential.²¹ English Electric proposed a larger, two engine aircraft to save funds. English Electric's partner, Short Brothers Ltd., proposed giving the English Electric aircraft a revolutionary vertical take-off (VTOL) capability.²²

The RAF favored the two-engine English Electric design because of its claims that it could be landed safely in the event of engine trouble and because it promised more capabilities than the Vickers counterpart.²³ Alarmed at the prospective high cost of this alternative, the Ministry of Supply urged the RAF to consider purchasing existing foreign aircraft. However, the RAF concluded that each one fell short.²⁴ Attempting to forge a corporate arrangement that would produce the cutting-edge aircraft the RAF demanded, the Ministries of Supply and Defense in mid-1958 awarded the contract jointly to Vickers

and English Electric, with English Electric's design, but with Vickers as prime contractor with management responsibility,²⁵ and with Vickers' George Edwards as director.²⁶

The forced merger disrupted corporate alliances then forming and resulted in manufacturers creating less than ideal mergers.²⁷ English Electric, Vickers and Bristol Aviation joined to form the British Aircraft Corporation (BAC), while most of the United Kingdom's other aircraft manufacturers joined the rival Hawker-Siddeley consortium.²⁸ The Ministry of Supply's actions constitute an extraordinary example of state intervention in private enterprise, which is especially surprising considering that a Conservative Party government ruled the United Kingdom at the time. This decision broke completely with the previous policy of allowing private enterprises to select their partners.

Even before the announcement that the contract would be awarded jointly to Vickers and English Electric, the RAF's Canberra replacement had reshaped the British aircraft industry. Contrary to the desires of the Ministries of Supply and Defense, the RAF's operational requirement was for a revolutionary aircraft, which precluded purchasing a foreign aircraft or developing a modified version of an existing British aircraft. The Ministry of Supply renamed the aircraft to "Tactical Strike and Reconnaissance 2," or TSR.2.

II. Vicissitudes of Technology, TSR.2, 1959-64

In December 1958, the RAF concluded that higher performance was necessary.²⁹ From the moment the new requirements were released, corporate planners anticipating that the program would run over cost and behind schedule, feared it would be cancelled.³⁰

From the start, they worked to lower the requirements.³¹ While some corporate managers tried in vain to convince the RAF to lessen its requirements, others attempted also unsuccessfully to persuade the RAF to purchase an existing terrain following and navigation system from the United States.³²

With the RAF demanding that the TSR.2 be operational by 1965, industry had to concurrently develop different components before integrating them into an ensemble, thus increasing the risk of failure. A factor exacerbating the situation was no existing aircraft possessed avionics capable of fulfilling the requirements.³³ Costs soared as technical problems abounded,³⁴ prompting voices within the British administration to question the TSR.2's rationale.³⁵

RAF leadership, realizing that if the United Kingdom's defense budget remained constant, they would be forced to find a cheaper alternative, attempted to persuade the government to cancel aircraft-carriers replacements requested by the Royal Navy.³⁶ If they could persuade the government that the TSR.2 was a better investment, they felt the plan would be saved.³⁷ Because the prevailing view among British political leaders was that aircraft carriers projected British power, the RAF had to make a convincing case that the TSR.2 was capable of fulfilling the power projection role, in addition to penetrating the Soviet Union's air defenses in Eastern Europe.

From late 1962, the armed forces engaged in an acrimonious struggle over missions and means,³⁸ with the RAF arguing that the TSR.2 could conduct nuclear and conventional missions against the Warsaw Pact in Europe and also against overseas adversaries, while the Royal Navy's aircraft carriers contributed nothing to NATO's defense and the United Kingdom's nuclear deterrent. The Navy countered that the RAF

should procure the Blackburn Buccaneer, used by the Navy, as a lower-cost substitute for the TSR.2.³⁹ It claimed that aircraft carriers provided more air power than strike aircraft based coming from distant islands and were uniquely capable of supplying close-air-support to army units overseas. The struggle stagnated.⁴⁰

Inter-service rivalry reached its culminating point when BAC attempted to sell the TSR.2 to Australia, the sole state with a requirement for such an aircraft. Although the Australian order was for a comparatively small number (12 to 30), BAC's managing director calculated that the British government would not cancel TSR.2 once a close ally had ordered the aircraft.⁴¹ Indications boded well for the Australian purchase until Admiral Louis Mountbatten, the United Kingdom's Chief of Defense Staff, sabotaged the sale, and Australia purchased the American TFX (F-111) instead.⁴²

TSR.2's survival was at stake, as many at the highest levels of power came to view it as emblematic of the extravagant desires of the armed services and the ineptitude of British industry.⁴³ The program's continuation moved from a matter for the RAF to a question of government policy.

III. Termination, 1964-65

As 1964 dawned, George Edwards of BAC was disappointed by the election, which brought a Labour Party government to power, but he was shocked by the RAF's shift in attitude toward a cheaper alternative, one that would not entail reductions in force or operational readiness.⁴⁴ The RAF turned to the American F-111, even though it did not meet all of the RAF's performance objectives.⁴⁵ But, they argued, with the new Mark

II avionics package, the F-111 would fulfill their requirement. Table II below details the performance differences between the F-111 and the TSR.2 requirement.⁴⁶

Specification	TSR.2	F-111
Combat Radius	1,000 nm	800 nm
Low-Level Speed	Mach 1.1	Mach 1.2
High-Level Speed	Mach 2.25	Mach 2.2
Take-Off Distance	3,000 ft	3,550 ft
Anticipated Cost per Aircraft	£6 million	£2.6 million

When the new Minister of Defense, Denis Healey, took up the TSR.2 dossier in 1965, his inclination was to replace the British aircraft (along with the contemporary P.1154 and HS 681) with the cheaper American alternative.⁴⁷ However, the TSR.2 had become viewed as so important to the future of the United Kingdom's aviation industry that a concerted effort was mounted to prevent its replacement by an American aircraft. The RAF, the final arbiter of performance characteristics, would accept an improved F-111, but not an improved Buccaneers (multiple versions were proposed) or a simplified TSR.2.⁴⁸

The British Cabinet voted on 1 April 1965 to cancel TSR.2 and take an option out on the American F-111, with the intention of purchasing it once the Mark II version was available. In the interim, the RAF's Canberra bombers, along with Vulcan and Victor bombers, soldiered on in Central Europe. The British government had spent £190 million

on the development of the TSR.2, a colossal misallocation of resources for an aircraft in the prototype phase.⁴⁹ Comparison with either the Mirage IV or an improved Buccaneer demonstrates that the RAF could have obtained a cheaper aircraft had it been willing to compromise on two or more of its performance criteria.⁵⁰ Ironically, the RAF was obliged to continue using the Canberra, which it claimed was obsolete from 1963, until the F-111's projected entry into service in 1968. Table III below illustrates the cost estimates for the TSR.2 versus these two less ambitious and more evolutionary aircraft.

Table III:
TSR.2, Mirage IV, Improve Buccaneer and F-111

Aircraft	Development Cost	Program Cost Per Unit	Fly-Away Cost
TSR.2	> £190 million (£270 million est.)	£7.5 million	£4.8 million
Mirage IV	£45 million	£4.2 million	£1.5 million
Buccaneer 2*	£18 - 21 million	N/A	£0.7 - 0.8 million
F-111 Mk.2 (1965 est.)			£2.6 million

British manufacturers bitterly impugned the RAF for having demanded unrealistic performance objectives.⁵¹

IV. Search for Alternatives, 1965-1966

When the Cabinet decided to replace the TSR.2 with the American F-111, the government did not have to immediately fund its purchase because the Mark II version was not yet available. It took out an option for 110 F-111s, whose purchase it could

decide in three stages.⁵² This delay gave British aircraft manufacturers the opportunity to lobby against the decision, making the case that canceling the TSR.2 would lead to BAC going out of business, massive layoffs, and an exodus of trained engineers and scientists.⁵³ Furthermore, they felt that accompanied by loss of international reputation, the United Kingdom would become totally dependent on the United States for future aircraft, military and civil.⁵⁴ The Government decided to not allow BAC and the British aviation to collapse.

Minister of Defense Healey and Minister of Aviation Jenkins looked to international collaboration as a salvation, which meant working with the United Kingdom's only Western European ally with a significant aviation industry—France.⁵⁵ Because the French government had independently come to view cooperation with the United Kingdom as important to the viability of European aircraft industries, the British and French governments reached an accord.⁵⁶

They decided to develop two combat aircraft. The first, an advanced jet trainer, was projected to be launched on the basis of a design study that the French company, Breguet Aviation, had already conducted.⁵⁷ Breguet would exercise design leadership on the airframe, while Rolls Royce would do so with the engine, with BAC and French engine manufacturer SNECMA also collaborating. The second would be a sophisticated variable-geometry combat aircraft specialized in low-level strikes; BAC would exercise design leadership, with SNECMA acting as prime contractor for the engine and Dassault Aviation and Bristol assisting with the airframe and engine respectively.

It was hoped that the jet trainer would carry little design risk but vast export potential and that the Anglo-French Variable Geometry aircraft (AFVG) would permit

BAC to sustain designs employed on TSR.2.⁵⁸ A major drawback was that the AFVG would not enter service before 1975. Because the RAF wanted to phase out the Canberra as soon as possible, they still preferred the F-111 to the proposed AFVG because the F-111 was known and boasted a longer range than the AFVG.⁵⁹

Healey proposed a compromise,⁶⁰ that the United Kingdom would reduce the purchase of F-111s to 36, which would allow the RAF to retain credible long-range strike and reconnaissance capabilities until the AFVG entered service in 1975. The Canberra would continue to serve only in reconnaissance, while Victor and Vulcan bombers would supplement the F-111s in the ground-attack role.⁶¹ Healey hoped that this compromise, which would save £85 million over the coming decade, would allow British manufacturers to retain their ability to develop sophisticated aircraft.⁶²

BAC balked because of their immediate financial problems. Even before TSR.2 was cancelled, BAC had secretly been planning a cheaper alternative.⁶³ Having identified the French Mirage IV as a cost-effective aircraft that could be modified with Rolls-Royce Spey engines and British avionics, BAC lobbied to acquire a limited number of the improved Mirage IV instead of the F-111 before the operational debut of the AFVG. Immediately after the TSR.2's cancellation, BAC engineers set to work developing a joint proposal with the Mirage IV's manufacturer, Dassault Aviation.⁶⁴ BAC calculated that a British decision to purchase Mirage IVs would solidify Dassault's commitment to the AFVG by compensating it with a development contract and production order for improved Mirage IVs. Partisans of an improved Mirage IV argued that a decision in its favor would reinforce the independence of British and European aviation industries.⁶⁵

In the months following the TSR.2's cancellation, a fourth option re-entered the Canberra successor debate –funding an improved Buccaneer. The advantage, pointed out by Hawker-Siddeley Aviation, the Buccaneer's manufacturer, and individuals within the Ministry of Aviation, was that the development and production work on a modified Buccaneer would occur in the United Kingdom. Throughout 1965, Hawker-Siddeley Aviation proposed numerous Buccaneer variants, with the first equipping the Buccaneer with the TSR.2's terrain following radar, which studies suggested would double the Buccaneer's ability to survive enemy air defenses and increase its lethality two-fold, and could be obtained at the comparatively low cost of £20 million in development costs and a 10 percent increase in the unit cost of aircraft.⁶⁶ The effectiveness of this aircraft, termed Buccaneer 2*, could be further augmented by arming it with precision-guided munitions. To offset an anticipated negative RAF verdict to this version, Hawker-Siddeley proposed that the Buccaneer 2** which would be based on a more sophisticated, yet undeveloped, nose radar produced by the Elliott Company. This radar would permit the Buccaneer to fly combat missions in all weather conditions and deliver bombs more accurately than the Buccaneer 2*.⁶⁷ Hawker-Siddeley further proposed developing a supersonic Buccaneer, which would incorporate an afterburner into its two Rolls-Royce Spey engines and an increased fuel storage capacity. Hawker-Siddeley suggested that the aircraft, with all improvements, could enter service within four years of development approval.⁶⁸

Table IV compares the costs and capabilities of the aircraft proposed (except the supersonic Buccaneer).

Table IV:

Potential Canberra Replacements Discussed in 1965

<u>Aircraft</u>	<u>Development Cost to U.K.</u>	<u>Unit Cost</u>	<u>Consequences</u>
F-111 Mark II	£0	£2.6 million	Import (no British manufacturing) Meets RAF requirements Available in 1968
UK Mirage IV (BAC data)	£10 million	£1.5 million	50 % manufacturing in United Kingdom Does not meet RAF range, short-take off or unprepared runway requirements
UK Mirage IV (Ministry of Defense estimate)	£50 million	£1.8 million	Available in 1970
Buccaneer 2*	£18-21 million	£0.7-0.8 million	All design and production work in UK Does not meet RAF range, short-take off, unprepared runway, supersonic speed or bombing accuracy requirements.
Buccaneer 2**	£25-28 million	£1.1 million	All design and production work in UK Estimated 1.5x to 2x as effective as 2* Still fails to meet RAF requirements Available 1971-1972
AFVG	£150 million	£1.75 million	Meets most RAF performance criteria High technology value for British industry Available 1975

Of the possible alternatives, the improved Mirage IV received no high-level support within the government, as the Ministry of Defense felt it fell short of the RAF's Canberra successor requirement in terms of runway performance and range. Taking issue with the cost-estimates provided by BAC,⁶⁹ the RAF categorically opposed acquiring an improved Mirage IV.⁷⁰

If the RAF's objections to Buccaneer variants focused on performance, according to British analyses, each of the Buccaneer variants (excepting the supersonic Buccaneer) cost significantly less than the F-111 and would have been developed and manufactured

entirely in the United Kingdom. However, the RAF contended that the Buccaneer was incapable of fulfilling its requirements for a Canberra replacement regardless of upgrades. The RAF produced a study examining the comparative abilities of the Buccaneer and F-111 to conduct a “likely” military mission—neutralizing 50 percent of the Indonesian Air Force within 24 hours by attacking its airfields from bases in Australia, the Cocos Islands, Singapore and Malaysia. Table V illustrates the RAF’s calculations as to the quantities of different types of aircraft needed to neutralize the Indonesia Air Force.⁷¹

<p style="text-align: center;">Table V:</p> <p style="text-align: center;">Alternative Strike Forces to Neutralize Indonesian Air Force</p> <p style="text-align: center;">35 F-111As</p> <p style="text-align: center;">Or</p> <p style="text-align: center;">89 Buccaneer 2**s and 13 tanker aircraft</p> <p style="text-align: center;">Or</p> <p style="text-align: center;">145 Buccaneer 2*s and 18 tanker aircraft</p>

The larger numbers of Buccaneers needed to conduct the same missions as a smaller force of F-111s, made cost of a Buccaneer higher than that of F-111s.⁷²

The RAF also claimed that the F-111 possessed the speed and range to conduct strategic reconnaissance missions while the Buccaneer did not.⁷³ Because of the recent Cuban Missile Crisis (1962), political leaders subscribed heatedly to the reconnaissance requirement,⁷⁴ as did the Army.⁷⁵ Neither the British political leaders nor the Army questioned the technical judgment of the RAF.

In a final act of inter-service competition, the RAF renewed its argument that investing in sophisticated long-range land-based aircraft was more economical than purchasing aircraft carriers equipped with less capable aircraft. In its hypothetical campaign against Indonesia, the RAF demonstrated that the annual costs of a force of 35 F-111s would cost approximately one-fifth that of an aircraft carrier task group with 30 Buccaneers.⁷⁶

Early in 1966, the decision was made for the United Kingdom to acquire American F-111s rather than improved British Buccaneers or a Franco-British Mirage IV. The relative capabilities of the different aircraft examined as successors to the TSR.2 and Canberra are detailed in Table VI.⁷⁷

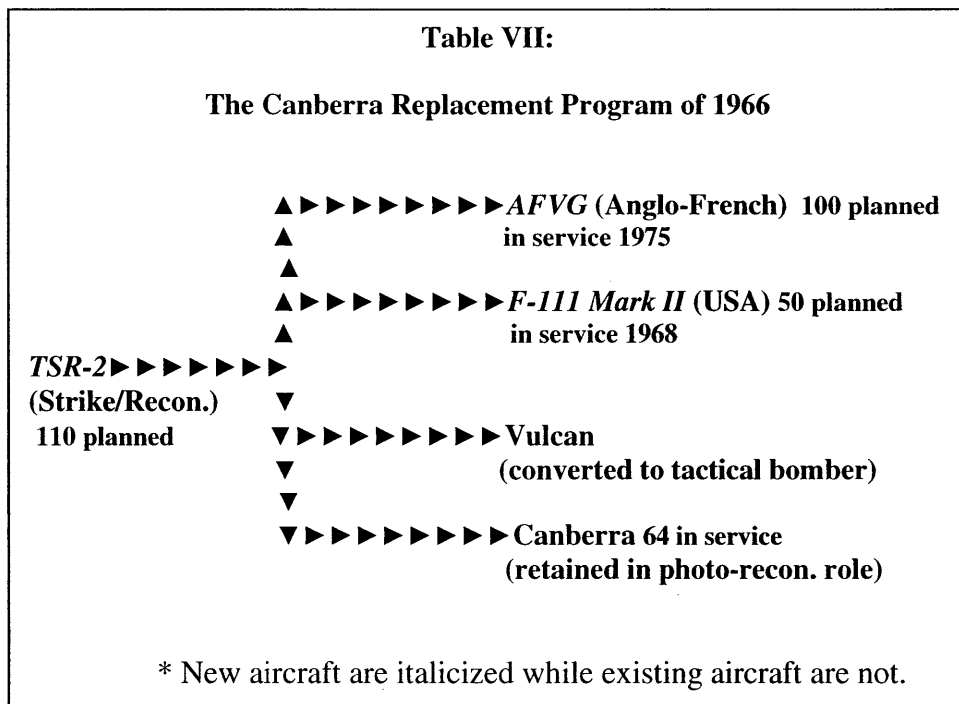
<u>Aircraft</u>	<u>Combat Radius Low-Low Profile</u>	<u>High-Altitude Speed</u>	<u>Max Bomb load</u>	<u>Runway Required for Take-off</u>
F-111	800 nm	Mach 2.2	34,000 lbs.	Unimproved 2,200 ft
Mirage IV (UK)	530 nm	Mach 2.2	14,000 lbs	Concrete 5,500 ft
Buccaneer 2*	220 nm	Mach 0.965	10,000 lbs	Concrete 1,950 ft
S.S. Buccaneer	850 nm	Mach 1.25	unknown	Concrete

The RAF spelled its procurement philosophy out in a memorandum: “Provided we have aircraft of quality our numerical requirements for aircraft can still be kept small in themselves and a small portion of the defense budget.... once the TSR2 was

eliminated.... Professional advice must be that a force wholly of F111s is the right answer.”⁷⁸

But the RAF did not receive its favored outcome of replacing the entire cancelled TSR.2 program with 110 F-111s. Because British elected leaders anticipated that such a move would precipitate the collapse of much of the United Kingdom’s aircraft industry, the Cabinet stipulated that BAC had to be given enough design and production work to keep the company solvent, which ruled out purchasing 110 F-111s.

The solution adopted in 1966 was for a purchase of 50 F-111s to be delivered between 1968 and 1970. The plan envisioned fulfilling the United Kingdom’s long-range strike and reconnaissance missions until 1975 by a combination of the F-111s, and older and less sophisticated V-bombers and reconnaissance Canberras. From 1975, the AFVG would replace the V-bombers and Canberras, and supplement the F-111s. The AFVGs would fulfill all Canberra replacement criteria except combat range and payload. They would replace Canberras in Europe, while F-111s would fulfill the Canberra’s extra-European roles. Table VII below illustrates the 1966 answer.



In theory, this compromise had the advantages of ensuring that the RAF's strike and reconnaissance requirements would be adequately met, while the British aircraft industry would receive enough work to remain viable; the significant disadvantage was that it cost more than the alternative, as Table VIII illustrates.

Table VIII:	
Projected Costs of 1966 Compromise	
50 F-111s x £2.6 million (fly-away cost)	£130 million
UK Share of AFVG Research and Development	£150 million
100 AFVG x £1.75 million	£175 million
<hr/>	
Total Canberra Replacement Costs	£455 million
Projected Cost of 110 F-111s (April 1965).	£286 million

British industry still faced imminent financial troubles as a result of the TSR.2's cancellation. Initially, the additional funds for the mixed purchase of F-111s and AFVGs came from the cancellation of the Navy's aircraft carriers, but ultimately, in the face of the equipment goals of the two armed services, a choice had to be made. Healey therefore embraced the so-called "Island Strategy" rejected three years earlier. (See Note 30 for a description of this strategy.)

V. New Crises and Fresh Compromises, 1967-69

The state of affairs soon began to unravel. France withdrew from the AFVG program on 22 June 1967, leading Edwards to speak of "French chicanery" and

prompting Healey to despair that the program that “lay at the heart” of his aviation policy was suddenly cancelled.⁷⁹

The F-111 program ran into problems when economic difficulties led the British government to curtail the United Kingdom’s defense budget.⁸⁰ On 12 January 1968, the British Cabinet voted to cancel the F-111 despite the objections of the Minister of Defense.⁸¹ The cancellations of the AFVG and F-111 in 1967 and 1968 put the United Kingdom’s Canberra replacement program back to square one.⁸² Moreover, the RAF considered a gradual introduction of Vulcan bombers in the tactical ground-attack role unacceptable since these large subsonic aircraft, built in the late-1950s, would be vulnerable in a European conflict. The RAF doubted whether its long-range strike and its reconnaissance aircrafts (Canberras and Vulcans) could accomplish their missions or indeed survive long in the event of a war with the Warsaw Pact. In addition, the RAF’s need for new ground attack aircraft had grown since the Canberra replacement program’s inauguration in 1957 because by now its Hawker Hunters were approaching obsolescence. Replacing the remaining ground attack Hunters soon became subsumed within the Canberra replacement requirement.⁸³

On the industrial side, one of the United Kingdom’s two airframe manufacturers, BAC, lacked a single new combat aircraft project.⁸⁴ To prevent the collapse of future military aircraft production capabilities, BAC shifted profitable contracts to its now unemployed combat aircraft facilities, which meant closing a profitable factory and shifting production to lesser facilities.⁸⁵ While these expedients kept the most sophisticated factories operating, they increased costs, thereby reducing competitiveness.

Detailed in table IX below, expenditures on numerous programs failed to provide the RAF with a single combat aircraft.⁸⁶

Table IX:	
Resources Invested in the Canberra Replacement 1957-68	
TSR.2 Research and Development	£190 million
AFVG Studies	£2.5 million
F-111 Payments and Cancellation Fees	£46.4 million
<hr/>	
Total Canberra Replacement Expenditure to 1968	£239 million
Estimated Program Cost of 150 Buccaneer 2**	£193 million
Total Cost of Mirage IV Program (62 produced)	£259 million

Investing resources differently, the United Kingdom could have provided the RAF with a Canberra successor and British aircraft manufacturers with continual combat aircraft production work.⁸⁷ Although neither the Mirage IV nor the improved Buccaneer provided the performance the RAF demanded, both were superior to the older Canberras and Vulcan bombers that the RAF would be forced to continue operating.

In the aftermath of the AFVG and F-111 cancellations, the Ministry of Defense scrambled to limit the damage inflicted on the RAF’s operational capabilities and the United Kingdom’s combat aircraft industries. Answers had to be found more quickly than the usual eight years of a “normal” aircraft procurement cycle. For the third time in three years, British decision makers attempted to identify ad hoc solutions. The immediate solution was to redefine the requirement for jet trainer aircraft. The originally

planned bi-national jet trainer with France (the Jaguar) was reintroduced, to which the RAF increased payload, range and strike requirements. Earlier plans to purchase 150 Jaguar two-seat trainers in 1965 rose to 165 strike Jaguars and 35 trainers in 1970. The modifications the RAF demanded for the Jaguar program led to an extensive redesign of the aircraft, with attendant explosion of costs.⁸⁸ Ultimately, they acquired 200 Jaguars, including two-seat trainers eventually converted for ground-attack missions.⁸⁹ Given the excessive cost of operating the Jaguar in its original trainer role, the French Air Force was obliged to use the 200 Jaguars it acquired for ground-attack missions rather than for training pilots as was originally planned.

Because the RAF's longer-range strike and reconnaissance missions demanded additional aircraft, interim solutions were sought. After the F-111's cancellation, one was to reassign Buccaneer strike aircraft from the Navy to the RAF. Since the Navy's new aircraft carriers had been cancelled after the three existing carriers reached the end of their service lives, their air wings would be decommissioned. Although the RAF had long resisted acquiring Buccaneers, they now acknowledged that the soon to be redundant Naval Buccaneers were more capable of penetrating enemy air defenses at low-levels than the RAF's Vulcans and Canberras.⁹⁰

The RAF, now eager to accept second-hand Navy Buccaneers after its own overly ambitious aircraft programs had faltered, agreed to a new calendar to transfer Navy Buccaneers to the RAF beginning in 1969. To complement these plans, the RAF placed an order for an additional 26 new Buccaneers.⁹¹

The RAF claimed that it still needed a more sophisticated low-altitude and long-range ground-attack aircraft capable of striking the Warsaw Pact's most heavily defended

military targets, such as airfields and key bridges. This aircraft would be fitted with sophisticated avionics for flying at high speeds and low levels, and delivering conventional or nuclear weapons on targets at night or in inclement weather. In other words, the RAF renewed its calls for an aircraft equivalent to the TSR.2 and F-111 Mark II, but now it insisted that it also needed its future aircraft to feature variable geometry wings.

Fortunately, the Ministry of Technology had provided funding for BAC's design teams to study variable geometry aircraft soon after the French withdrawal from AFVG.⁹² In most respects, the new performance requirements for the new aircraft, entitled the United Kingdom Variable Geometry (UKVG), were identical to the defunct AFVG. The UKVG program, never intended to be purely British, was adopted to permit BAC to retain expertise accumulated on low-level aerodynamics and short take-off during the TSR.2 and AFVG programs, pending the launching of a new program with partners yet unidentified.⁹³ Although provisional, the UKVG program pushed the boundaries of British knowledge about variable geometry.

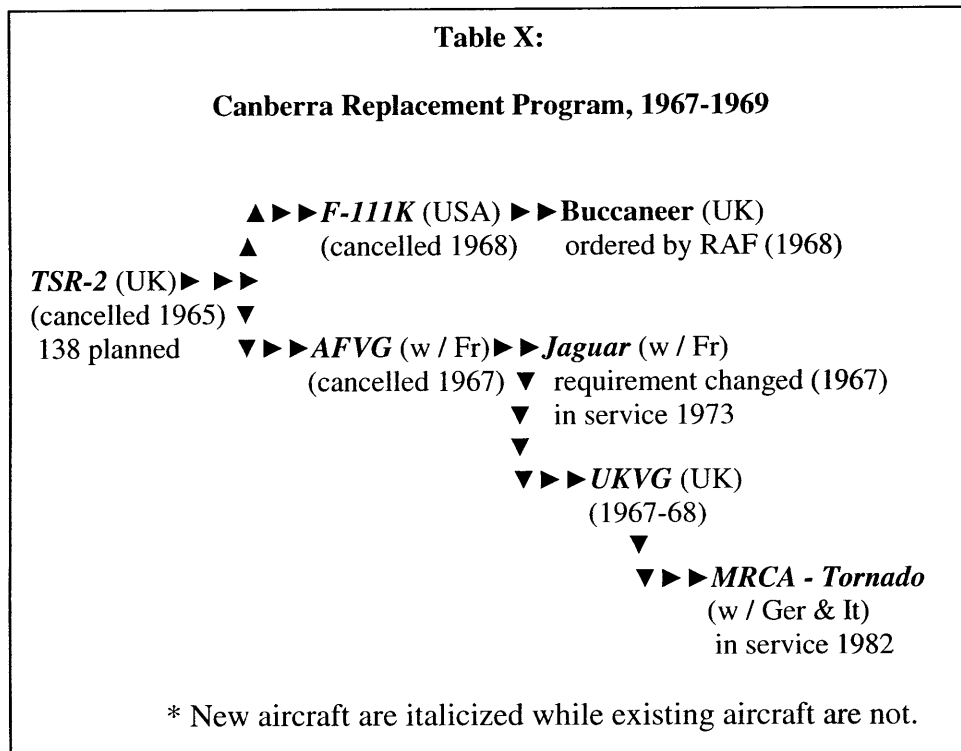
The Ministry of Technology and the BAC hoped to develop variable geometry expertise and resolve engineering problems before entering into a new combat aircraft program with foreign partners. In this spirit, BAC launched a research effort to develop a wing pivot bearing with sufficient strength and fatigue life,⁹⁴ as the Ministry of Defense sought suitable partners. Because the French were occupied in another new aircraft project,⁹⁵ West Germany and Italy became the United Kingdom's only other allies with aircraft industries and defense budgets large enough to collaborate on the aircraft. A complication existed in that at the time, West Germany and Italy were collaborating with

Canada, Belgium and the Netherlands on a joint project to replace the Lockheed F-104 Starfighters with a new single-engine lightweight fighter, the cost of which would likely consume their aircraft procurement budgets for the near future if it went forward. The only way the United Kingdom was likely to find partners capable of jointly collaboratively on the project was by joining the F-104 replacement cartel and convince its members to change their perceived needs to that of a large variable-geometry aircraft rather than a lightweight fighter,⁹⁶ which was a substantial diplomatic challenge.⁹⁷ Eventually the F-104 replacement consortium agreed to let the United Kingdom join the cartel, as a non-voting observer.⁹⁸

For West Germany and Italy, the industrial advantages of collaborating on a joint aircraft with the United Kingdom, with its larger and more sophisticated aircraft industry outweighed the inconvenience of changing the requirement. However, the Dutch, Belgians and Canadians abandoned the program, and the Canadians, who were responsible for bringing the United Kingdom into the F-104 replacement cartel, were embittered.

With the launching of the new joint combat aircraft program by the United Kingdom, Italy and West Germany, the UKVG program design team was reassigned to what was provisionally called the Multi-Role Combat Aircraft (MRCA), but would later become the PANAVIA Tornado. The requirement defined by the RAF remained the foundation around which the new procurement decisions were made, while limited procurement budget and the vicissitudes faced by previous programs (TSR.2, AFVG and F-111) meant that improvisation and interim solutions were required until the new MCRA program bore fruit.⁹⁹ Table X details the mixture of interim solutions and long-

term programs adopted between 1967 and 1969 to fulfill the RAF's need for a Canberra replacement.



The RAF continued to operate with an assortment less capable aircraft, while its combat future depended largely on two cooperative programs—the Anglo-French Jaguar and the Anglo-Italo-German MCCA (Tornado).¹⁰⁰

VI. A Difficult Denouement, Part I, Jaguar

Employing nearly half of the quarter million individuals of the United Kingdom's aircraft industry, BAC's continued existence depended equally on the technological, political and economic success of the Anglo-French Jaguar and the Anglo-Italo-German MRCA (Tornado) programs. Through these joint development programs, the United Kingdom could procure aircraft the RAF demanded and sustain the country's ailing

aircraft industries.¹⁰¹ Although with the launching of the Jaguar and MRCA programs, British decision-makers felt confident that the RAF's operational requirements would be met and British aircraft industry would remain viable, both programs soon faced unanticipated obstacles. The RAF incrementally changed the primary mission of the Jaguar from a jet trainer to a ground-attack aircraft between 1968 and 1970.¹⁰² To their credit, BAC and Breguet accomplished all of these modifications in a short period of time.¹⁰³ The Jaguar's basic design was comparatively simple to re-adapt and BAC's recent design efforts saved effort and time.¹⁰⁴ Transforming the original design into a dedicated ground-attack aircraft swelled the Jaguar's development cost, to more than seven times as projected.¹⁰⁵ In addition, the aircraft was dramatically underpowered when it entered service in 1973 due to its new requirements.

Despite the Jaguar's lack of thrust, the aircraft provided BAC with commercial ambitions. For the first time since the 1950s, the United Kingdom could export a combat aircraft that suited the needs of several potential clients.¹⁰⁶ Sturdily constructed of inexpensive aluminum alloys, the aircraft was price-competitive. For the many states lacking highly skilled maintenance personnel and a sophisticated airbase infrastructure, the ease of maintaining the Jaguar and its ability to operate from unimproved airfields were attractions.¹⁰⁷ Moreover, the aircraft's strong undercarriage and two engines, exceptional on an aircraft of the Jaguar's size, permitted it to return to base regardless of technical mishaps or battle damage. To give the Jaguar the minimal air-to-air capabilities demanded by export clients, BAC succeeded in mounting AIM-9 Sidewinder missiles above the aircraft's wings. Because BAC and Breguet were guaranteed of a production run of 400 aircraft for the British and French air forces, they could offer the aircraft for

export at a comparatively cheap price.¹⁰⁸ Soon BAC sales teams were targeting over 30 states as potential Jaguar clients.¹⁰⁹

But, BAC soon encountered an unexpected obstacle—their French partner. The British-French 1965 Memorandum of Understanding to jointly develop the Jaguar and AFVG stipulated two distinct, yet complementary aircraft. But France chose to build the Mirage F1 in 1967, a lightweight fighter capable of conducting ground-attack missions as well intercepting enemy aircraft, and then the RAF changed its Jaguar requirement from a jet trainer to a lightweight ground-attack aircraft, which inadvertently placed the Jaguar in the same market niche as the Mirage F1. The two aircraft, priced competitively with one another, appealed to the same potential customers. Breguet Technical Director Henri Ziegler, wanting the Jaguar to be an export success, confidentially warned the British government that France’s decision to produce the Mirage F1 would put the aircraft into competition.¹¹⁰ The stage was set for a bitter, frequently zero-sum competition.

When Dassault Aviation acquired Breguet, it obtained the advantage over BAC of privileged information on the aircraft’s strengths and weaknesses. From the position of inside knowledge, Dassault did everything in its power to impede Jaguar sales and favor Mirage F1 exports,¹¹¹ prompting Edwards publicly to question the French understanding of “partnership.”¹¹² Dassault and the DGA also hindered Jaguar upgrades to further reduce the aircraft’s export potential vis-à-vis the Mirage F1.¹¹³ The United Kingdom, however, went ahead with Jaguar upgrades, incorporating incrementally improved jet engines into the aircraft on two occasions and developing a succession of improved avionics packages.¹¹⁴

Entering service in the same year—1973, the Jaguar and Mirage F1 competed in many foreign markets. Ultimately, 192 Jaguars were exported to four states (Oman, Ecuador, India and Nigeria), while 457 Mirage F1s were sold to ten. Although the aircraft was jointly produced, BAC and its successor (from 1977) British Aerospace negotiated all four Jaguar contracts in the face of stiff French opposition.¹¹⁵ Even though the Jaguar was outsold by its French competitor and failed to gain the share of the international combat aircraft market that BAC anticipated, it was a commercial success, enjoying more export sales than any British combat aircraft produced since the 1950s. BAC capitalized on the Jaguar program to sell its design expertise to Japan, providing Mitsubishi with the technical advice needed to design Japan's first indigenous combat aircraft since the Second World War.¹¹⁶

It is ironic that the French Air Force dramatically verified the Jaguar's capabilities in 1978 in its intended role as an uncomplicated and rugged low-level ground attack aircraft, in Mauritania, and Chad.¹¹⁷ These operations proved that the Jaguar's designers had created an aircraft meeting the RAF's requirement for a simple but rugged ground-attack aircraft with superb low-altitude handling.

What French interventions in Africa failed to indicate was whether Jaguars could have fulfilled their intended role in Europe against Warsaw Pact armored forces, airfields and bridges. On the one occasion when Jaguars were used against a target similar those that would have been faced in Europe, the results were disturbing. For the French Air Force's first action during the 1991 Gulf War, 12 Jaguars were ordered to attack the Al Jaber airbase in Kuwait. Using standard operating procedures developed for a European conflict, the Jaguars were supposed to approach the airbase in two waves of six aircraft

apiece, at the lowest possible altitude that atmospheric visibility and pilot skill permitted, and then attack the airbase, with each aircraft making a single pass using either parachute-retarded bombs or cluster-bombs. The Jaguar's comparative simplicity compromised its effectiveness. Lacking all-weather avionics, the Jaguars attacked in daylight, when enemy low-level air defenses had the least trouble zeroing in on attacking aircraft. The absence of sophisticated navigation systems led to the first and second waves becoming separated. Instead of attacking Al Jaber with an interval of one minute apart, as planned, the two flights arrived at Al Jaber two minutes apart.¹¹⁸ With a low thrust-to-weight ratio, the aircraft completed their attack missions at a sluggish speed of 480 knots (900 km/h), which left them exposed to enemy anti-aircraft fire longer than necessary.¹¹⁹

Although the first wave of Jaguars achieved surprise, delivering ordnance and suffering only one aircraft damaged, in the second attack two minutes later, three were hit, of which two had to be scrapped.¹²⁰ The density of anti-aircraft fire forced the leader of the second wave to cancel the attack and authorize his men to bomb targets of opportunity they could locate.¹²¹ The fact that the stricken Jaguars managed to continue flying is a testament to their robustness, but overall results were unacceptable especially as the operational results of the mission were disappointing.¹²²

After Al Jaber, French and British Jaguars flew subsequent combat missions over Iraq and the former Yugoslavia at higher altitudes. The almost inescapable deduction to draw from this change in tactics is that Jaguars, operating at day and in good weather, would have suffered substantial attrition if they had attacked well-defended Warsaw Pact military targets, a sobering conclusion when it is considered that Jaguars were the most

numerous British aircraft stationed in West Germany from 1976 until 1984, and that the French Air Force depended on them for its most hazardous strike missions until after the end of the Cold War.

VII. Troubled Denouement, Part II, Tornado

The decision making process employed in aircraft procurement by the United Kingdom during the 1960s and the early years of the 1970s, while attempting to replace the Canberra with an aircraft that would succeed against conflict with the Warsaw Pact countries, was duplicated during the 1970s with the MRCA (Tornado), with similar stages and ultimate results. As previously, the RAF set the requirements; industrial leaders attempted to create the aircraft desired while minimizing risk and maximizing market potential; and elected political leaders mediated and worked to forge partnerships with allies and develop international markets.

The MRCA (Tornado) was the aircraft the RAF had long claimed it needed—capable of taking off from short and improvised runways and penetrating enemy air defenses at low altitudes and in all meteorological conditions. Only two major changes distinguish the MRCA from the earlier TSR.2 requirements: variable geometry wings,¹²³ and a more stringent low-altitude terrain-following requirement.¹²⁴ Again, the RAF's demand for a slight performance improvement, at the cusp of what was technically possible, generated disproportionate cost increases.¹²⁵

While complicated avionics were one problem exacerbated by the RAF's requirements, the British demand for a sophisticated long-range ground-attack aircraft also created political difficulties for the program. As we saw earlier when the RAF

changed the nature of the international F-104 replacement cartel, three of its founding members, Canada, Belgium and the Netherlands, abandoned the program, and now Italy and West Germany, threatened to abandon the MRCA program. After much negotiation, Italy confirmed its participation during late 1970.¹²⁶

Through considerable diplomacy and compromise, the United Kingdom also managed to convince both the West Germans to persevere with the MRCA program. Industrial agreements to retain political support for the MRCA frequently came at the expense of sound financial management.¹²⁷ Less qualified firms were tasked with developing extremely complicated components of the aircraft and production ran over schedule.¹²⁸ Analogous to the situation in 1962 when the defense budget would not support several procurement programs at the same time, deep cuts in procurement programs and force structure were again needed, and once again the RAF argued lobbied that these cuts be made by the Royal Navy.¹²⁹ As in the 1960s, the RAF and the Royal Navy argued their cases passionately.¹³⁰

When Minister of Defense Francis Pym refused to cut any of the armed services' most expensive procurement programs, Prime Minister Margaret Thatcher replaced him with John Nott, who decided in favor of the RAF.¹³¹ In a remarkably wasteful decision, Navy's Fleet Air Arm would be virtually disbanded just as its VTOL aircraft carrier program reached fruition, while its frigate and destroyer force would be cut by 30 percent.¹³²

Despite slight performance shortfalls, the first Tornado ground-attack squadron entered service with the RAF in 1982, six years later than originally projected,¹³³ and with it, the RAF finally acquired its long anticipated Canberra replacement.¹³⁴ For the

Tornado's most challenging mission of attacking well-defended Warsaw Pact airbases, the aircraft's phenomenal low-altitude penetration capability was complemented by a sophisticated purpose-built anti-runway weapons—the JP233, which was to permit a single aircraft to pepper an enemy runway with 30 bomblets designed to crater a runway and 215 anti-personnel mines to inhibit the repair of damaged runways.¹³⁵ If all went as planned, a small number of Tornados would disable an enemy runway in a single pass and escape before an enemy's low-level air defenses would be able to respond.

The Tornado's only test in its low-altitude anti-runway role came in the 1991 Gulf War. Because of the unique capabilities of the Tornado / JP233 combination, the United States Air Force requested that the RAF dispatch Tornados and their anti-runway munitions to the Persian Gulf.¹³⁶ On 16 January 1991, the first night of the coalition air attack on Iraq, ground-attack Tornados were tasked with flying the most challenging mission they had been conceived for—attacking enemy runways—against an enemy possessing many of the same surface to air weapons that would have protected Warsaw Pact airbases. In the initial coalition attack, groups of four to eight Tornados attacked 10 Iraqi air bases with JP233s. At night and flying at low-levels, the Tornados succeeded in delivering their munitions, with only one being shot-down in the process. In the days that followed, Tornado crews repeated their runway attack missions.¹³⁷ After the first night, Tornados supplemented their JP233s with an increasing number of unguided 1,000 lbs bombs, attacking the most highly defended targets at night, when Iraqi crews manning visually aimed anti-aircraft weapons would have trouble aiming. Tornados continued to fly sorties when poor weather grounded less sophisticated British and French Jaguars.¹³⁸ Pilots also minimized the relative time that they were vulnerable over a target by flying at

higher speeds, 540 knots versus 480 knots, than the Jaguars could manage at low altitudes.¹³⁹

Six Tornados were shot down between 16 and 22 January 1991, more than any other single type of coalition aircraft.¹⁴⁰ Moreover, anti-aircraft fire prompted Tornado pilots to take evasive action instead of flying low, straight over runways; consequently the JP233's anti-runway bomblets did not land in uniform patterns, incapacitating runways.¹⁴¹ Six days after the start of Tornado low-level operations, Air Force Chief of Staff Paddy Hine ordered them to cease low-level operations. The Tornado/JP233 combination was never reemployed for the type of low-level anti-runway attacks for which it had been devised. Many have taken Tornado losses and the abrupt shift in RAF tactics for proof that the Tornado's original conception was wrong.

The question remains as to what the Tornado would have accomplished against Warsaw Pact targets.¹⁴² Its four percent attrition rate suffered at flying low-altitude missions in the 1991 Gulf War would have been acceptable during a conventional war with the Warsaw Pact, provided they seriously disrupted the Warsaw Pact's offensive air operations.¹⁴³ The fundamental question is whether RAF Tornados could have inflicted damage on enemy runways sufficient to disrupt a Warsaw Pact air offensive. Data from the 1991 Gulf War is inadequate for responding to this question. In a significant departure from Soviet practice, Iraq relied on a small number of heavily fortified airbases, with redundant taxiways, runways and base facilities.¹⁴⁴ The Warsaw Pact planned to disperse Soviet aircraft to a large number of small airbases, each of which had fewer redundant facilities and air defenses than Iraq's "super bases."¹⁴⁵ Would Tornados have been more successful in disrupting these airfields than Iraqi bases? How much

disruption would have been necessary to dislocate a Warsaw Pact's air offensive? These questions cannot be answered based on the Tornado's actual combat record.

While the ground-attack Tornado was a technical success, the aircraft was a commercial failure.¹⁴⁶ Its variable geometry wings and sophisticated avionics required intensive maintenance by well-trained technicians, resulting in an average annual operating cost nearly twice those of the less complex Jaguar.¹⁴⁷ Besides exceeding the defense budgets and human capital available to most developing countries, the aircraft's specialization in low-altitude ground-attack appealed to few potential customers, who prefer to acquire a single type of aircraft that can conduct both ground attack and air superiority missions, rather than dedicated aircraft for each purpose. As a consequence, only one state, Saudi Arabia, has imported the Tornado.

Even though Saudi Arabia had the financial resources to purchase an aircraft of the Tornado class and even with the personal diplomacy of the highest level of the British government, it was difficult selling Tornados to the Saudi government.¹⁴⁸ Lacking the human resources to operate the Tornado's complex systems, Saudi Arabia required that 1,000 British Aerospace employees be stationed in Saudi Arabia to oversee every facet of the aircraft's upkeep.¹⁴⁹ The contract, which included support services and trainer aircraft, amounted to £43 billion, one of the most lucrative arms contracts ever concluded.¹⁵⁰ The aircraft sale had probably mobilized the most significant marketing efforts by the government of a great power.

After the Saudi deal, the United Kingdom's government and British Aerospace devoted considerable effort at marketing the Tornado to other potential customers.¹⁵¹ Despite a large-scale marketing campaign in the Middle East, South East Asia, Oceania,

as well as to Greece, Japan and South Korea, none of the targeted states purchased Tornados.¹⁵² Notwithstanding its unique technical capabilities, the Tornado was too costly, complex and single-purpose for any but the wealthiest states to afford.

VIII. Troubled Denouement, Part III, Tornado ADV

If the ground attack Tornado eventually matured into a capable, albeit costly aircraft, the development of the Tornado Air Defense Variant (ADV), a new variant requested by the RAF was less satisfactory. This version of the Tornado was intended for two distinct activities – engaging the enemy at long ranges, frequently beyond the visual range (BVR) of pilots and in the short-range dogfight, where fighters maneuver to shoot down enemy aircraft with cannons or infrared-guided air-to-air missiles. Studies conducted during the 1960s convinced the RAF that variable geometry wings would permit the Tornado ADV to function superbly in both capacities.¹⁵³ With the air defense variant of the variable geometry Tornado, the RAF believed that it was adopting the most modern technology available for fighter aircraft.

The RAF's confidence in the Tornado ADV's air-to-air combat capabilities diminished after the aircraft's basic design was approved. When the Tornado ADV was launched in 1971, no variable geometry fighter was yet in service anywhere, and as time went passed, variable geometry wings proved incompatible with dog fighting performance.¹⁵⁴ It was still hoped that the aircraft would perform well as a missile-armed beyond visual range (BVR) interceptor. However, the lessons of recent conflicts, particularly the United States in Vietnam, led the RAF to reevaluate its air combat priorities, revalorizing the dogfight at the expense of BVR missile engagements.¹⁵⁵ In a

1976 meeting, representatives of Western European air forces agreed that turning ability and acceleration were the two most important characteristics for a fighter.¹⁵⁶

When in the mid-1970's it became clear that the Tornado ADV did not meet the new priorities, the RAF attempted to terminate this aircraft that it had so vigorously supported a few years previously,¹⁵⁷ with many agreeing that that importing an American fighter, the F-16, would be a better use of funds.¹⁵⁸ But because of the ongoing development of the Tornado program, this decision came too late to replace the Tornado ADV. Because the ADV represented nearly 30 percent (110 out of 385) of the United Kingdom's contribution to the tri-national, (British-West German-Italian) Tornado program, at the time projected to yield 809 aircraft, many in the RAF feared that canceling the ADV would undermine the entire Tornado program. Faced with contradictory desires to supplant the Tornado ADV with a more qualified American aircraft, yet acquire the ground-attack Tornado (which was the service's highest priority), the RAF's high command had trouble expressing a unified position.¹⁵⁹

Voices in the British government lobbied for continuing the Tornado ADV.¹⁶⁰ Decisively, the Chief of Defense Staff felt that it would be impossible to cancel the Tornado ADV without crippling the broader Tornado program.¹⁶¹ The RAF was obliged to continue the Tornado ADV program even though it no longer corresponded to its beliefs about what would be needed. It was still hoped that the Tornado ADV would prove a capable aircraft in the BVR role. Over the coming years, developing the Tornado ADV as a BVR aircraft took longer, was more expensive, and yielded a less capable aircraft than anticipated.

Fundamentally, two capabilities were considered necessary to make the Tornado ADV a capable BVR interceptor—excellent air-to-air radar capable of detecting enemy aircraft at long ranges and tracking multiple contacts, and a radar-guided missile capable of destroying enemy aircraft at long ranges. To save costs, the RAF decided to rely on improving existing technologies for the Tornado ADV radar and air-to-air missile.¹⁶² Even with these cost saving efforts, the cost and difficulty of developing the Tornado ADV grew from the outset.¹⁶³ The radar (Fox Hunter) proved exceptionally difficult to develop. Although difficulties with the airframe delayed deliveries of the Tornado ADV by three years (from 1981 to 1984), because of difficulties with the radar, no radar at all was available when the RAF received the aircraft. The first Tornado ADVs carried lead ballast in their noses to compensate for the weight of the Fox Hunter radars that did not yet work.¹⁶⁴

When the RAF received production Fox Hunter radars in 1985, the first version performed so poorly that it was judged incapable of serving in an operational fighter aircraft. Mocking the incapacity of the initial ADVs and the United Kingdom's system of assigning code names to radars (Green Satan and Orange Putter for example), RAF officers dubbed the radar "Blue Circle," after the Blue Circle Cement Company.¹⁶⁵ Costing 59 percent more than anticipated, the radar did not become operational with the RAF until 1987.¹⁶⁶ The avionics of the 18 Tornado ADVs (designated the F2) delivered before the radar was judged adequate were considered so poor that the aircraft were put into storage by 1988, without ever becoming operational.¹⁶⁷

Six years behind schedule and dramatically over-budget, the Tornado ADV became operational, in its F3 version, in 1987.¹⁶⁸ Although the Tornado F3 has provided

the backbone of the RAF's fighter force since 1988 and is projected to remain in service until 2010, the aircraft is not a success. Even excluding its development costs, the Tornado F3 is one of the most expensive fighters in the world, costing as much as the F-15 and approximately twice as much as the F-16.¹⁶⁹ As the RAF foresaw from the mid-1970s, the Tornado ADV is a poor dogfighter and one of the worse fighter aircraft for this form of air-to-air combat.¹⁷⁰

Because of its poor maneuverability, Tornado F3 crews developed tactics for keeping their aircraft out of close combat with enemy aircraft.¹⁷¹ The aircraft also did not turn out to be an effective beyond visual range (BVR) fighter.¹⁷² Because of development problems by the time the Tornado F3 became operational in 1987 (rather than 1981), active radar was becoming used on a variety of air-to-air missiles.¹⁷³ Unlike aircraft armed with active radar missiles, the Tornado F3 can direct missiles only at one enemy aircraft at a time, whereas aircraft equipped with active radar missiles can launch missiles at multiple targets near simultaneously.¹⁷⁴ Because active radar missiles do not require the attacking aircraft's radar to continuously illuminate the target, Tornado F3s do not necessarily know when enemy missiles have been fired.¹⁷⁵ Moreover, an active radar missile will continue pursuing its prey even when the launching aircraft has been destroyed, so the Tornado F3 tactic of pursuing an engagement as long as the aircraft fired its missiles lost its rationale once it became possible for an enemy missile, launched second, to destroy the Tornado after the launching aircraft had been hit.

Although it is impossible to pass definitive judgment on the air combat capabilities of a fighter that has not fired on enemy aircraft, indications exist that highlight the Tornado F3's limitations.¹⁷⁶ In fact, the RAF has avoided sending Tornado

F3s into air-to-air combat. Although sent to Saudi Arabia in 1990, Tornado F3's were not permitted to operate over Iraq or Kuwait during the ensuing air war, probably to be kept safe from harm's way.¹⁷⁷ From 1991 to 1998, the RAF sent no Tornado F3s to help enforce no-fly zones in northern and southern Iraq, to which it contributed ground-attack Tornados and Harriers. The next year, the RAF refrained from committing Tornado F3s to NATO's air campaign (Operation Allied Force) intended to force Serbia to cease military operations in Kosovo, where other RAF aircraft and Royal Navy combat aircraft participated.¹⁷⁸ In the only exception to the RAF's unwillingness to use Tornado F3s, which was to enforce the no-fly zone over parts of the former Yugoslavia (Bosnia-Herzegovina and the Krajina) in Operation Deny Flight, from 1993 to 1995, none of the warring factions possessed fighter aircraft.¹⁷⁹

Because of its high cost and comparatively low performance, the Tornado ADV failed in international export markets.¹⁸⁰ The 24 of the 173 Tornado ADVs produced that were sold abroad were all delivered to Saudi Arabia, which is reportedly dissatisfied with the aircraft. Despite extensive marketing, no other state ordered the Tornado F3.¹⁸¹

It is hard to avoid concluding that the Tornado ADV was one of the most expensive, yet least capable fighter aircraft ever produced.¹⁸² The RAF's decision to build distinct ground-attack and fighter aircraft around a single airframe, and the supposedly revolutionary technology—variable geometry wings—that it incorporated, made it impossible for the service to extricate itself from the Tornado ADV program after its limitations were realized. As a result, the RAF continued investing enormous resources into an aircraft that would not be a good fighter and had meager commercial prospects. The technological risk inherent in its design meant that it became combat

ready six years later than planned, with a primary weapons system that was approaching obsolescence. Although the aircraft is fundamentally limited, the RAF has had little choice but to continue upgrading it, lengthening its useful life until the Eurofighter supplants it around 2010. As part of one of these updates, the United Kingdom announced plans in 1996 to modify 100 Tornado F3s to use AMRAAM.¹⁸³

IX. Economics of Decline

As the 1950s came to a close, British aircraft manufacturers were poised for a promising future, ranking only after the United States and the Soviet Union and possessing three times the industrial capacity of its nearest competitor, France. Technologically and commercially, the industry achieved notable successes after the Second World War,¹⁸⁴ and as the decade wore on, the Hawker Hunter became one of the greatest commercial warplane successes in history, with 17 foreign air forces acquiring the aircraft, including Belgium and the Netherlands, which produced it under license.¹⁸⁵ In civil aviation, British aircraft manufacturers introduced the world's first passenger jet (the de Havilland Comet) and reaped substantial profits exporting 450 Vickers Viscounts.

From 1960 onwards, the United Kingdom's loss of international orders for military aircraft contributed significantly to its decline as an aircraft producer.¹⁸⁶ As the table below illustrates, the United Kingdom exported less than a third the number of warplanes as France from 1960 until 2000, to a more limited number of countries,¹⁸⁷ while sinking to the world's fourth largest exporter of combat aircraft.¹⁸⁸

Table XI:

Combat Aircraft Production and Exports

Aircraft	Year Operational	Total Produced	Total Exported	Foreign Clients
Lightning	1961	334	61 (18%)	2
Harrier I	1969	274	123 (45%)	2
<i>Jaguar</i>	<i>1973</i>	392	<i>192 (49%)</i>	4
<i>Tornado GR.1</i>	<i>1982</i>	498	<i>96 (19%)</i>	1
Tornado F3 ADV	1987	173	24 (14%)	1
Total		1671	496 (30%)	8
Comparison with France		2841	1717 (60%)	26

The primary reason for the United Kingdom's decline lies in the characteristics of British aircraft. While the vast majority of states capable of purchasing combat aircraft demanded lightweight, multipurpose aircraft that they could afford to acquire and maintain, British aircraft were heavy, specialized and expensive. Only one, the Jaguar, remotely corresponded to the budget and needs of the majority of export customers. This aircraft was sold in greater numbers, to more states than any other British aircraft of the period. By way of contrast, all contemporary French aircraft, except the Mirage IV, were lightweight multi-role fighters, each of which was exported in greater numbers to more clients than even the Jaguar.

Commercial failure went hand-in-hand with technological innovation. British aircraft were more sophisticated and pioneering than their French counterparts and often led the superpowers.¹⁸⁹ Unique capabilities increased cost, complexity and sometimes the size of British aircraft.¹⁹⁰ In addition, British aircraft appealed to only certain niche

customers; for example, although the Harrier was the best VTOL aircraft in existence, its mixture of strengths and weaknesses attracted the interest of only a few states.¹⁹¹ Thus, although Harrier exports were mediocre in absolute terms, the aircraft captured the entire international market for VTOL aircraft.¹⁹² The Tornado, also appealing to a limited clientele,¹⁹³ was reasonably successful, as table XII illustrates.

Table XII:
High-End Low-Level Strike Aircraft, 1960-Present

Aircraft	Producing Country	Number Exported	Foreign Clients	Purchasing States
Buccaneer (1962)	United Kingdom	16	1	South Africa
F-111 (1967)	United States	24	1	Australia
Sukhoi Su-24 (1975)	Soviet Union	79	5	Iraq, Libya, Syria, Iran, Algeria
Tornado (1982)	UK-Italy-W. Ger.	96	1	Saudi Arabia
F-15E Strike Eagle (1989)	United States	147	4	Saudi Arabia, Israel, S. Korea, Singapore
Others: F-105, A-5, A-6 Mirage IV	United States, France	0	0	
Total		362	11	

Acquiring low-level strike aircraft, such as the Tornado, makes sense only if a state is confronted with vast distances (Australia and South Africa) or dense air defense networks (Israel, Syria, Iraq and South Korea). Consequently, while a total of 362 strike aircraft were sold to 11 states between 1960 and present, this number is dwarfed by the commercial results of many lightweight fighter programs.¹⁹⁴ Although the Tornado was

successful in capturing a significant portion of the market for sophisticated strike fighters, the market was small.

The primary reason why British combat aircraft did not meet the needs of possible clientele lies with the inflexible, demanding requirements issued by the RAF. Although these requirements corresponded to what the RAF felt was necessary for the most demanding air combat environment imaginable—war with the Soviet Union, aircraft designed with the RAF's specifications in mind appealed only to a few wealthy customers who felt that the extra capabilities justified the cost.

British aircraft manufacturers preferred to develop more evolutionary aircraft aimed at satisfying international markets, with engineers proposing a series of simple lightweight fighters throughout the 1960s and 1970s.¹⁹⁵ Although none of these designs corresponding to an official RAF project, they were developed with export markets in mind and in the vain hope that the RAF would adopt them.¹⁹⁶ Based on design successes, British aircraft manufacturers could have developed lightweight fighters that would have been cost and performance competitive with aircraft offered by French, American and Soviet designers and with radar and jet engine designs superior to those used by their French and Soviet rivals.¹⁹⁷

The British aircraft industry continued to demonstrate its soundness on the rare occasions that an RAF aircraft requirement corresponded with the broader demands of export markets. Perhaps the best illustration is provided by their comparative success in producing subsonic jet trainer aircraft with a secondary ground attack capability.¹⁹⁸ In this instance, British manufacturers competed on a relatively level playing field, where the cost-effectiveness of the aircraft would play the predominant role in their commercial

fortunes. As Table XIII illustrates, most foreign customers perceived that the resultant Hawker-Siddeley Hawk as providing a better combination of reliability, performance and cost its competitors.¹⁹⁹

<u>Aircraft</u>	<u>Producing Country</u>	<u>In Service</u>	<u>Number Exported</u>	<u>Foreign Clients</u>
Hawker (BAe) Hawk	United Kingdom	1976	725+	18
Alphajet	France/W. Germany	1978	326	8
L-39	Czechoslovakia	1971	499	6
Aermacchi MB.339	Italy	1979	86	8

British designers, like their French counterparts, repeatedly proposed aircraft that responded to the demand of simple, affordable combat aircraft at a time when the air forces of both countries preferred larger, more sophisticated designs. Judged by the capabilities of domestically produced subsystems and prior combat aircraft, British aircraft manufacturers were probably even more capable of developing lightweight fighters than their French counterparts. The major difference between aircraft procurement in the two countries is that, whereas French aircraft designers managed to impose lightweight fighters on the French Air Force, the RAF forced their British aircraft manufacturers to produce expensive, sophisticated aircraft with marginal export potential. The absence of a British equivalent to the DMA/DGA permitted the RAF to issue operational requirements without thought to commercial success.

The United Kingdom's elected leaders attempted to compensate for the poor commercial prospects of British aircraft by intensive marketing and lax export restraints. From the 1960s, the United Kingdom exported Rolls-Royce Viper jet motors to Communist Yugoslavia,²⁰⁰ and a few years later, Rolls Royce sold the license to build the latest, most powerful version of the Viper jet engine to Romania, a member of the Warsaw Pact.²⁰¹ The British government and aircraft manufacturers then prospected in the People's Republic of China, one of the largest potential markets for combat aircraft, where British faced neither American nor Soviet competition.²⁰² This willingness to sell to a state considered an international pariah shows the desperation felt by British leaders at rendering its aircraft industries profitable.²⁰³ In the early 1980s, the United Kingdom guaranteed loans to Nigeria to purchase Jaguars, despite the country's poor human rights record and even worse credit rating.²⁰⁴ These efforts and others made by the highest political leaders to market aircraft did not alter the fact that British combat aircraft did not appeal to potential customers.

Poor export performance and high development costs in combat aircraft harmed commercial aircraft projects as 1) commercial production was diverted to uneconomic combat aircraft factories; 2) British firms were denuded of risk capital needed to launch commercial aircraft programs; and 3) British aircraft firms were forced to invest disproportionate resources in technologies with no civilian application.²⁰⁵ After the cancellation of the TSR.2 in 1965, and the near simultaneous cancellation of BAC and Hawker-Siddeley's major combat aircraft programs (TSR.2 and P.1154), no British aircraft company drew on its earnings from combat aircraft exports to finance

commercial aircraft, as Dassault had done in France with the Mystère and Falcon business jets.

By the early 1970s, the British government simultaneously confronted the need to finance the expensive Tornado program, support Rolls Royce after its declaration of bankruptcy, provide launching aid for the BAC 3-11 commercial airliner, and invest funds needed for the United Kingdom to join the European Airbus consortium. Faced with these interrelated projects, the British government funded Rolls Royce and the Tornado, leaving the commercial airframe industry to decay.

As British aircraft industries focused on military projects, British aircraft industries neglected to develop dual-use technologies and resources applicable to both commercial and military programs.²⁰⁶ By the 1970s, British aircraft factories possessed fewer of the latest machine tools than their French and American counterparts, and British design, development and production facilities were older, dirtier and more crowded than their French counterparts.²⁰⁷ In the years that followed, British aircraft manufacturers failed to match French investments in computer-assisted design (CAD) and computer assisted manufacturing (CAM).

The United Kingdom has not independently developed a commercial airliner since the 1960s and has not even considered doing so since the BAC 3-11 was abandoned in the early 1970s. Even after finally acquiring a stake in Airbus, the predominantly military character of British aircraft development prevented British Aerospace from branching into other commercial aviation markets. When BAe Systems sold its 20 percent share in Airbus in September 2006, it consecrated 40 years of the United Kingdom's decline as a producer of airframes for commercial aircraft. For the first time

since the dawn of aviation, no British firm has a sizeable interest in the full-scale manufacture of commercial aircraft.

If France emerged as the world's third largest exporter of combat aircraft by the end of the Cold War as a consequence of the DMA/DGA's influence over procurement, the United Kingdom lost this position because of the RAF's quest for sophisticated aircraft and high technology. Once at the leading edge of aircraft development, the United Kingdom has not independently developed and produced a combat aircraft since the 1960s or produced one since the 1970s. Because British airframe companies abandoned their commercial aircraft programs to concentrate exclusively on the defense sector, the United Kingdom declined from having European predominant aircraft industry, to being a distant second to France.

X. Conclusion

By comparison with France, the principal features of the British weapons acquisition process are the dominant influence of the armed services, the comparative weakness of dedicated procurement agencies and the crucial role of politicians in arbitrating inter-service disputes and enabling the system to "muddle through." Because of their preponderant influence, the armed services favored programs consonant with their vision of future warfare, regardless of the impact of their demands on the health of British defense industries. Ultimately, this policy resulted in the United Kingdom procuring sophisticated armaments that were largely devoid of both export prospects and technological spin-offs.

The combat aircraft sector is an exemplar in this regard. The RAF (and Royal Navy over its programs) wielded unchallenged authority to determine the technical characteristics of future combat aircraft. The only constraints on service requirements came in the form of the size of defense budgets acceptable to the cabinet and the need for consensus within the Chiefs of Staff Committee. Within this context, most weapons requirements obeyed what Mary Kaldor has described as the "follow-on imperative."²⁰⁸ At regular intervals, military institutions sought to replace their existing weapon systems with equivalent numbers of newer systems leveraging newer technologies to accomplish existing missions. Ambitious programs as the TSR.2, AFVG and Tornado were all conceived of as hi-tech successors to the venerable and comparatively inexpensive Canberra.

In addition to the follow-on imperative, British armed services systematically privileged technological requirements consonant with offensive doctrines, as predicted by scholars of bureaucratic politics. For the RAF, this meant the expense of substantial organizational energy and procurement resources to develop aircraft optimized for a struggle of comparative runway destruction. By demanding aircraft optimized for attacking enemy runways (the Tornado) and capable of continuing to fight the destruction of their own runways (the Harrier), the RAF planned to seize the initiative in the event of war by crippling Warsaw Pact airfields and continuing to fight regardless of the damage suffered by their own runways.

The British armed services exhibited excessive optimism in deciding which technological possibilities to pursue. For example, many of the aircraft detailed by RAF requirements proved decades in advance of what available technology, let alone finances,

permitted. Thus, the RAF's "urgent" 1958 requirement for a bi-sonic, low-level strike aircraft (TSR.2) only became technologically and economically feasible around 1980. Even worse, a fighter responding to the RAF's 1962 requirement for a bi-sonic VTOL fighter (the P.1154) has not yet entered service in any country. Only the controversial VTOL variant of the United States' costly F-35 program appears likely to make bi-sonic VTOL a reality.

Ultimately, demanding weapons requirements provided an impulse for military innovation, but proved deleterious to the health of British aerospace industries and challenging to procurement agencies (the Ministry of Supply, Ministry of Aviation, Ministry of Technology and, eventually, the Procurement Executive). Although the RAF frequently demanded greater capabilities than existing technology could provide or budgets afford, the service nevertheless identified and fostered novel technologies. The United Kingdom thus became a pioneer of low-level, high speed flight, automated terrain guidance, VTOL, variable geometry wings and specialized anti-runway munitions. It successively introduced the world's fastest climbing interceptor (the Lightning), the first operational VTOL fighter (the Harrier) and the combat aircraft with the highest lift coefficient (the Tornado).

Invariably, these technical achievements were only achieved through the concerted efforts of, and frequently at the expense of, the well-being of British aerospace industries. Despite the changing nature (and names) of the procurement agencies, British procurement institutions lacked the technical expertise to evaluate RAF requirements and the budgetary authority to allocate funds accordingly, such as the French DMA/DGA possessed. Because British procurement agencies could not alter RAF requirements to

render them compatible with the capabilities of British industry, their only recourse involved prodding industry to restructure itself into ensembles possessing the requisite human and financial resources. Thus, the RAF's ambitious TSR.2 requirement was accompanied by the Ministry of Supply strong-arming 27 aircraft prime contractors to consolidate down to two. Likewise, the RAF's focus on acquiring a single hi-tech product, the Tornado, prompted the Ministry of Aviation to consolidate the United Kingdom's remaining producers in 1977. In both cases, the weakness of intermediary institutions vis-à-vis the armed services and their brutal coercion of industry provide a stark contrast with France, where procurement agencies overruled service requirements and worked in symbiosis with defense industries.

Paradoxically, the primacy of the individual armed services in the procurement process created a need for politicians to intervene. By demanding revolutionary technologies, which inevitably entailed high development risks, the British armed services created an environment where their inter-service compromises and budgetary phasing proved ephemeral. Although weapons acquisition programs were the product of agreement in the Chiefs of Staff Committee, the dramatic cost escalations and schedule delays associated with cutting edge technologies ruptured inter-service bargains. The only way an armed service could obtain continued support for programs running over cost was to obtain resources at the expense of sister services. Thus, inter-service rivalry became a recurrent feature of the British procurement process.

When the Chiefs of Staff Committee could not arrive at a consensus, political leaders were obliged to adjudicate inter-service disputes. To give one example, Defense Minister Healey was obliged to take a proactive role in defense procurement once the

RAF's TSR.2 and the Navy's aircraft carrier program both overran their budgets. As each service argued for the merits of their particular programs, Healey was obliged to find a solution. At first, Healey upheld the aircraft carriers but replaced the TSR.2 with an apparently economic buy of American F-111s and Anglo-French AFVGs. When this solution failed to produce sufficient savings and the French withdrew from the AFVG, Healey was forced to extemporize further solutions. Although the details of their interventions differ, the sweeping defense reviews of Defense Ministers Sandys (1957) and Nott (1981) were similarly actuated by inter-service disputes triggered by troubled and over-budget procurement programs.

Noted scholars have highlighted how inter-service rivalry spurs innovation and provides civilian leaders with policy options. Unfortunately, inter-service competition appears to have been much less productive for British procurement. Coming during the latter phases of the procurement process, inter-service rivalry in the United Kingdom forced politicians to cancel programs upon which substantial investments had already been made. Inevitably, such necessary decisions entailed considerable waste. A case in point is Nott's 1981 decision to sell ships that were virtually new and scrap others then under construction. Another example can be found in the Canberra replacement program, where £239 million was invested between 1958 and 1968 on a series of ambitious programs (TSR.2, AFVG and F-111) that were all ultimately cancelled. Had the money lost to program cancellations been invested differently, the United Kingdom could have acquired more armaments and greater military capabilities for the same defense expenditure. In this context, a more active political role at the onset of the procurement process would have been more efficient than interventions once programs had gone awry.

Ultimately, the RAF's incessant demands for highly specialized aircraft combined with the retrenchment efforts of civilian politicians to grievously damage the United Kingdom's aerospace industries. Most of the technologies demanded by the RAF, such as variable geometry wings, VTOL and low-altitude avionics, lacked any commercial applications whatsoever, while technologies with spin-off potential, such as carbon fiber composites and fly-by-wire avionics, were neglected. Moreover, the costly and complicated aircraft thus produced failed to meet the requirements of foreign air forces and were, therefore, only exported in small numbers. Taken as an ensemble, the application of substantial engineering resources to produce commercially unviable and militarily un-exportable technologies progressively robbed the British aerospace industry of its ability to compete internationally.

Given that the RAF dictated requirements and ultimately received aircraft meeting its perceived needs, it is now necessary to ask whether the RAF was well prepared for the conflict it anticipated with the Warsaw Pact. Within this context, the decade stretching from 1965 to 1975 appears particularly problematic. Having enunciated overambitious requirements for a revolutionary Canberra replacement and a bi-sonic VTOL fighter, the RAF was then frustrated by repeated delays and cancellations. Receiving few new combat aircraft during this period, the RAF's inventory aged.

From 1975 onwards, the RAF's procurement programs, albeit behind schedule, provided aircraft meeting the RAF's performance specifications. By the mid-1980s, the United Kingdom's aircraft inventory largely corresponded to the RAF's judgment that the best way of countering a Warsaw Pact air offensive was to destroy the enemy's runways, while using short take-off, VTOL and unimproved runway capabilities to continue

fighting despite damage to British runways. With the Harrier, the Tornado and the Jaguar, virtually the entire RAF front line was capable of operating independently of large intact airbases, thus in this respect, the RAF was less vulnerable to attacks on its runways than other major powers. With the Tornado/JP233 combination, the RAF also had the best low-level anti-runway capability in the world.

Judging by their technical characteristics, British aircraft were well suited for their designated missions. However, a variety of groups, both in the United Kingdom and abroad, questioned the RAF's analysis. Fundamentally, employing sophisticated aircraft to attack heavily defended and easily repairable concrete targets, such as runways, appeared hazardous to many experts. Drawing on its Vietnam War experience, the United States Air Force argued that heavily defended targets are best attacked from higher altitudes and with the assistance of electronic countermeasures.²⁰⁹ Within the British defense establishment itself the Office of the Science Advisor concluded that Soviet air defenses would be sophisticated enough to inflict excessive attrition on British aircraft attacking at low altitudes.²¹⁰ Elements within the RAF also questioned the wisdom of the service's perceptions of runway vulnerability and its emphasis on attacking enemy runways.²¹¹ One squadron leader asked, "Are the targets really so important that counter-air attacks . . . will be made in which the attackers risk suffering high losses for small gains? This might well be true for certain targets of high strategic significance, but can hardly be justified for counter-air targets as a whole."²¹² For critics such as these, the RAF appeared fixated on an offensive doctrine that would yield meager results for disproportionate costs and was overly worried by the Soviet Union's runway attacks.²¹³

With the information available, it is impossible to say whether the RAF's leadership or its detractors would have been vindicated in a major war. In this context, data that exist from the 1991 Gulf War is inconclusive. In the anti-runway mission, Tornados reached their targets suffering acceptable attrition (2 percent), but failed to inflict the expected damage on enemy runways. However, lessons drawn from this conflict must be temporized with the understanding that Iraqi runways and air defenses differed from their Soviet equivalents, and that the Iraqi Air Force constituted a negligible threat to Tornados reaching their targets.

What is clear from the Gulf War experience is that sophisticated all-weather strike aircraft like the Tornado performed significantly better in the low-level anti-runway role than less sophisticated attack aircraft that could attack only during day light, in clear weather. In this context, the RAF's aircraft requirements, issued since 1957, led to the service acquiring a *better* anti-runway capability than the Soviets or French, which had similar doctrines but relied on less-sophisticated aircraft and weapons. However, it remains still questionable whether the best technology available rendered an inherently risky mission cost-effective.²¹⁴

In sum, the British weapons acquisition process enabled the armed services to acquire innovative weapons consonant with their visions of future warfare. Ultimately, the weight given to the opinions of the armed services proved detrimental to the aerospace industry as a whole, which could not pursue technological spin-offs and saw its arms export activities decline. Despite their frequent interventions in the procurement process, political leaders were unable to shape its fundamental dynamics and reduced to the role of crisis managers. Whether the British weapons acquisition process succeeded

at its core mission of providing the armed forces with suitable weaponry depends on one's view of the requirements issued by individual armed services. If it is accepted that individual armed services relied on their best professional judgments of future warfare to define requirements, then the weapons acquisition process succeeded in providing them with what they needed. On the other hand, if service requirements were tainted by organizational biases towards the offensive and follow-on systems, then the weapons the services requested were incapable of cost-effectively providing the nation with the security it demanded.

Endnotes

¹ For much larger states, like the United States and (during the Cold War) the Soviet Union, the size of the internal market for combat aircraft was so large that the goal of pleasing potential overseas customers paled in comparison to the need to please the state's air force. Moreover, stiff competition between rival companies in the United States and design bureaus in the Soviet Union enhanced national air force leverage vis-à-vis aircraft designers. Nevertheless, American companies repeatedly attempted to build aircraft that would please broad international markets, such as the Northrop F-5 and F-20 and the Lockheed F-104 and Lancer.

² An impartial analysis of the RAF before and during the Second World War must weigh numerous cognitive failures against the organization's undeniable successes. Although the Spitfire, Hurricane and Lancaster have gone down in history as well-conceived aircraft, the Fairey Battle (a light bomber) and Gloster Defiant (a fighter with a gun turret) were failures. Meanwhile, one of the United Kingdom's best aircraft, the De Havilland Mosquito, was the result of a corporate initiative, which did not respond to an existing RAF requirement. The RAF's broader claim to have anticipated the character of the air war is likewise tenuous. Before and during the war, the RAF overestimated the results and underestimated the difficulty of conducting a bombing offensive on Germany.

³ Under government insistence before the start of war, the United Kingdom established redundant industrial capacity to produce warplanes—so-called “shadow factories,” which permitted a rapid conversion of the country's manufacturing industries to military production when war began. Later, shortly after taking power, Prime Minister Winston Churchill created a centralized Ministry of Aircraft Production, with the specific objective of developing and manufacturing aircraft to meet the RAF's demands. Thanks to centralized organization and competent planning, the United Kingdom produced substantially more aircraft than Germany between the fall of France and the United States' entry into the war. During the crucial summer months of 1940, the United Kingdom manufactured twice as many Spitfires and Hurricanes as Germany did Bf-109s and Bf-110s.

⁴ Although the Soviet Union produced slightly more aircraft than the United Kingdom, most of the Soviet Union's aircraft production consisted of lightweight single engine fighters and attack aircraft, while a significant proportion of the United Kingdom's production comprised four engine (Lancaster and Halifax) and two engine (Wellington, Beaufighter, Mosquito) bombers.

⁵ By 1964, government leaders decided that greater efficiency could be obtained by subsuming the Ministry of Aviation into a new Ministry of Technology, charged with developing the United Kingdom's technology base. After further reflection, the British government concluded that weapons acquisition could be more effectively managed if entrusted to a distinct agency, the Procurement Executive of the Ministry of Defense, created in 1971. After further study, the 1998 Strategic Defense Review significantly

reformed the procedures and career structures of the Procurement Executive. See Glen Segell, *Royal Air Force Procurement: The TSR.2 to the Tornado* (London: Glen Segell, 1998), 13; and Jeffrey Engel, *Cold War at 30,000 feet: The Anglo-American Fight for Aviation Supremacy* (Cambridge, Massachusetts: Harvard, 2007), 21-23.

⁶ George Edwards, the dominant figure of Vickers Aviation and the British Aircraft Corporation (BAC) between 1945 and 1975, observed the technical superiority of DMA/DGA officials vis-à-vis their British counterparts during the AFVG and Jaguar programs. According to Edwards, “The French senior civil servants [in procurement] were drawn from chaps who had been put through the l’Ecole Polytechnique system. The result was you got on one side British Greek scholars de luxe who were absolutely ace on what I would describe as public school and Oxford projects, whereas, on the French side, you had chaps who knew what a pound per square inch was.” See Robert Gardner, *From Bouncing Bombs to Concorde: The Authorized Biography of Aviation Pioneer Sir George Edwards* (Thrupp, United Kingdom: Sutton, 2006), 202.

⁷ The SR.177 was similar in conception to France’s Trident, which was cancelled in favor of the Mirage III after three prototype aircraft were lost. At the time the SR.177 and Fairey Delta III were cancelled in 1957, neither was yet in advanced development and prototypes did not yet exist of either, although the Fairey Delta III was derived from an experimental aircraft (the Fairey Delta II) and the SR.177 was developed from the prototype SR.53 rocket fighter. Given the problems similar aircraft faced abroad, it is doubtful whether either the SR.177 or the Fairey Delta III would have been ready on schedule. Tony Butler, *British Secret Projects: Jet Fighters Since 1950* (Hinckley, the United Kingdom: Midland, 2000), 80-92, 103-13.

⁸ Discussion of a Canberra replacement began in September 1951, but a final draft of an RAF operational requirement was not ready until March 1957. PRO AIR 20/10576 ASR 343 – *Historic Diary*.

⁹ The Defense White Paper was written after the British government decided to reduce defense spending from 10 to seven percent of the state’s Gross National Product (GNP). The end of conscription was the most important ramification of the Paper. Developing guided missiles to succeed manned bombers and surface-to-air missiles to succeed fighter aircraft was one of the Paper’s stated technological goals. The 1957 White Paper has been severely criticized in many histories of British aviation. For example, Charles Gardner claimed that, “What Sandys set down was really a Dan Dare scenario which might conceivably be valid by the turn of the century, but which bore no relation to the state of the art or the practicalities of life for the 1960s.... He demoralized the Royal Air Force and the industry, and set British military aviation development back by at least several years—and some say by a decade.” Although the Sandys review was traumatic for Britain’s aviation industries, it is hard to see how there was any alternative. Given budgetary realities, the United Kingdom was eventually obliged to cancel the ballistic missiles (Blue Steel) supported by the White Paper as well as the Canberra replacement aircraft. See Stephen Twigge, *The Early Development of Guided Weapons*

in the United Kingdom, 1940-1960 (Chur, Switzerland: Harwood, 1993), 78-79; and Charles Gardner, *British Aircraft Corporation* (London: B.T. Batsford, 1981), 19-21.

¹⁰ In August 1953, a camera-equipped Canberra flew evading Soviet fire, from West Germany, over Czechoslovakia, Poland and a significant portion of the Soviet Union, to photograph the Soviet Union's missile test facility at Kapustin Yar, southeast of Stalingrad. The Canberra was a standard bomber aircraft, rather than one of the photographic reconnaissance Canberras, which were being produced with longer wings to operate at even higher altitudes. Over the course of several years, Canberras set 22 world records for speed, height and range. In August 1953, when a camera equipped Canberra flew from West Germany, over Czechoslovakia, Poland and a significant portion of the Soviet Union, to photograph the Soviet Union's missile test facility at Kapustin Yar, southeast of Stalingrad. Soviet air defenses scrambled a significant number of MiG fighters to intercept the Canberra. Lacking internal radars, many had trouble visually locating the plane at such a high altitude. Near Kharkov, two MiGs became confused and fired on each other. Near Kapustin Yar, a MiG pilot actually managed to approach the Canberra, however operating at an aircraft higher than his aircraft was designed, the MiG was constantly in danger of stalling. The MiG managed to fire a burst at the Canberra, with one cannon shell hitting, but the MiG subsequently lost speed and altitude, and the Canberra continued its mission. The inability of the Soviet Union's air defenses to halt a single Western bomber aircraft led to the removal of several generals and officers from their positions. One committed suicide after being demoted to the rank of lieutenant colonel. Curtis Peebles, *Shadow Flights: America's Secret Air War Against the Soviet Union* (Novato, California: Presidio, 2000), 43-45.

¹¹ New Soviet capabilities were demonstrated in 1956 when a Syrian MiG-17 shot down a RAF Canberra during the Suez Crisis. Bruce Halpenny, *English Electric Canberra: The History and Development of a Classic Jet* (Barnsley, the United Kingdom: Pen and Sword, 2005), 17.

¹² In 1952, Air Vice-Marshal Geoffrey Tuttle of the RAF's operational requirements department already anticipated that the Canberra would be unable to fulfill daylight missions from 1955 onwards because of the Soviet MiG-15 threat. By 1957, it was anticipated that the Canberra would be unsuited for operations during great power wars by 1963 and would be unable to fulfill any military role by 1965. Given the fact that the RAF still operated Canberras in 2000, the RAF was either premature in judging the aircraft obsolete or obliged to continue operating an aircraft once it had become gravely outmoded. Tony Butler, *British Secret Projects: Jet Bombers Since 1949* (Hinckley, the United Kingdom: Midland, 2003), 87-104.

¹³ Initially, the RAF deemed a height of 1,000 ft (305 m) and a low-level speed of Mach 0.95 as sufficient for penetrating enemy air defenses, but enough doubters remained so that the RAF included a requirement for a minimum speed of Mach 1.7 at higher altitudes. In previous generations of aircraft, high altitude was perceived as a means of protecting aircraft from enemy air defenses. For aircraft such as the B-29

(30,000 ft maximum height) and Canberra (60,000 ft maximum height), high altitude placed them above the range of light enemy anti-aircraft guns and rendered it difficult for enemy fighters to attain the necessary altitude to shoot bombers down before the latter reached their targets. With improvements to early warning radars and the climb rates of fighters, the slow high-altitude approach became increasingly problematic, before finally proving obsolete when surface-to-air missiles permitted the Soviet Union and People's Republic of China to shoot down high altitude reconnaissance aircraft (the Lockheed U-2 and reconnaissance versions of the Canberra) in 1959 and 1960.

The RAF's Bomber Command continued to argue that high altitude performance was the most important criteria for the future aircraft. PRO AIR 20/10576 ASR 343 – Historic Diary.

¹⁴ According to 1957 estimates, the costs of designing a modified Buccaneer were assessed at £20 million versus £190 million for an entirely new aircraft.¹⁴ However, even with modifications the Buccaneer would fall a little short of meeting the RAF's operational requirement, with a range of 850 nm versus 1000 nm, a low-level speed of Mach 0.85 opposed to Mach 0.95 and a subsonic speed at high altitudes, against the Mach 1.7 desired by bomber command. The Buccaneer also could not meet the RAF's short take-off requirement for the Canberra replacement.

¹⁵ A subject of continuing debate is whether the RAF rejected the Buccaneer solely for performance reasons, or because of an emotional desire not to adopt a naval aircraft. RAF sources tend to argue the former, while some accounts promote the latter theory. Healey himself opined that, "Under the conditions of internecine warfare which had ruled the between the services, the RAF would never accept an aircraft originally designed for the navy – a syndrome described in the Ministry as NIH, or 'Not Invented Here'." See Denis Healey, *The Time of My Life* (London: Penguin, 1989), 274; and Minister of Defense Denis Healey wrote, "The real tragedy is that [the Canberra] TSR2 should never have begun." PRO AIR 20/10576 ASR 343 – Historic Diary.

¹⁶ The Ministry of Defense suggested that Valiant bombers hitherto used in the strategic bombing be recycled. The Vickers Valiant was the United Kingdom's first jet powered strategic bomber. By the time the Canberra replacement requirement was issued, the Valiant was joined in the strategic bombing role by the more advanced Avro Vulcan and Handley Page Victor bombers. Minister of Defense civil servants therefore argued that Valiants could be diverted to replace Canberras. Unknown at the time, this proposal was unsound. When Britain's strategic bomber force (the V Force) shifted to low level delivery, it was discovered that low altitude turbulence generate stress cracks in the Valiant's fuselage. PRO AIR 20/10576 ASR 343 – *Historic Diary*.

The de Havilland Company suggested that a tactical bomber, the Christchurch DH.110, derived from the Royal Navy's Sea Vixen fighter could be developed quickly and affordably. The Christchurch proposal involved adding extra fuel tanks to the Sea Vixen's wingtips, strengthening the aircraft's structure for low-level flight and replacing the aircraft's RA-24 turbojets (Avons) with RB.133s (developed Avons). Blown flaps, used on the Buccaneer and Supermarine Swift, would be added to the Sea Vixen to

improve its short take-off capabilities. The resultant aircraft would have a radius of action of 550 nm (versus 1,000 demanded by the RAF) and an approach speed to the target of Mach 0.87 (versus Mach 0.95). At higher altitudes, the Christchurch would remain subsonic. Butler, *British Secret Projects: Jet Bombers Since 1949*, 89-90.

¹⁷ Although the United Kingdom's aviation industry remained vibrant and inventive, it had not consolidated after the Second World War and by the mid-1950s it comprised of 31 aviation firms (compared to the United States' 23). Commenting on the paucity of trained specialists, one government-employed scientist recalls that, "They [The firms] always had their chief aerodynamicist, but to be honest, he was the one aerodynamicist [in the company]." Another civil servant observed that the United Kingdom's aircraft manufacturers possessed "some twenty design departments, all more or less inadequate." Andrew Nahum, "The Royal Aircraft Establishment From 1945 to Concorde," *Cold War, Hot Science: Applied Research in Britain's Defence Laboratories, 1945-1990* (Amsterdam: Harwood, 1999), 29; and Engel, 189-190.

¹⁸ Charles Gardner, 23.

¹⁹ Ibid.

²⁰ Vickers had absorbed the producer of the famous Second World War-era Spitfire fighter and developed the United Kingdom's most profitable post-war commercial aircraft (the Viscount). John Law, *Aircraft Stories: Decentering the Object in Technoscience* (Durham: Duke University Press, 2002), 79-80.

²¹ According to Vickers, "If this project was to move forward to reality... it was essential that the cost of the whole project should be kept down to a minimum whilst meeting the full requirement. This led us towards the small aircraft... which offers the most economic solution." More particularly, the Vickers' proposal declared that the financial outlay per successful bombing mission would provide greater "lethality" per £ sterling. See Law, 76-80.

²² English Electric's status was based on its having designed two cutting-edge jet aircraft—the Canberra (the United Kingdom's first jet bomber), and the Lightning (its first bi-sonic fighter). According to their design submission, English Electric and Shorts envisaged the English Electric aircraft being lifted off the ground and propelled into forward flight by a piloted platform powered by 58 small jet engines. See Law, 66-69; and Butler, *British Secret Projects: Jet Bombers Since 1949*, 96-104.

²³ Vickers contested, arguing, "The principal objective of the design... should be aimed at providing the maximum strike potential for a given amount of national effort. PRO AIR 20/10576 ASR 343 – *Historic Diary*; and Vickers Armstrong, *GOR 339: One Engine versus Two Engines: a Proposal for a Small Working Party to Study Available Statistical Records*, May 5, 1958, quoted in Law, 106.

²⁴ The RAF studied as potential foreign contenders the United States Air Force's F-105, France's Mirage IV and the United States Navy's A3J. The F-105 lacked the range and short take-off performance, the Mirage IV fell short in range (although better than the F-105), take-off performance and low-level flying, and the A3J failed to meet the RAF's requirements for speed and range. PRO AIR 20/10576 ASR 343 – *Historic Diary*.

²⁵ PRO AIR 8/2196 *Tactical Strike and Reconnaissance Aircraft – Historic Diary*.

²⁶ Robert Gardner, 149.

²⁷ Originally, Vickers had considered de Havilland as its natural partner.

²⁸ Upon learning of the Ministry's decision to partner Vickers with English Electric, de Havilland immediately negotiated a merger with Hawker-Siddeley. This prompted Hawker-Siddeley to terminate negotiations with Bristol, which joined Vickers and English Electric to form what soon became known as the British Aircraft Corporation (BAC). Finally, Short Brothers was left out of this flurry of industrial consolidation and continued to operate as a separate entity. Robert Gardner, 146-60.

²⁹ The RAF wanted the new aircraft to disable enemy airfields with conventional munitions and thus permit neutralizing combat potential of an enemy air force and reduce the uncertainty of war. Its new objectives included an operating height of 200 ft (61 m) instead of 1000 ft (305 m) and a speed of Mach 1.1 at this altitude, instead of Mach 0.95. The high altitude speed of the aircraft was also revised upwards, from Mach 1.7 to Mach 2.25. According to the RAF, "In times of conflict the best way to protect our naval, ground and air forces from air attack is to take out the enemy's air potential. Purely defensive measures would be very much more expensive, comparably ineffective and likely to involve heavy losses and casualties to our forces." While the RAF argued that attacking enemy airfields would be the most effective strategy, it believed that improvements to enemy air defenses would make attacking them increasingly hazardous from altitudes above 500 ft. PRO AIR 20/11750 *The Aircraft Problem*, December 1965; PRO AIR 8/2196 *Tactical Strike and Reconnaissance Aircraft – Historic Diary*; and Butler, *British Secret Projects: Jet Bombers Since 1949*, 107-08..

³⁰ George Edwards, director of the TSR.2 effort, recalled, "Right from the start, I heard the hoofbeats of this united opposition to TSR.2. I knew it would have a struggle to survive." George Edwards, quoted in Charles Gardner, 58.

³¹ RAF Vice-Chief of Staff Geoffrey Tuttle, with whom Stanley Hooker, Chief Engineer at Bristol Aero-Engines, attempted to negotiate concerning the 1,000-mile range requirement, remained impervious to suggestions that requirements be reduced. Arguments against the short take-off and unprepared (grass or earth) runway requirements were made to no avail. Stanley Hooker, the Chief Engineer at Bristol Aero-Engines, responsible for developing the TSR.2's Bristol Olympus engines, vainly attempted to convince the RAF to lessen the TSR's speed and range requirements. In

Hooker's eyes, the 1,000-mile combat radius demanded also required technically risky and excessively costly modifications to the Olympus engine. At a meeting with RAF Vice-Chief of Staff Geoffrey Tuttle, Hooker pleaded, "Do you realize that the final 100 miles will cost you something like a million pounds a mile for engineering development. The Olympus engine was already in service in the Avro Vulcan strategic bomber before the TSR.2 program began. The aluminum alloy compressor could withstand the ambient temperatures generated at speeds up to Mach 1.8. When the RAF increased the maximum speed requirement to Mach 2.25, they necessitated the redesign of the aluminum portions of the engine in exotic materials, such as titanium, capable of withstanding higher temperatures. Apart from the speed requirement, the range requirement for the TSR.2 entailed substantial modifications. Stanley Hooker, *Not Much of an Engineer* (Marlborough, the United Kingdom: Airlife, 2002), 146-47.

³² English Electric reasoned that Minneapolis-Honeywell had recently developed an automatic terrain-following system for the United States Navy's A5 Vigilante bombers. Purchasing an existing system off-the-shelf would obviate the effort and cost of developing a new system in the United Kingdom. Also, since the size and components of an American system were already known, integrating the terrain-following and navigation system into the TSR.2's fuselage would be simpler. However, while the Minneapolis-Honeywell system could meet the original performance requirements for the TSR.2, it could not meet the revised requirements of flying Mach 2.25 at 200 ft (61 m). PRO AIR 20/10576 ASR 343 – *Historic Diary*.

³³ It was necessary to modify and integrate: a forward-looking radar, a radar altimeter, an inertial navigation system, a downwards-looking Doppler radar, a sideways looking radar, an autopilot and an American digital computer (VERDAN) for systems integration. Although the TSR.2's terrain following system was developed from scratch, the VERDAN computer was part of the United States Navy's A-5 Vigilante's terrain following system. The original estimate of the cost of the terrain following system was predicated on the RAF's original requirement for 1000 ft (305 m) at Mach 0.95. When the RAF changed its requirement to 200 ft (61 m) at Mach 1.1, the cost estimate rose from £0.3 million to £1.005 million. After development problems, the research and development cost estimate was reevaluated in December 1961 as £3.14. This process provides a good illustration of the dramatically higher price for marginal improvements to performance beyond a certain point and the difficulty of estimating development costs for an inherently cutting-edge system. PRO AIR 20/10576 ASR 343 – *Historic Diary*; PRO DSIR 23/28528 T.S.R.2. Terrain Following: Design of a Terrain Following System, 9 March 1961; and Anthony Thornborough, *TSR2* (Ringshall, the United Kingdom: Ad Hoc Publications, 2005), 21.

³⁴ While attempting to coax the improved speed and fuel consumption for the TSR.2 from the Olympus engine, Bristol Aero-Engines suffered from a series of technical mishaps, culminating in an engine exploding on its flying test-bed, a Vulcan bomber, in December 1963. After the Olympus' redesign, an unanticipated vibration developed in the high-pressure portion of the engine, causing it to shake apart. Hooker, 148.

³⁴ PRO AVIA 65/1678 TSR-2 Survey, 23 November 1964.

³⁵ By February 1963, the Minister of Aviation (which superceded the Ministry of Supply in 1959) wrote, "This (costs) compels us to look very hard, and if need be anew, at other aspects of defense policy." PRO DEFE 13/305 Peter Thorneycroft to Secretary, 5 April 1963.

³⁶ The British Treasury calculated that the cost of the new carriers would lie between £700 and £750 million, which approached the TSR.2 estimates. The Treasury's estimate was inclusive of operating costs over 14 years, during which old carriers would be replaced and new ones commissioned. The Navy itself argued in 1962 that it would cost £120 million to replace four carriers, or £40 million per carrier. Based on Navy calculations, the Minister of Defense suggested that replacing a carrier would cost £100 million (£60 million for the ship and £40 million for the air group) in 1963. Another figure quoted in 1963 involved £620 million to build and arm four carriers (£155 million per ship). The Treasury's estimate of £700-750 million for two carriers clearly exceeded others, a fact that can be explained by the motivations of different organizations—the Navy wanted a firm commitment to build the carriers, while the Treasury hoped to curtail spending. See PRO PREM 11/5104 Michael Cary to Prime Minister, Aircraft Carriers, June 30, 1962; PRO AIR 20/11424 Carrington to Minister of Defence, May 9, 1963; PRO PREM 11/5104 Statement by Minister of Defence to the House of Commons, July 30, 1963; Saki Dockrill, *Britain's Retreat from East of Suez: The Choice between Europe and the World?* (Basingstroke, the United Kingdom: Palgrave, 2002), 39; and PRO PREM 11/4791.

³⁷ The bureaucratic politics behind the RAF's attack on the Navy's aircraft carriers was barely disguised in official documents. According to one, "No adequate case has been made for including the carriers in our hard-pressed defence programme. If we do include them, and do not at the same time increase our defence budget accordingly, something else will have to go." For the RAF, the obvious danger was that the aircraft carrier would come at the expense of TSR.2. See PRO AIR 20/11425 Chief of Air Staff, *The Aircraft Carrier Programme*, 11 July 1963.

³⁸ To the RAF, the spread of supersonic aircraft, jet bombers and anti-ship missiles to states like Indonesia and Iraq rendered aircraft carriers excessively vulnerable, while the TSR.2, capable of operating from improvised runways, offered a better alternative for projecting power globally. The RAF's Scientific Advisor released a study in February 1963 arguing that British carriers, even if modernized, would be worthless by the 1970s, when many second-rate states would possess modern air forces, anti-ship missiles and submarines, and would therefore be able to sink the Navy's carriers. In one revealing phrase, the RAF study argued, "Whatever tactics are followed by the enemy in this form of [air] attack, and whatever countermeasures we use, there is serious danger of the enemy penetrating the carrier's defenses with long-range stand-off weapons." The paper concluded, "the risks involved are at least great enough to cast serious doubt on the

validity of the carrier-borne strike concept for a wide variety of situations." In a strategy variously referred to as the "Island Strategy" or "Island Stance," the TSR.2s could bomb targets or intimidate adversaries almost anywhere. To the RAF, from the main base in the U.K. island airfields would act as "strategic stepping-stones from which our forces would be launched to the theater of operations. The RAF argued that "from the main base in the U.K. we should carry out the timely and effective intervention we need by the use of island airfields as strategic stepping-stones from which our forces would be launched to the theater of operations." PRO AIR 20/11420 Chief of Air Staff, *Long Term Strategy*, January 1963; and PRO AIR 77/576 Scientific Advisor to the Air Ministry, *Vulnerability of Aircraft Carriers in Limited Wars*, 1970-1980, February 1963.

³⁹ PRO AIR 20/10576 ASR 343 – *Historic Diary*.

⁴⁰ The RAF initially argued that the "island strategy" would only cost £40 million in base infrastructure, versus £620 million for the aircraft carriers. The Navy rejoined that the RAF's strategy would cost at least £75 million for infrastructure, in addition to the costs of TSR.2. PRO AIR 20/11423 *Comments on the Note of the Chief of the Air Staff* of 15th February 1963. In February 1963, the Chief of the Air Staff argued, "What could the carrier do in the way of providing close air support and air defence to an intervention force pitched into Central Africa." PRO AIR 20/11423 *Note by the Chief of the Air Staff: Interim Report by the C.S.A.'s Inquiry*.

⁴¹ Being the only client for an aircraft of its type, the TSR.2 faced stiff competition for the Australian order from the American B-58 Hustler, A-5 Vigilante and F-111, and France's Mirage IV.

⁴² One unverified but widely repeated story is that Mountbatten had a habit of slapping down five card-sized photos of the Buccaneer and one with a drawing of the TSR.2, and saying "Five of one or one of the other at the same cost." Based on recent scholarship, Mountbatten's intervention does not appear to have been the decisive element in Australia's decision not to purchase TSR.2. Rather, growing enthusiasm for the TFX (F-111) aircraft, launched by the United States under Secretary of Defense Robert McNamara, was the most important influence on Australia's decision. Robert Gardner, 166-69.

⁴³ Mountbatten, along with Solly Zuckerman, the Ministry of Defense Chief Science Advisor, resuscitated the idea that the RAF should acquire Buccaneers as a cheap substitute for TSR.2A. A supposedly neutral committee led by Zuckerman concluded that aircraft carriers provided more air cover and greater geographic flexibility than RAF aircraft from island bases. TSR.2 proponents have accused Zuckerman of having an "aircraft carrier bias." Zuckerman had good social relations with Admiral Mountbatten. However, it is impossible to ascertain the role of subjective factors such as "bias" and "friendship" in the conclusion of the committee Zuckerman led, versus objective analysis. PRO AIR 20/11424 Solly Zuckerman, *Report on Inquiry into Carrier Task Forces*, April 23, 1963.

In a rare statement on defense policy and one of the most acerbic attacks on RAF policy, Burke Trend wrote the Prime Minister that, “We commit vast sums of money for e.g. the Canberra replacement, without stopping to consider whether, politically, the T.S.R.2 makes sense or has a useful role to play. Defence is the servant of foreign policy: it is not war games for generals (underlined in original). In short, I fear that we are committing altogether too much money for future expenditure based on old patterns rather than gradually re-allocating new resources to meet emerging needs.... As for TSR 2, I cannot think what it will ever be called to do, if indeed it ever gets off the ground. Keeping up the morale of the [Armed] Services is, it is true, an essential aspect of Defence Policy; but there is a limit to the number of new toys the nation can afford to give them.” Burke Trend to Prime Minister, *International Affairs*, March 26, 1964.

⁴⁴ By late 1964, the estimated cost for the RAF to acquire 110 TSR.2s had risen from £325 to £750 million, and would increase further to £1,135 million. Saki Dockrill, 82-83.

⁴⁵ Although a contract for the F-111 development was issued in the United States in December 1962, three years after the TSR.2 contract had been signed, the development of the American aircraft overtook its British counterpart, with the F-111 prototype flying in December 1964, three months after the TSR.2. Performance shortcomings included: the combat radius was shorter, ability to operate from unimproved runways lesser, and in its initial version, it lacked the TSR.2’s sophisticated avionics system for low-level high-speed flight it had advantages. A Mark II avionics package was planned to redress this last shortcoming. Robert Coulam, *Illusions of Choice: The F-111 and the Problem of Weapons Acquisition Reform* (Princeton: Princeton University Press, 1977), 56-68.

⁴⁶ The figures for the F-111 are actual figures, whereas those for the TSR.2 are derived from the requirement. Although two TSR.2 prototypes were completed, not enough flight-testing had been completed to confirm that it met all of its objectives. In terms of range, the TSR.2 was supposed to fly a hi-low-low-hi profile, whereas the F-111 flew a low-low-hi-hi. *Ibid.*, 78.

⁴⁷ RAF Chief of the Staff Charles Elsworthy openly discussed canceling the TSR.2 in favor of the F-111 in a letter to Minister of Aviation Hugh Frazer, justifying the proposal on the uncontrollable costs of the British project. He came to view the financial savings associated with the American aircraft, evaluated at between £285 million and £369 million, as vital to the RAF’s future.

BAC argued that cancellation would provoke mass layoffs and discredit Britain’s newly consolidated aviation industry. Minister of Aviation Roy Jenkins also pleaded against purchasing an American aircraft, contending that a simplified and cheaper TSR.2 or enhanced Buccaneer would be developed to meet the RAF’s requirements. For Jenkins, these alternatives had the advantage that British procurement funds would be spent acquiring products from British manufacturers. Saki Dockrill, 84-85, 93.

⁴⁸ The proposals to ameliorate the Buccaneer largely concentrated providing it with some of the avionics developed for TSR.2 and the Hawker-Siddeley P.1154. Concurrently, the Ministry of Aviation and BAC made one last effort to save the TSR.2. With development of the aircraft far from complete, they attempted to negotiate a fixed price contract to complete the development, pre-production and production of 100 aircraft. After intensive negotiations, there remained a gap of £20 million between the highest sum the Ministry could offer and the lowest that BAC would accept. At the time of these negotiations in January 1965, £190 million had already been spent on the TSR.2's development. The best estimates at the time predicted that an additional £560 million would have to be spent to complete the program for 110 aircraft. The Ministry of Aviation initially offered a fixed price contract of £414 million to complete the contract, while BAC initially bargained for £475 million. Ultimately, negotiations collapsed when the Ministry would not raise its offer above £430 million and BAC would not accept below £450 million. Although both BAC and the Ministry wanted to salvage the TSR.2, there was an element of unreality in their negotiations. Few felt that costs could be contained to the limits they were willing to accept and both sides understood that BAC (whose capital upon formation was £20 million) could not underwrite the losses likely to occur. PRO AIR 20/10576 ASR 343 – *Historic Diary*; PRO DSIR 23/32965 *An Effectiveness Comparison of the Buccaneer 2 and 2**, June 1965; and Robert Gardner, 176-77.

⁴⁹ France developed the Mirage IV for the comparatively modest sum of £45 million. Based on contemporary exchange rates, the total program cost per Mirage IV built for the French Air Force was £4 million (fly away cost £3.45) whereas the predicted program cost for TSR.2 came to £7.5 million per aircraft (fly away cost £5 million). Although failing to meet the same performance criteria as the TSR.2, the Mirage fit into the same category of aircraft and competed against the TSR.2 for the Australian export contract. Predicted development costs for Buccaneer enhancements, estimated to range from £18 million to £21 million, would have been even more economical. Over the course of the TSR.2 program, many distinct proposals to improve the Buccaneer were presented. These included adding extra fuel to the aircraft; giving it more efficient engines and incorporating advanced avionics (developed for either the TSR.2 or P.1154) into it. See Jean Forestier, "Le Mirage IV, arme de précocité," *Armement et Ve République: Fin des années 1950 – Fin des années 1960* (Paris: CNRS Editions, 2002), 205; and PRO DSIR 23/33256 *The Cost and Cost/Effectiveness Comparison of the Buccaneer 2 and 2**, July 1965.

⁵⁰ The Mirage IV met the TSR.2's speed requirement, while an improved Buccaneer would have met its requirement for low-level flying and the precise delivery of munitions. Both could have carried the same nuclear payloads as TSR.2, but neither could carry as heavy a conventional bomb load. Neither aircraft could match the TSR.2's short take-off or unimproved runway requirement, but the Buccaneer was better in this respect than the TSR.2. Both aircraft also fell short in terms of combat radius, but the Mirage IV was better in this respect. British documents indicate that an improved Buccaneer could have been developed and over 200 procured for the same sum of money

expended on the TSR.2's development, which was still incomplete. PRO AIR 20/11752 *A Comparison – Mirage, F111 and Buccaneer 2**, n.d. (1965).

⁵¹ Because the United States' F-111 program encountered significant difficulties meeting similar objectives, despite an enormous design team of 4,000 to 6,000, while the Anglo-German-Italian Tornado proved troublesome to develop more than a decade later, it appears that the primary cause of the TSR.2's troubles were the over-ambitious performance requirements that the RAF defined in 1957 and revised upwards in 1959. Hooker, of Bristol Aero-Engines, claimed that the RAF's requirements led to the "pouring of effort and money down the drain." According to Hooker, "The fresh arrivals of brilliant and dedicated young RAF officers in the Operational Requirements branch tended to justify their existence by changing, usually upwards, the numbers cranked into official specifications." Hooker, 147.

⁵² A commitment to the purchase of an initial batch of 10 aircraft had to be made by 1 January 1966, while the purchase of a second batch of 70-100 aircraft was to be confirmed by April 1967.⁵² PRO CAB 65/39 pt. 2 21st Conclusions, 1 April. 1965.

If the United Kingdom persevered with the full F-111 purchase, all 110 aircraft would be delivered by 1970. PRO CAB AIR 10/11750 *Buccaneer 2***, January 1966.

⁵³ Robert Gardner, 174.

⁵⁴ PRO CAB 65/39 pt. 2 20th Conclusions, 1 April 1965.

⁵⁵ The British government established an independent advisory committee under the leadership of Lord Plowden to study the United Kingdom's aircraft industry. This committee concluded that the United Kingdom should purchase its most complex military aircraft from the United States and develop the rest in cooperation with other European states. Sweden had a comparatively large aviation industry, but refused to collaborate with NATO member states because of its non-alignment during the Cold War. The West German and Italian combat aircraft industries were largely dismantled after the Second World War and were only gradually reestablishing themselves. PRO T 225/2685 *Committee to Redecide the Aircraft Industry*, 1 February 1966.

⁵⁶ On 17 May 1965, soon after the TSR.2 cancellation, Healey and Jenkins signed a joint memorandum of understanding with French Minister of Defense Pierre Messmer providing for the development of two collaborative aircraft.

⁵⁷ The jet trainer would replace the United Kingdom's Jet Provost and France's Potez (Fouga) Magister. The Breguet design, the Br.121, was an adaptation Breguet's design submission, the Taon, for NATO's lightweight fighter competition in the late 1950s. See Andy Evans, *SEPECAT Jaguar* (Ramsbury, United Kingdom: Crowood, 1998), 7-10.

⁵⁸ Because the AFVG would conduct similar missions as envisioned for the TSR.2, albeit at shorter ranges (a radius of action of 400 nm), it was anticipated that much of the research conducted on terrain following and low-level flight during the TSR.2 program would prove valuable to the AFVG.

⁵⁹ The United States Air Force restricted its version of the Canberra bomber to operations over South Vietnam, where they did not face opposition from enemy fighters or missiles. PRO AIR 20/11750 Denis Healey, *Memorandum by the Secretary of Defence: The Canberra Replacement*, January 1966.

⁶⁰ In a January 1966 Memorandum to the United Kingdom's Defence and Overseas Policy Committee, Healey admitted that, "Militarily the best and most effective answer [to the Canberra replacement requirement] would be a force composed entirely of F-111A's. But we must take into account... the need to secure a stable industrial programme in the future [for the aircraft industry]. Ibid.

⁶¹ Both the Vulcans and Victors were subsonic, however they carried heavy bomb loads, could fly long ranges and possessed sophisticated electronic warfare suites. The RAF had rejected the use of "V bombers" (the collective term for the Vulcan, Victor and Valiant) as Canberra replacements as early as 1957. However, the aircraft were considered more capable than the Canberra and no new production would be necessary. In Healey's words, "By taking a small number of aircraft with the highest performance [the 36 F-111s], we can take the risk of retaining in service with them some of the 'V' bombers (and transferring [them]... albeit at some risk – to the tactical role), and a small and declining number of Canberra reconnaissance aircraft. PRO AIR 20/10576 ASR 343 – *Historic Diary* and PRO AIR 20/11750 Denis Healey, *Memorandum by the Secretary of Defence: The Canberra Replacement*, January 1966.

⁶² This calculation covers purely the costs of the coming decade for the tactical strike and reconnaissance roles, including retaining the V bombers and photo-reconnaissance Canberras in service, the purchase of F-111s and the development of the AFVG. It does not include the entire AFVG production run. PRO AIR 20/11750 Denis Healey, *Memorandum by the Secretary of Defence: The Canberra Replacement*, January 1966.

⁶³ Robert Gardner, 214.

⁶⁴ As a high-altitude nuclear bomber, the Mirage IV required significant modifications for low altitude operations. However, BAC and Dassault believed that adequate performance could be obtained by incorporating existing British avionics, developed for the TSR.2 and the cancelled P.1154, into the Mirage IV's airframe.. Increased range would be obtained by substituting the Mirage IV's fuel-guzzling ATAR 9K engines for more efficient Rolls-Royce Speys. Refitted with new engines and avionics, the Mirage IV could meet or approach many of the TSR.2's performance goals, including minimum altitude, low-level speed and high-level speed.

⁶⁵Arguing that the advanced Mirage IV could be developed at a comparatively reasonable cost, BAC commented that although Dassault would conduct the development on the modified Mirage IV, half of the production effort and a similar proportion of the aircraft's components would come from the United Kingdom. BAC projected £10 million, compared to the £190 million that had already been spent on the TSR.2 or the £20 million anticipated for an improved Buccaneer.

BAC also argued that the British government could negotiate a quid-pro-quo with the French government on other deals and that Dassault's commitment to the AFVG project was lukewarm because the French company was denied design leadership over the airframe. PRO AIR 20/11752 *Air Commodore G.F.W. Heycock to C. Hartley, DCAS*, November 8, 1965; and PRO AIR 20/11752 F. Cooper, *Influence of the Sprey-Mirage Decision on French Interest in Bloodhound*, December 10, 1965.

⁶⁶ PRO DSIR 23/33256 Royal Aircraft Establishment, *The Cost and Cost/Effectiveness of the Buccaneer 2 and 2**, July 1965.

⁶⁷ Ministry of Defense studies suggested that the Buccaneer 2** would be 50 to 100 percent more effective than the Buccaneer 2*, but would cost £23 million to £28 million to develop, which was at least £3 million more than the Buccaneer 2*. PRO AIR 20/11750 *The Aircraft Problem*, December 1965.

⁶⁸ PRO AIR 20/11750 Wing Command R.J. Bannard, *Supersonic Buccaneer*, December 23, 1965.

⁶⁹ While BAC and Dassault estimated that the French variant of the aircraft would cost £10 million to develop, the RAF cited a larger figure of £50 million. Although the cost estimate of £10 may have been overly optimistic, the RAF's sum of £50 million appears unduly pessimistic considering that Dassault originally developed the Mirage IV for £45 million. PRO AIR 20/11752 *Mirage IV/Spey*, n.d..

⁷⁰ The RAF contended, "It is clear that the fitting of a British nav/attack system of sufficient accuracy, which is the smallest alteration we should need, would make the aircraft virtually as dear as the F111.... After conversion to meet our needs, the aircraft will still have a lower bomb load and range than F111 and would be tied to long concrete runways whereas F111 will be able to operate from short rudimentary strips." PRO AIR 20/11752 *Mirage IV/Spey*, n.d..

⁷¹ The RAF's decision to use Indonesia as the designated adversary in this study was not incidental. British Canberras, the aircraft whose replacement in question, were stationed at airfields at Labuan and Kutchings during the confrontation with Indonesia over Borneo (1963-66). In British eyes, the Canberras deterred Indonesia from escalating the confrontation beyond limited guerrilla attacks in Borneo. PRO AIR 20/11750 Assistance Chief of Air Staff, *The Canberra Replacement*, November 30, 1965; and

Bruce Halpenny, *English Electric Canberra: The History and Development of a Classic Jet*, 120-21.

⁷² The RAF argued that although 100 Buccaneers 2*s could be acquired for the same cost as 50 F-111s, the 50 F-111s had a combat value equivalent to 150 to 200 Buccaneer 2*s. Also, the costs of maintaining a larger number of less-capable aircraft would be higher in long run than maintaining a smaller number of more capable aircraft. Examining other scenarios, the RAF contended that 101 Buccaneer 2* sorties would be required in an intervention against Iraq, against 33 F-111 sorties. See PRO AIR 20/11750 *Comparative Performance and Cost Effectiveness of Canberra, Victor, Vulcan, Buccaneer 2, Buccaneer 2* (Ferranti Radar), Buccaneer 2** (Elliott Radar), Mirage-Spey, and F111A*, n.d..

⁷³ PRO AIR 20/11750 Assistance Chief of Air Staff, *The Canberra Replacement*, November 30, 1965.

⁷⁴ Minister of Defense Healey argued to the Cabinet's Defence and Overseas Policy Committee that, "The reconnaissance task is important and vital to both political and military decision making. In times of apparent calm discreet reconnaissance will disclose threats. In times of tension reconnaissance can provide the essential basis for political and military decisions." PRO AIR 20/11750 Denis Healey, *Memorandum by the Secretary of Defence: The Canberra Replacement*, January 1966.

⁷⁵ The Army claimed that it would need 200 reconnaissance sorties flown a day, up to 100 nm behind the forward edge of battle in the event of a Soviet attack in Western Europe. It felt that reconnaissance flights would be crucial in determining the likely axis of Soviet armored breakthrough efforts. As a result, its primary requirement was for reconnaissance flights up to 100 nm deep. The RAF argued that certain critical reconnaissance targets were 500 nm behind the Warsaw Pact. PRO AIR 20/11750 *The Need for the F111A to Meet Future Reconnaissance Requirements*, September 13, 1965.

⁷⁶ PRO AIR 20/11750 Assistance Chief of Air Staff, *The Canberra Replacement*, November 30, 1965.

⁷⁷ The performance characteristics listed in Table VI are those upon which the RAF based its analysis, and can be found in various documents already cited from PRO AIR 20/11750 and PRO AIR 20/11752. Figures for combat radii are those for a low-low mission profile carrying 10,000 lbs of bombs, except for the range for the supersonic Buccaneer, where the only figure cited for a low-low profile involved a 2,000 lbs bomb load.

⁷⁸ Written by the Assistance Chief of the Air Staff, the text specifies that the F-111 model discussed is the F-111A. For simplicity's sake, this was omitted from the quote. PRO AIR 20/11750 Assistance Chief of Air Staff, *The Canberra Replacement*, November 30, 1965.

⁷⁹ Charles Gardner, 138-39.

⁸⁰ The government reduced expenditure from £2,000 million in 1966 to £1,800 million by 1975. After the Pound was devaluated by 14 percent in November 1967, the British government decided to cut social and defense spending still further. Because of a shrinking defense budget and the devaluation of the Pound, which rendered future payments on F-111s more expensive (the value of £1 dropped from \$2.8 to \$2.4, increasing the cost of the F-111 from £2.6 million to £3 million), the F-111 program itself soon became controversial.

⁸¹ Saki Dockrill, 197-208.

⁸² The question was raised after the AFVG and F-111 cancellations whether the Canberra replacement requirement was a sensible formulation of future aircraft needs. According to Chief Science Advisor Zuckerman, "During the (interdepartmental) studies... some doubts were cast on the feasibility, in any likely European operational environment of the seventies and eighties, of an aircraft, even with the low-level performance of the MRCA, ever being able to attack defended targets with conventional weapons.... In the final analysis, however, one must attach some weight to the RAF's professional judgment of what would be operationally practicable in the opening stages of a military clash in Europe. I doubt, therefore, whether any Minister will feel disposed to press objections to the aircraft on these grounds, though the doubt inevitably remains." PRO PREM 15/1374 Solly Zuckerman to Prime Minister, *The Multi-Role Combat Aircraft*, July 8, 1970.

⁸³ Harrier VTOL aircraft were replacing some of the Hunter ground-attack force.

⁸⁴ The British aircraft industry was quickly obliged to fire 8,000 employees, of which 5,000 were at BAC.

⁸⁵ BAC closed the Luton factory, transferred its production of Jet Provost trainers to Preston, and shifted much of the BAC 1-11 airliner manufacturing from Hurn to Weybridge. Charles Gardner, 117-18.

⁸⁶ Charles Gardner, 116.

⁸⁷ According to British estimates, it would have cost less to replace the entire British Canberra fleet of 150 aircraft with improved Buccaneers than did the actual policies enacted. It is useful to note that the entire program costs of France's Mirage IV, including research, development, production (62 aircraft) and a certain stockpile of spare parts, cost only slightly more than the resources squandered on the TSR.2, AFVG and F-111 programs. Forestier, 205; and PRO AIR 20/11750 *The Aircraft Problem*, December 1965.

⁸⁸ In the end, the Jaguar's overall development cost was nearly as high as that of the French Mirage F1 and Mirage IV combined, which were more sophisticated aircraft. The Jaguar's development costs were FF 1200 million, whereas the Mirage IVs was FF 635 million and the Mirage F1 FF 670 million. Evans, 20.

⁸⁹ Butler, *British Secret Projects: Jet Bombers Since 1949*, 174-75.

⁹⁰ The RAF initiated discussions with the Navy and the Ministry of Defense on 22 January 1968, barely 10 days after the F-111's cancellation. PRO AIR 20/10576 ASR 343 – *Historic Diary*.

⁹¹ The RAF was first asked to evaluate the Buccaneer for its Canberra replacement needs in 1955. Since then, the Buccaneer's producers (Blackburn Aviation and then Hawker-Siddeley Aviation [after industry consolidation]) repeatedly proposed upgraded Buccaneers for the RAF, including: the B.103A (1957) with 300 gallons of additional fuel and 10 percent more thrust (Gyron Junior engines with afterburners); the B.108 with a two-man cockpit, photo-reconnaissance equipment and terrain following radar; the Buccaneer Mark 2 with the more powerful Spey engines; the Buccaneer 2* with improved avionics (Ferranti radar); the Buccaneer 2** with better avionics (Elliott radar); and the supersonic Buccaneer. See Butler, *British Secret Projects: Jet Bombers Since 1949*, 89-93; PRO AIR 20/11750 *The Aircraft Problem*, December 1965; and PRO AIR 20/11750 Wing Command R.J. Bannard, *Supersonic Buccaneer*, December 23, 1965.

⁹² In the project definition for the new study, entitled the United Kingdom Variable Geometry (UKVG) aircraft, the RAF specified that BAC should design an aircraft with a low-level speed of Mach 0.9, a combat radius of action of 400 nm and the ability to operate from short runways.

⁹³ The government learned from the TSR.2 experience and based its decision also on the Plowden Committee Enquiry into the Aircraft Industry report of 1964. PRO FCO 46/178 *Military Aircraft Industrial Potential: Defence and Foreign Policy Considerations*, September 22, 1967.

⁹⁴ Another basic design challenge, the incorporation of high-lift devices into the leading and trailing edges of the entire wing to improve both take-off performance and slow-speed maneuverability, also became the focus of intensive engineering efforts. Butler, *British Secret Projects: Jet Bombers Since 1949*, 180-81.

⁹⁵ The French had already decided on an aircraft project, the Mirage F1. Even after problems with France over the AFVG, the British government considered that, in the long run, "a reasonable solution [for the British aircraft industry] will only be found through some adequate tie-up between our own and French firms. PRO PREM 15/1374 Solly Zuckerman to Prime Minister, *The Multi-Role Combat Aircraft*, July 8, 1970.

⁹⁶ As a secret memorandum addressed to the United Kingdom's Prime Minister admitted after the fact, "Essentially we moved in on what was originally a German-Italian-Dutch-Canadian [Belgian] plan, and altered it to suit our needs." PRO PREM 15/1374 Solly Zuckerman to Prime Minister, *The Multi-Role Combat Aircraft*, July 8, 1970.

⁹⁷ The RAF dispatched a team to Canada on the day after the AFVG's cancellation. Capitalizing on its privileged relations with the Royal Canadian Air Force (RCAF), it attempted to persuade the Canadians to convince the other F-104 replacement cartel members to allow the United Kingdom to join their group despite the fact that the RAF was not a F-104 user and had no requirement for a lightweight fighter. Charles Gardner, 138-39.

⁹⁸ By 1969 British diplomats and the RAF convinced the West Germans and Italians to abandon the cheap lightweight fighter for a large variable geometry aircraft similar to the UKVG's specifications. As the United Kingdom's Chief Science Advisor confided to the Prime Minister in 1970, "By joining [the F-104 replacement consortium], the RAF also changed the character of the project, and succeeded in injecting their own ideas for a two-seater aircraft designed primarily for the strike role, rather than a single-seat fighter." PRO PREM 15/1374 Solly Zuckerman to Prime Minister, *The Multi-Role Combat Aircraft*, July 8, 1970.

⁹⁹ Interim solutions included extending the longevity of the Vulcans and Canberras; but Buccaneers would now join them for low-level strike missions. By changing its Jaguar requirement from jet trainer to ground-attack aircraft, the RAF ensured that it would have a new, if unsophisticated, aircraft for its shorter-range ground-attack missions from 1973. However, the United Kingdom would have to wait for the new MCRA program before it would acquire a cutting-edge aircraft capable of replacing the Canberra in all of its missions.

¹⁰⁰ Performing missions originally discharged by a homogenous fleet of Canberras, by 1979 the RAF possessed six squadrons of Vulcan bombers, four squadrons of Buccaneers and three squadrons of reconnaissance Canberras. Mark Hewish et al., *Forces aériennes du monde entire* (Paris: Elsevier, 1979), 70-72.

¹⁰¹ The bi-national Jaguar program was launched with a guaranteed order of 300 aircraft, later increased to 400, and the tri-national MRCA program was launched on the basis of 900 aircraft. In the end, the Jaguar's overall development cost was nearly as high as that of the French Mirage F1 and Mirage IV combined, which were more sophisticated aircraft. PRO PREM 15/1374 *Statement on MRCA*, July 22, 1970.

¹⁰² To accomplish this objective, the aircraft had to be strengthened and enlarged to accommodate more fuel and carry more bombs, and its aerodynamics modified to maximize high-speed low-level flight rather than provide the stability and handling needed in a training aircraft.

¹⁰³ The transformation of the Jaguar into a dedicated ground attack aircraft was facilitated by the aircraft's design lineage. The original design for the Jaguar trainer aircraft, the Breguet 121, was derived from the company's submission to NATO's lightweight fighter competition of 1958, the Breguet 1001 Taon. Although the Taon had been designed as a subsonic single-engine aircraft, its function was providing European states with a cheap and reliable ground-attack aircraft—a requirement analogous to the RAF's revised Jaguar specifications. After losing the NATO competition, Breguet continued work on its design, adapting it for a French requirement for a two-engine lightweight fighter, the Breguet 1100 and, later, the Breguet 121 two-engine trainer. Despite being a more sophisticated aircraft, the Taon (Breguet 1001) lost the NATO competition to the Fiat G.91. The Breguet 1100 design was likewise cancelled when the Gazibo jet engine that was supposed to power it encountered technical problems. Roland de Narbonne, "Les chasseurs légers de Les avions du concours OTAN," *Fana de l'Aviation* no. 440 (July 2006): 50-55; Butler, *British Secret Projects: Jet Bombers Since 1949*, 173-75.

¹⁰⁴ While the overall layout of the Jaguar was Breguet's responsibility, BAC contributed its wing planform and assisted with the aircraft's design. In both of these respects, Jaguar benefited from BAC's experience from the TSR.2 program. The Jaguar's thin highly swept wing, mounted high in the aircraft's fuselage, was a direct product of BAC's research into low-level high-speed aerodynamics. The small surface area of the wing rendered the Jaguar extremely stable and flyable in the highly turbulent air at low altitudes. The TSR.2 program involved considerable basic research into the dynamics of low-level flight and turbulence. BAC conducted some of this research in-house, but the Royal Aircraft Establishment (RAE), which provided basic scientific advice to both British aircraft manufacturers and the RAF, conducted much. The RAE developed a formula for predicting how aircraft would respond to gusts of wind at low levels and various speeds. Using this formula, English Electric and Vickers both developed TSR.2 proposals with wings mounted high in the fuselage. Having accumulated an unrivaled expertise in low-altitude airframe fatigue, BAC advised Breguet how to strengthen the aircraft's structure and, thereby, avoid the stress fractures that develop in aircraft flying for prolonged periods at low altitudes and high speeds. Vickers, one of the component companies of BAC, faced the problem of stress cracks developing from low level flight when the company's Valiant bombers were withdrawn from service when they were obliged to shift from high-altitude to low-altitude missions. Extensive research on low-altitude structural fatigue was later conducted both when the Vulcan and Victor bombers transitioned to low-level missions and as part of the TSR.2 program. Having begun their Mirage IV bombers at high-level flights, the French were comparatively late to study low-level metal fatigue. PRO AIR 20/10576 ASR 343 – *Historic Diary*.

¹⁰⁵ As a comparatively simple aircraft, with no new technologies and mounting minimal avionics (the aircraft lacked a radar), the Jaguar would not normally have faced cost escalation of this magnitude, except for the fact that the RAF's modification of the

Jaguar's purpose entailed the aircraft's comprehensive redesign at a comparatively late stage of development. The Jaguar was originally anticipated to be a fairly cheap program, costing approximately half as much as the Mirage F1 to develop. Cost growth was produced by a number of factors, including the aircraft's redesign, engine troubles and duplication of design and prototype testing effort. Originally, 120 million francs had been allocated for the Jaguar's development to the prototype stage. Development ultimately cost 864 million francs. A RAND Corporation study indicates that the program suffered a 309 percent increase in development costs, but specific costs are not given. The decision to change the Jaguar's purpose from a trainer to a ground attack aircraft came too late for the aircraft's intended engine to be upgraded. At the same time as BAC and Breguet received the contract to design the Jaguar's airframe in 1965, Rolls Royce and the French engine producer Turbomeca were tasked with building the aircraft's power plant—two Adour 101 jet engines. However, when Rolls Royce and Turbomeca were initially tasked with developing the Jaguar's engines, the aircraft was anticipated to weight approximately 3,500 kilograms. In modifying the Jaguar's airframe for ground-attack missions, they doubled its mass, augmenting the Jaguar's empty weight to 7,000 kg. Unfortunately, by the time the airframe redesign was complete, it was too late to redesign the Adour 101. See Andy Evans, *SEPECAT Jaguar* (Ramsbury, the United Kingdom: Crowood, 1998), 20; and Mark Lorell and Julia Lowell, *Pros and Cons of International Weapons Procurement Collaboration* (Santa Monica: Rand Corporation, 1995), 18.

¹⁰⁶ Possessing limited financial resources, most states interested in purchasing a combat aircraft sought a simple economic design capable of fulfilling both ground-attack and fighter roles. The Jaguar was in the same lightweight category as the Mirage III, Mirage F1 and Lockheed F-104, which were all commercially successful.

¹⁰⁷ The Jaguar was built with maintainability in mind. Four hundred quick release panels cover 30 percent of the aircraft's surface. This enables mechanics to easily access many of the aircraft's systems. Charles Gardner, 145.

¹⁰⁸ Contemporary British documents estimated that experience accumulated during a long production run would result in a 10 to 20 percent decrease in the aircraft's cost. PRO AVIA 97/30 *Plowden Report*, November 19, 1965.

¹⁰⁹ Andy Evans, *SEPECAT Jaguar* (Ramsbury, the United Kingdom: Crowood, 1998), 101.

¹¹⁰ According to the British record of Ziegler's warning, "He wished to express the concern he shared with the British Aircraft Corporation that the French Government were contemplating ordering the Dassault Mirage 3F1 [later Mirage F1].... The Mirage 3F1 would of course be competitive in exports markets with the Anglo-French Jaguar. M. Ziegler suggested that in the common interest of maximizing Jaguar sales, it would be entirely appropriate for the H.M.G. [Her Majesty's Government – the British Government] to attempt to influence the French Government against proceeding with the

Mirage 3F1.” PRO PREM 13/1308 P. Reilly, *Anglo-French Aircraft Collaboration*, January 24, 1967.

¹¹¹ According to BAC’s publicity manager, Charles Gardner, “There were acute problems on the sales side from the time Dassault took control of Breguet.... Quite often the French were trying to sell the Dassault F1 fighter... against the Jaguar. To help them in this they had, of course, all Jaguar performance and cost data, and were able highlight any development problem of the day, while keeping silent on any hitches with the Mirage F1. The French were, by various stratagems, also able at one time, to keep the cost quotation of possible export Jaguars high and to delay deliveries.” Charles Gardner, 146.

¹¹² *Ibid.*, 147.

¹¹³ After the French Air Force expressed a need for a low-level reconnaissance version of the Jaguar, the DGA encouraged it to instead develop a variant of the Mirage F1. When the French Air Force later proposed upgrading its Jaguars by equipping them with more powerful Adour jet engines, jointly developed by Rolls Royce and Turbomeca, and a French-designed inertial navigation system, the DGA likewise blocked the proposal because it would increase the Jaguar’s attractiveness to foreign clients and lead to a portion of France’s aircraft procurement funds budget being spent in the United Kingdom. According to General Jean Fleury, the total cost of upgrading France’s Jaguar fleet would have been a comparatively modest 1 FF billion. The government would not have opposed the Air Force’s demand, but the DGA would have subsequently refused to fund the upgrade. According to Fleury, France deliberately limited the capabilities of its Jaguars, adopting a “poor man’s navigation system” and electronics so rudimentary that France initially refused to send Jaguars to the United States for “Red Flag” exercises “so as not to appear ridiculous because of our under-equipped aircraft.” See Jean Fleury, *Faire Face: Mémoires d’un chef d’état majeur* (Paris: Jean Picollec, 1997), 129-44.

¹¹⁴ Dassault later refused to collaborate with BAC in offering a joint submission for the so-called “sales of the century” wherein Belgium, the Netherlands, Denmark and Norway intended to equip their air forces with a common aircraft. Since the Belgian and Dutch requirements were primarily for a ground-attack aircraft, with a secondary requirement for air superiority, BAC reasoned that the Jaguar and the Mirage F1 should be offered as a package. Dassault refused to cooperate, offering an upgraded Mirage F1 to fill both roles. Ultimately, neither the two-aircraft solution nor Dassault’s enhanced Mirage F1 won the “sale of the century.” The four states ordered a total of 348 American F-16s in 1974. The United Kingdom began refitting its Jaguars with the Mk104 Adour, which provided more power than the original Mk102 Adour, in 1978. Later, the even better Mk811 Adour was developed for export Jaguars, which were sold to Oman and Nigeria. Evans, 59-61.

¹¹⁵ The one state that purchased both the Jaguar and the Mirage F1 was Ecuador, indicating that it at least considered the two aircraft complementary. India and Oman chose the Anglo-French Jaguar over French aircraft Oman chose the Jaguar in 1974,

while the Indian decision came in 1978. Egypt originally expressed an interest in Jaguars in 1972, however the United Kingdom was not willing to sell them at this point, when they would have likely been employed in a future Arab-Israeli War. When Egypt's relations with Israel improved later in the decade, the United Kingdom changed its position on selling Egypt Jaguars. However, France now offered the Mirage 2000, which Egypt purchased, albeit with Saudi financial assistance. Kuwait was unsatisfied with the reliability of the English Electric Lightnings they had purchased in the 1960s and chose the Mirage F1 as a consequence. PRO DEFE 11/653 *I.S. McDonald, Director of Sales to Hd/DS13*, January 28 1974; PRO DEFE 11/653 Chiefs of Staff Committee, Defence Policy Staff, *British Military Assistance to Oman*, February 15, 1974; Robert Gardner, 217; PRO CAB 148/121 Defence and Overseas Policy Committee, *The Supply of Arms to Egypt*, September 13, 1972; and Evans, 101.

¹¹⁶ The Mitsubishi F-1's airframe and wing planform strongly resembled the Jaguar's and was powered by the same Adour jet engines. Mark Lorell, *Troubled Partnership: A History of U.S.-Japan Collaboration on the FS-X Fighter* (Santa Monica: RAND Corporation, 1995), 61-62.

¹¹⁷ When Southern Saharan POLISARIO guerrillas attacked Mauritanian iron-ore exports beginning in early 1977 and took expatriate French workers prisoner, France responded by dispatching ten Jaguars to Dakar, Senegal. Late in the year, on 18 December 1977, the Jaguars surprised a POLISARIO column of 25 to 30 all-terrain vehicles, armed with 12.7 mm machine guns and 20 mm cannons. Despite intense anti-aircraft fire, the Jaguars obliterated three-quarters of the POLISARIO column, leading to a temporary cessation of POLISARIO attacks and the rapid liberation of French hostages.

When POLISARIO sought to renew its offensive in May 1978, six French Jaguars methodically destroyed the column with conventional bombs and cannon-fire in two distinct series of low-level attacks. Although the subsequent overthrow of the Mauritanian government by military officers brought French Air Force operations against POLISARIO rebels to a halt, the Jaguar had already proven that it was remarkably well designed for its intended role.

The Jaguar's next combat missions were flown over Chad in 1978, when the aircraft helped detachments of Foreign Legionnaires and Marine infantry prevent larger rebel forces from taking the capital of N'Djamena. Tactically, Jaguar raids overwhelmed poorly equipped rebels, reportedly killing more than 200 in a single attack near Djadda. Between 1983 and 1987, French Jaguars returned to Chad where they were regularly employed against both Libyan backed insurgents and the Libyan armed forces. Throughout these operations, the Jaguars confirmed their suitability for a wide-range of attack missions. They successfully interdicted Libyan supply columns, attacked armored columns and even struck the Libyan airbase at Ouadi-Doum on two occasions. SHAT 3 K 4 Entretien avec le Général Guy Méry, November 1996; and Mark Lorell, *Airpower in Peripheral Conflict: The French Experience in Africa* (Santa Monica: RAND Corporation, 1989), 27-29.

¹¹⁸ Jean-Pierre Otelli, *Pilotes dans la tourmente: Secret défense* (Levallois-Perret, France: Altipresse, 2005), 38-39.

¹¹⁹ The Chief of Staff of the French Air Force, General Fleury, stated that, “The speed was a bit feeble with respect to the enemy air defenses, but the aircraft could not do better with the jet engines they had.” Fleury, 290.

¹²⁰ One Jaguar was hit by a SAM-7 man-portable surface-to-air missile, which destroyed the right jet motor. One Jaguar had its hydraulically powered flight controls cut by a 23mm cannon round. The pilot of a third Jaguar was hit in the head by a Kalashnikov assault rifle bullet, but survived because the bullet glanced off his skull. Fleury, 290-91.

¹²¹ Otelli, 42.

¹²² Two of the aircraft, 16.5 percent, were beyond repair and one pilot suffered a bullet wound to the head and was hospitalized; 33 percent of the aircraft that participated in the Al Jaber mission was damaged.

The overall commander of French Forces in Saudi Arabia, General Michel Roquejoffre, and the Chief of Staff of the French Armed Force (CEMA), General Maurice Schmitt, both suggested ceasing French participation in the allied air offensive. Instead, the French Air Force ordered its Jaguars to change tactics, delivering bombs from comparatively safe altitudes above 5,000 m (15,000 ft), where man-portable surface-to-air missiles and small-caliber anti-aircraft guns cannot reach. Suspending air operations would have been politically delicate, so Fleury and General Lartigau, the commander of French tactical aviation, decided to raise the height of Jaguar missions to 5,000m. See Fleury, 290-93; and Etienne de Durand and Bastien Ironelle, *Strategie aérienne comparée: France, Etats-Unis, Royaume-Uni* (Paris: C2SD, 2006), 143.

¹²³ Normally, the aerodynamic requirements for low altitude penetration and maneuvering in air combat are diametrically opposed. Low altitude penetration requires wings to be swept as far back as possible (70 degrees) to maximize speed and minimize an aircraft’s response to gusts of wind. Contrarily, air combat requires moderate sweep (45 degrees), which is needed for an aircraft to be able to turn rapidly at the low-supersonic, high-subsonic speeds where most air combat occurs. Variable geometry wings can, in theory, permit aircraft to obtain optimal performance in both domains by modifying the sweep of their wings.

Barnes Wallis developed the concept of variable geometry wings while working for Vickers, which became part of BAC. Thus, when the TSR.2 project was launched BAC engineers considered equipping the TSR.2 with variable geometry wings, but the company's management rejected the idea as adding the excessively complicated engineering task to an already revolutionary aircraft.

The British shared variable geometry technology with the United States because of bilateral accords for sharing certain defense-related technologies. John Stack, the head of the Mutual Weapons Development Program, visited BAC’s research center at

Weybridge, while Wallis and a British team presented their findings to NASA. After the Americans became interested in variable geometry wings and adopted them for the F-111 (TFX), the British RAF mimicked them. In the words of a 1976 RAF study, “*Any future projects which are multi role in nature or where a reasonably wide range of performance parameters are required, the best solution will be to adopt variable sweep [my italics].*” Charles Gardner, 209-11; Robert Art, *The TFX Decision: McNamara and the Military* (Boston: Little, Brown, 1968), 20-23; PRO DSIR 23/41952 D.E. Shaw, *Swing Wing Performance (Multi-Role Combat Aircraft)*, June 30, 1976;. PRO AIR 20/10576 ASR 343 – *Historic Diary*.

¹²⁴ Assuming that Soviet air defenses had improved in effectiveness in the previous 11 years since the TSR.2 requirement, the RAF fixed a lower altitude for the MRCA. The new requirement demanded the aircraft to be capable of approaching enemy targets at 100 ft (30 m) rather than the 200 ft (61 m) mandated for TSR.2. The Tornado’s low-altitude requirement has not been published or declassified. However, numerous first hand accounts by Tornado pilots and British commanders have cited the figure of 100 ft (30 m). Peter de la Billiere, *Storm Command : A Personal Account of the Gulf War* (London: HarperCollins, 1992) 213.

¹²⁵ Between 1969 and 1973, the anticipated cost of developing the MRCA’s avionics rose by 70 percent, despite the fact that British companies were prime contractors for six out of the ten avionics contracts. PRO CAB 148/130 Defence and Oversea Policy Committee, *The Multi-Role Combat Aircraft – Review of Progress*, March 1, 1973.

¹²⁶ Italy’s primary concerns with the MRCA were financial. While Italy intended to purchase 11 percent of the MRCAs produced, it demanded 15 percent of the aircraft’s production work. Italy also required that the United Kingdom reimburse its expenditures if the project collapsed in the first 12 months. The British government ultimately agreed to the first but not the second of these demands. The Italians also, in collaboration with the West Germans, pushed for the aircraft to be equipped with an American radar, which would presumably be more economic than a British radar.

It was politically controversial for West Germany to build a long-range ground-attack aircraft that could be construed as an offensive weapon, rather than the defensive lightweight fighter originally planned by the F-104 replacement cartel. In a November 1970 meeting between the British Minister of Defense and West German Chancellor Helmut Schmidt, Schmidt warned the British that there was a significant “risk of political controversy about the aircraft in Germany” because of the country’s Second World War legacy, which meant that “the term ‘strike aircraft’, for example, had only one [offensive] connotation.”

West German leaders pushed the United Kingdom to purchase an American-designed radar to reduce development expenses. In the same November 1970 meeting, Schmidt also warned that, “The technical risks [of the MRCA] should not be underestimated.” PRO PREM 15/1374 *Record of Discussion Between Lord Carrington and Herr Schmidt in London on Thursday, 19th November, 1970*, November 20, 1970;

and PRO PREM 15/1374 Solly Zuckerman to Prime Minister, *The Multi-Role Combat Aircraft*, July 8, 1970.

¹²⁷ The West German government was adamant that German firms develop the center section of the MRCA's fuselage, which contained the aircraft's complex variable geometry pivot. Calculating that variable geometry was a critical technology, the Germans desperately wanted to develop the expertise needed for future variable geometry programs. Unfortunately, West German companies had no experience whatsoever with variable geometry, whereas BAC and, before it, Vickers had been developing the technology since the mid-1940s. However, the logic of apportioning critical development contracts to companies in the same proportion that their governments contributed to the costs of the program—known as “fair return”—led to the contract for the center fuselage and the variable geometry wing pivot being awarded to Messerschmidt-Bölkow-Blohm (MBB). The wing pivot took longer to develop and ended up more expensive than originally anticipated. Lorell and Lowell, 14.

¹²⁸ Not surprisingly, MRCA costs exceeded expectations, ran behind schedule and had trouble meeting its performance objectives. As early as July 1971, the MRCA partners judged that aircraft's performance would be “somewhat lower than envisaged” but “still acceptable to all three air forces.” By May 1973, British records demonstrate that the MRCA's development costs had already risen by 15 percent, while the aircraft's projected entry into service was now two years later than originally anticipated. PRO CAB 148/130 Defence and Oversea Policy Committee, *The Multi-Role Combat Aircraft – Review of Progress*, March 1, 1973.

¹²⁹ The defense budget crisis of the early 1980s was the product of a number of factors. The Tornado project was over-budget and six years behind schedule, which meant that its financial costs had to be paid during fiscal years different from those originally planned. Meanwhile, the government's project to modernize its submarine launched Polaris missiles, entitled Chevaline, and consumed £1 billion in development funds during the 1970s. However, problems with the Chevaline's development led to its cancellation and a British decision in 1980 to purchase American Trident missiles at a projected cost of £5 billion. Meanwhile, the Navy's aircraft carrier program was moving ahead, with *Invincible* in service, *Illustrious* virtually complete, and *Ark Royal* under construction. Despite real increases in the defense spending of three percent annually, the Ministry of Defense failed to keep within budget beginning in 1979. Michael Dockrill, 106-121; and Warren Chin, *British Weapons Acquisition Policy and the Futility of Reform* (Aldershot, the United Kingdom: Ashgate, 2004), 72-73.

¹³⁰ One technical argument between the RAF and the Navy was whether the RAF's intended Tornado ADVs could shoot down Soviet maritime reconnaissance aircraft shadowing Navy ships in the North Sea and the so-called Greenland-Iceland-United Kingdom Gap. The Navy argued that only its new aircraft carriers, equipped with Sea Harriers, had the flexibility to carry out this mission, while the RAF argued that Tornado ADVs could fulfill the same role better. Besides arguments over capabilities,

the debates of 1979 to 1981 also involved questions of equity. The principal RAF position was that Trident was a Navy weapon and that the £5 billion to pay for its acquisition should come from other Navy programs. The Navy argued that Trident was a national program to sustain the United Kingdom's independent nuclear deterrent. Therefore funds for its acquisition should have come equally from economy measures imposed on all three services. Interview with Admiral Henry Leach.

¹³¹ Under Nott's guidance, the Ministry of Defense heavily cut the Royal Navy. Bill Jackson and Dwin Bramall, *The Chiefs: The Story of the United Kingdom Chiefs of Staff* (London: Brassey's 1992), 396.

¹³² Although some of the cuts to the Navy were reversed after the Falklands War, the RAF had clearly won the 1981 battle.

¹³³ One figure, cited by the British government in a recent parliamentary debate, claimed that the Tornado's development cost to the United Kingdom was £7 billion. However, it was not stated explicitly whether this figure was stated in £ sterling from the year development began (1969), deliveries began (1980) or the statement was made (2007). Given inflation, it is difficult to judge how much the Tornado's actual development budget exceeded its planned budget. House of Commons, Hansard Debates, Dr. Fox, Column 1071, April 26, 2007.

¹³⁴ The aircraft embodied all of the principal qualities the RAF had demanded 25 years earlier in a Canberra replacement; with its variable geometry wings and attached high light devices, the Tornado could take off from shorter runways than any supersonic combat aircraft in the same class, including the F-111. The published figures for Tornado and F-111 take off distances are respectively 3,550 ft and 3,000 ft.

The Tornado's terrain-following avionics permitted the aircraft to approach targets at lower altitudes and higher speeds than any comparable system, permitting precision bombing attacks in all weather conditions. From the standpoint of operating from short dispersed or damaged runways and penetrating enemy air defenses at high speeds and low altitudes, the Tornado remained in a category of its own. The United States' McDonnell Douglas F-15E was the first American aircraft with terrain following avionics comparable to the Tornado's. However, the F-15E did not enter service until 1988, six years after the Tornado. The F-15E also remained confined to comparatively long runways, rather than the short fields the Tornado could use.

¹³⁵ The weapon was also one of the most expensive conventional munitions ever developed. The JP233 cost more than £1 million/unit, compared to \$1.2 million for the American Tomahawk cruise missile. House of Commons, Hansard Debates, Henry Cohen (Leyton), May 2, 1991.

¹³⁶ House of Commons, Hansard Debates, Tom King (Minister of Defense), Column 106, January 21, 1991.

¹³⁷ House of Commons, Commons Written Answers, Archie Hamilton, Column 166, March 20, 1991.

¹³⁸ “The Gulf War Campaign Diary,” Royal Air Force, www.raf.mod.uk/gulf (last consulted August 1, 2007).

¹³⁹ Actual speeds for both the Tornado and Jaguar frequently fall short of specified speeds. In this case, the actual speed of a Tornado conducting its attack mission is drawn from the memoirs of flight lieutenants John Peters and John Nichol, who were shot down over Iraq on 17 January 1991. John Peters and John Nichol, *Tornado Down* (London: Penguin, 1998), xvii-xviii.

¹⁴⁰ Six Tornados were shot down between 16 and 22 January 1991.

¹⁴¹ The JP233 bomblets produced small “scabs” in Iraqi runways rather than large fissures. One analyst estimated that Iraqis repaired their runways within four and six hours. General Peter de la Billière cites a slightly longer 48 hours. Historically, damaged runways have been repaired comparatively rapidly. For example, during the 1973 Arab-Israeli War, Arab repair teams restored damaged runways after an average of nine to twelve hours. Faced with the mounting evidence that Tornado anti-runway attacks were not immobilizing Iraqi air operations, the British Ministry of Defense prevaricated, stating that “RAF Tornado GR1s... were used to disrupt and harass Iraqi air operations rather than to close Iraqi airfields. House of Commons, Commons Written Answers, Archie Hamilton, Column 50, April 25, 1991; Christopher Centner, “Ignorance is Risk: The Big Lesson from Desert Storm Air Base Attacks,” *Airpower Journal* (Winter 1992), www.airpower.maxwell.af.mil/airchronicles (last consulted August 1, 2007); and de la Billière, 208-230.

¹⁴² By the time tactics were changed, the Tornado force had flown 148 sorties, with an attrition rate of four percent. “The Gulf War Campaign Diary,” Royal Air Force, www.raf.mod.uk/gulf (last consulted August 1, 2007).

The attrition rate per JP233 sortie was two only percent, since each Tornado carried two JP233s. Taylor implies that Tornados carried two JP233s apiece during the Gulf War. Bill Taylor, *Royal Air Force Germany Since 1945* (Hinckley, the United Kingdom: Midland, 2003), 162-64.

While the Tornado’s overall attrition rate of four percent per sortie was higher than the attrition rates suffered by other coalition aircraft, it was not excessive by historic standards. During the 1973 Arab-Israeli War, Israeli attrition rates varied between two and four percent, the United States suffered an attrition rate of two percent during its attacks on North Vietnamese targets in the Red River Delta in 1967 and again during Operation Linebacker in December 1972, and the Argentines suffered 10 percent attrition during the 1982 Falklands War. Targets in the Red River Delta were the most heavily defended in North Vietnam. Wayne Thompson, *To Hanoi and Back: The United States Air Force and North Vietnam, 1966-1973* (Honolulu: University Press of the Pacific, 2000), 143, 305-12.

¹⁴³ According to RAF Air Marshal Patrick Hine, then commander of NATO's 2nd Allied Tactical Air Force, "We... need to attack the enemy's main offensive air fields. Unless we were effective in greatly reducing the number of offensive sorties the enemy can launch, we would find it increasingly difficult to keep the enemy air force off our own back and provide direct support for the land battle." Imperial War Museum Oral History Archive, 16197, Field Marshal Nigel Bagnall and Air Marshal Patrick Hine, "Concepts of Land-Air Operations in the Central Region: A British Perspective," May 23, 1984.

¹⁴⁴ Each of these large Iraqi airbases (some covering 5,000 acres) was ringed by significant air defenses. Centner.

¹⁴⁵ One intelligence report listed 65 permanent airfields and 112 dispersal fields. This 1969 intelligence report was completed the same year that the MRCA Memorandum of Understanding was signed. According to British intelligence, "The normal deployment appears to be 6 guns per TAF [Tactical Air Force] airfield.... All Soviet TAF airfields in E. Germany and Poland have an associated SA 3 (surface-to-air missile) site, usually sited on the high ground to the West of the airfield." PRO DSIR 23/28528 Squadron Leader I.A.N. Worby, *The Main Options Open to the Warsaw Pact Air Forces in Conventional Operations in Central Europe in 1970*, July 23, 1969.

¹⁴⁶ Because of its sophistication, the Tornado was expensive to design and produce, significantly more so than many contemporary combat aircraft, such as the F-16C, Mirage 2000, and F/A-18C. The Tornado was estimated to cost £25 million (\$38 million) in 1993, the F-16C \$18 million, the Mirage 2000 \$27 million, and the F/A-18C \$18 million. House of Commons, Hansard Debates, Mr. Aitken, June 17, 1993; and Yolande Simon, *Prospects for the French Fighter Industry in a Post-Cold War Environment: Is the Future More than a Mirage?* (Santa Monica: RAND Dissertation, 1993), 63.

¹⁴⁷ Because of the complex engineering involved in permitting an aircraft's wing to pivot, variable geometry aircraft were maintenance intensive. In the United States, the variable geometry F-111 and F-14 was amongst the least mechanically reliable American aircraft, being unavailable for combat missions 46.7 percent of the time. Costs were estimated to be £10.4 million/year for the Tornado and £5.5 million for the Jaguar, while it cost the RAF 37 percent more per year to operate a Tornado squadron than a Jaguar squadron. House of Commons, Commons Written Answers, October 12, 2004; House of Commons, Commons Written Answers, January 20, 1993; and Joshua Epstein, *Measuring Military Power: The Soviet Air Threat to Europe* (Princeton: Princeton University, 1984), 28.

¹⁴⁸ The Saudi decision to purchase the Tornado is revelatory of the difficulty of selling an aircraft of its type. Because Saudi Arabia is one of the few states with the raw financial resources to purchase an aircraft of the Tornado's class, British Aerospace

(which BAC became after its merger with Hawker-Siddeley), and Prime Minister Margaret Thatcher both viewed the sale of Tornados to Saudi Arabia as a strategic priority. Both industry and the British government attempted to see the Tornado to the Saudis beginning in early 1984.

When the Saudi government appeared to favor purchasing cheaper French Mirage 2000s the following autumn, the highest levels of British government intervened. Defense Minister Michael Heseltine rushed to Saudi Arabia to urge the Saudi government against buying a French aircraft. Prime Minister Thatcher herself began negotiating with Prince Bandar, son of Saudi Defense Minister Prince Sultan. Thatcher later visited Saudi Arabia's King Fouad to push the Tornado deal.

By mistake, the United Kingdom's National Archives released documents relating to the 1985 Al Yamamah arms deal under a freedom of information act. Although the National Archives later withdrew the documents, a non-profit organization had copied them by that time. The *Guardian* newspaper has published the documents on line, as a complement to an article published by the paper. R.C. Mottram, *Briefing for the Prime Minister's Meeting with Prince Sultan*, September 25, 1985, image.guardian.co.uk/sys-files/Politics/2006/10/25/PJ5_39BriefforThatcherSept85.pdf (last consulted August 2, 2007).

The British sales effort overwhelmed the French, where not a single cabinet member visited Saudi Arabia on behalf of the Dassault sales effort. According to General Pierrick Boquet, a member of the French military mission in Saudi Arabia, "Thatcher couldn't travel anywhere in the world without stopping in Riyadh to say hello to King Fouad and explain to him that the British aircraft were the best and she eventually succeeded in selling him her aircraft." SHAT 3 K 81 Entretien avec Général Pierrick Boquet.

¹⁴⁹ British Aerospace was required to provide language training to Saudi officers, who then received their flight training in the United Kingdom. To cap the deal, British Aerospace agreed to accept payment for the Tornado sale in the form of crude oil. The Saudis were particularly nervous about the supply of spare parts for the Tornado. The issue was one of the first raised by Prince Sultan in his meeting with Minister of Defense Heseltine prior to the signing of the contract for the sale. It is unclear what form British guarantees took. R.C. Mottman, *Note for the Record of a Meeting with his Royal Highness Prince Sultan Bin Abdulaziz al Saud at 1130 on Thursday 26th September*, September 26, 1985, image.guardian.co.uk/sys-files/Politics/2006/10/25/JJ5_39HeseltinemeetsSultanSep1985.pdf (last consulted August 2, 2007).

¹⁵⁰ "Une erreur 'yamamesque'," October 28, 2006, www.defensa.org (last consulted August 3, 2007).

¹⁵¹ In her memoirs, Thatcher recalls attempting to sell Tornados and tanks to Saudi Arabia, Hawk Trainer aircraft to the UAE and Tornados to Oman in a 1981 diplomatic tour of the Persian Gulf. By her own admission, Thatcher capitalized on the United Kingdom's historic presence in the Middle East, its maintenance of a patrol of

three frigates in the region beginning in 1980 and her personal diplomacy as the United Kingdom's Prime Minister to sell arms to states in the Persian Gulf. According to Thatcher, "Our old defence links reinforced our commercial interest. Some British aeroplanes and tanks were eminently suitable for this area.... The pattern of the visit [to Saudi Arabia, Oman and the UAE], combining diplomacy, commerce and private discussion would be repeated on many occasions in the years ahead." Margaret Thatcher, *The Downing Street Years* (London: HarperCollins, 1993), 163-64. Thatcher and British Aerospace drew on the United Kingdom's privileged relations with Oman, which had already purchased Jaguars, to convince the Sultanate to order Tornados. Swayed by British pressure, the Sultan Qaboos of Oman announced his intention to purchase Tornados in 1985, however the expense of the aircraft and a drop in oil prices led him cancel his order in 1989. The Oman sale was considered final enough that British Aerospace included it in a 1985 promotional brochure for the aircraft. The brochure highlighted the Tornado's performance at the United States Strategic Air Command's Bombing and Navigation Competition. While courting Oman, Thatcher also attempted to sell eight Tornados to Jordan, where she repeatedly raised the issue with King Hussein. House of Commons, Commons Written Answers, Margaret Thatcher, Column 691, March 23, 1989. See British Aerospace, *Tornado Wins Again* (promotional brochure), 1985, www.tornado-data.com/History/Pressreleases/tornado_wins_again.htm (last consulted August 3, 2007); House of Commons, Commons Written Answers, Mr. Sainsbury, Column 586, June 30, 1989.

¹⁵² The British government sent four Tornado ADVs on a 66-day world tour to demonstrate its capabilities. The March 1990 dispatch of Tornados to Malaysia was for the ostensible purpose of participating in joint exercises with the air forces of Malaysia, Singapore, New Zealand and Australia. However, marketing the Tornado to these states was the principal reason for the deployment. House of Commons, Commons Written Answers, Archie Hamilton, Column 254, June 27, 1990. Jon Lake and Mike Crutch, *Tornado Multi-Role Combat Aircraft* (Hickley, the United Kingdom: Midland, 2000), 77; and British Aerospace and Rolls Royce, *Tornado ADV, Exercise Golden Eagle: World Tour 1988*, 1988 www.tornado-data.com/History/Pressreleases/operation_golden_eagle.htm (last consulted August 3, 2007).

¹⁵³ It was calculated that a missile-armed variable geometry BVR fighter plane, at low sweep angles (25 degrees), would have the fundamental advantage over conventional aircraft of being able to maintain longer combat air patrols. At maximum sweep angles (68 degrees), the aircraft would achieve bi-sonic speeds to either intercept or escape an enemy aircraft. Meanwhile, intermediary sweep angles would permit the aircraft to maneuver efficiently at various speeds. In a dogfight, it was anticipated that the flexibility provided by variable geometry wings would give the Tornado ADV an edge over enemy fighters because the Tornado could change its wing configuration to exploit an adversary's performance deficiencies. Many of the RAF's beliefs about the utility of variable geometry wings for a dedicated fighter followed superpower thinking along

similar lines, with both the United States and Soviet Union working on variable wing fighters.

According to a 1976 document, “Many design teams concluded that if the size and weight [of a multi-role aircraft] were going to be kept reasonably low then the optimum solution was a configuration with a swing [variable geometry] wing. From the growing number of in-service swing wing projects it appears that a growing number of customers also regard the swing wing as the best solution [the documents lists fighters such as the F-14 and MiG-23, and bombers such as the Su-17, F-111 and Tu-22M].” PRO DSIR 23/41952 D.E. Shaw, *Swing Wing Performance (Multi-Role Combat Aircraft)*, June 30, 1976.

¹⁵⁴ Because the complex mechanisms, pivots, the wing box and servo motors used to join a variable geometry wing to an aircraft’s fuselage, the planes are vulnerable to forces imposed by tight high-speed turns. Pilots of variable geometry aircraft are frequently obliged to avoid even some turns that the wing planform would otherwise permit. The wing pivots and the servo-motors required to move a wing added significantly to the weight of variable geometry aircraft, giving them a lower thrust-to-weight ratio than conventional fighters of a similar size. Because the thrust-to-weight ratio of an aircraft is critical to its ability to maneuver vertically, the comparative disadvantage variable geometry aircraft suffer in this aspect negatively effects their ability to engage in air-to-air combat. While a low thrust-to-weight ratio hinders vertical maneuvers, the aircraft’s wing planform handicaps the Tornado ADV’s ability to maneuver horizontally. In common with all variable geometry aircraft, the Tornado ADV’s wings are comparatively narrow. When coupled with the aircraft’s heavy weight, narrow wings generate a high level of wing loading (the surface area of the wing divided by the mass of the aircraft). This, in turn, prevents variable geometry aircraft from turning as tightly as aircraft with conventional wings. The United States F-14 partially compensates for this by the design of the aircraft’s fuselage. Because the F-14’s comparatively broad fuselage assists the wing in providing lift for the aircraft, the aircraft’s functional wing loading is 44 percent lower (54 lbs/ft² rather than 97 lbs/ft²) than the standard wing loading equation would yield. The Tornado’s narrower fuselage did not provide a similar advantage in turn capability. See Robert Shaw, *Fighter Combat: Tactics and Maneuvering* (Annapolis: Naval Institute Press, 1985), 139-42; Ray Whitford, *Fundamentals of Fighter Design* (Ramsbury, Marlborough: Crowood, 2000), 18, 33, 92.

¹⁵⁵ The poor reliability of radar guided missiles, the lack of BVR engagements and the prevalence of dog fighting led the United States Air Force to emphasize maneuverability in its requirements for the F-15 and F-16 fighters. It had a kill rate of 8.9 percent. During Operation Rolling Thunder (1965-1968), only 8.9 percent of the radar guided Sparrow missiles fired hit their targets. None of these engagements were BVR. Because of the large number of “friendly” aircraft in the skies and deficiencies in identification friend/foe (IFF) technologies, the United States Air Force required its pilots to visually identify opposing aircraft before firing on them. Finally, in dogfights expensive and sophisticated F-4 Phantom IIs had trouble in dogfights with MiG-21s and,

even, MiG-17s. See James Stevenson, *The Pentagon Paradox: The Development of the F-18 Hornet* (Annapolis: Naval Institute Press, 1993).

¹⁵⁶ Shortly thereafter, an RAF study on the characteristics most important for a future fighter emphasized that, “The aerodynamic performance of the aircraft will be the key to its performance as an air combat fighter.... It seems most likely that a combination of high thrust to weight and low wing loading will provide the most economical method of achieving the desired performance.” PRO DEFE 72/52 D.J. Harper, *EPG Ad Hoc Group on Tactical Combat Aircraft*, June 26, 1976.

Although the air staff target was not ostensibly related to the Tornado ADV, the RAF was actively hoping to replace the ADV with an American aircraft, such as the F-16. By emphasizing performance characteristics similar to the F-15 and F-16, but quite removed from the ADV, the RAF hoped to further its case for one of the American aircraft. PRO DEFE 72/52 *Air Staff Target No. 403 For an Offensive Support Aircraft to Replace Harrier and Jaguar*, April 29, 1976

¹⁵⁷ Field Marshal Michael Carver, who served as the United Kingdom’s Chief of Defense Staff between 1973 and 1976, recalls, “There were... grave doubts about the air force’s commitment to the air defence version of the Tornado, in which very large sums were involved over a long period. This fighter version of the MRCA was required only for the RAF... it was intended to replace the ageing and unsuitable Lightnings as well as the American-made Phantoms. The problem was that its performance was little better than that of the Phantom.... My deputy who dealt with these matters, Air Marshal Michael Giddings, a man of rigid, puritanical devotion to his profession, was a convinced opponent and a firm supporter of choosing an American aircraft.” Michael Carver, *Out of Step: The Memoirs of Field Marshal Michael Carver* (London: Hutchinson, 1989), 472.

¹⁵⁸ At a meeting of the Ministry of Defense’s Equipment Policy Committee, the RAF’s chief technical officer, Air Chief Marshal Douglas Lowe, argued the F-16’s merits. According to Lowe, the fact that four European states (Belgium, the Netherlands, Norway and Denmark) had already ordered the F-16 meant that importing the American aircraft “was in a sense the most European solution of all.” Lowe also argued “that the F16 was reputedly half the MRCA [Tornado] cost” and was available so that “we could pick it up anytime in the next 4/5 years.” In a final oblique blow to the Tornado ADV, Lowe stated that the program had been launched without sufficient knowledge of what direction the Americans were going to take in the development of their own fighter aircraft. PRO DEFE 72/52 Ministry of Defence, Defence Equipment Policy Committee, *Minutes of a Meeting Held Wednesday, 9 June 1976 at 2.30 pm*, June 9, 1976.

¹⁵⁹ According to Carver, “Extracting a coherent policy on air defence from the air staff [RAF] proved a tough, prolonged and frustrating process.” Carver, *Out of Step: The Memoirs of Field Marshal Lord Carver*.

¹⁶⁰ The Ministry of Industry responded to Lowe’s desire to purchase F-16s by stating that, “an ultimate decision to buy F16 would be very difficult industrially.” The

Foreign Office likewise preferred European collaboration to the purchase of a foreign aircraft and feared the consequences should the United Kingdom abandon a program it had invested so much diplomatic capital in launching. PRO DEFE 72/52 Ministry of Defence, Defence Equipment Policy Committee, *Minutes of a Meeting Held Wednesday, 9 June 1976 at 2.30 pm*, June 9, 1976.

¹⁶¹ Carver, 473.

¹⁶² For the Fox Hunter radar, which was being designed for the Tornado ADV, it was decided to develop a pulse doppler system operating at extremely high pulse repetition frequencies (PRF). Although better than earlier monopulse radars, the Fox Hunter's high PRF and low data processing capabilities were not ideal for medium range BVR combat and lagged technologically behind the radar being developed in the United States for the F-15.

To accompany the Fox Hunter radar, the United Kingdom began developing the Skyflash missile in 1969. Because the Tornado ADV was originally supposed to enter service in 1981, the RAF decided not to equip the aircraft with an active (fire and forget) radar-guided missile, such as the United States' AIM-120 AMRAAM. The AIM-120 or an equivalent British active radar guided missile would only be available years after the Tornado ADV was slated to enter service. The RAF decided to develop the Skyflash as a variant of the semi-automatic radar-guided United States AIM-7 Sparrow missile. Only later did the RAF plan to acquire an active radar-guided variant of the Skyflash, provisionally referred to as Skyflash 2.

A semi-active radar-guided missile (sometimes referred to as semi-active radar homing or SAHR) involves the attacking aircraft's radar illuminating the target throughout the engagement and the missile homing in on the reflected radar energy. For this reason, the attacking aircraft must remain pointed in the general direction of the target throughout the engagement and the target is likely to learn that it is under attack when it detects the attacking aircraft's radar. Active radar guided missiles are launched in the general direction of an enemy aircraft that has been detected. They fly unguided, directed by an inertial navigation system, until they are within range of the missile's own radar. Then the missile will "go active" and maneuver to hit the enemy aircraft. Although the attacking aircraft only has to detect the enemy target briefly in order use an active radar-guided missile, the probability of hitting the target increases if the attacking aircraft occasionally paints the target with brief sweeps of radar. Whitford, 123.

¹⁶³ The RAF decided to develop the Skyflash as a variant of the semi-automatic radar-guided United States AIM-7 Sparrow missile. Only later did the RAF plan to acquire an active radar-guided variant of the Skyflash, provisionally referred to as Skyflash 2. The Skyflash missile rose by 37 percent to develop (£173 million versus £126 million) and was ready to enter service two years later than expected. The Skyflash was largely developed for the Tornado ADV, however its development costs were not included in the ADV's overall costs because Skyflash could also be used by the United Kingdom's F-4 Phantom IIs. Originally, Skyflash was intended to enter operational service with the F-4s in 1977 and then serve with Tornado ADVs once the latter entered

service in 1981. Ultimately, Skyflash were not introduced until 1979, but the Tornado ADV (F3) was not in service until 1987.

Early into the design process, it proved necessary to add four feet to the airframe forward of the wing box, to provide enough space to attach the aircraft's four radar-guided air-to-air missiles, a modification that increased the cost of the ADV by over 50 percent. The cost of the ADV was an anticipated £100 million by 1973. Ultimately, only 80 percent of the airframe remained identical between the Tornado and the Tornado ADV. Because of costs and delays of developing Skyflash, its active radar-guided successor (Skyflash 2) was cancelled at this stage. Even though the Tornado ADV airframe and Skyflash missile were both more expensive than anticipated, the Fox Hunter radar proved the most troublesome aspect of the Tornado ADV. PRO PREM 15/1374 Burke Trend (Cabinet Secretary) to Prime Minister, *The Multi-Role Combat Aircraft (MRCA)*, March 6, 1973; PRO CAB 148/130 Defence and Overseas Policy Committee, *The Multi-Role Combat Aircraft – Review of Progress*, March 1, 1973; PRO PREM 15/1374 Burke Trend (Cabinet Secretary) to Prime Minister, *The Multi-Role Combat Aircraft (MRCA)*, March 6, 1973; Chin, 220; Lake and Crutch, 44.

¹⁶⁴ Lake and Crutch, 44.

¹⁶⁵ The “Blue Circle” designation was initially applied to the original ADVs supplied with ballast in place of the radar. The RAF seems to have continued referring to the inadequate radars that began to equip ADVs in 1985 by the same mocking term. Lake and Crutch, 43; and House of Commons, Hansard Debates, Public Accounts Committee, John Wilkinson, October 17, 1991.

¹⁶⁶ House of Commons, Hansard Debates, Public Accounts Committee, John Wilkinson, October 17, 1991.

¹⁶⁷ The Tornado F2s were used as conversion aircraft to train pilots before the combat ready Tornado F3s were received. However, the F2s were considered so inadequate that it was decided to stockpile them rather than attempt to upgrade them to F3 standard. Lake and Crutch, 43-44.

¹⁶⁸ Because of ongoing problems with the radar, the annual cost of sustaining a Tornado ADV squadron was one-third more than a ground-attack Tornado squadron, and nearly two times as much as a Jaguar squadron. These are figures from 1993, which list the running costs of a Tornado F3 squadron as £35.6 million, compared to £26.7 million for a Tornado GR.1 (ground attack) squadron, £19.7 million for a Buccaneer squadron and £19.4 million for a Jaguar squadron. House of Commons, Commons Written Answers, Column 306, January 20, 1993.

¹⁶⁹ The comparative costs of combat aircraft are always difficult to determine with exactitude. A 1992 German study on the costs of combat aircraft listed the cost of the Tornado ADV as DM 122 million, versus DM 123 million for the F-15F. Chin, 171.

¹⁷⁰ A manual on designing fighter aircraft written by Ray Whitford, Senior Lecturer at the British Royal Military College of Science, lists the Tornado F3 as possessing the worst combination of thrust-to-weight ratio and wing loading of any fighter aircraft. According to ADV weapons system officer John Nichol, “Most fighters are... very agile aircraft—the American F-15s and F-16s and the Russian MiG-29 Fulcrums are incredibly agile—but the Tornado is not.... The Tornado is incredibly fast at low level, but it is not a good aircraft in which to be dogfighting or ‘turning and burning’ against other fighters. Take it above 5,000 feet and it is at a disadvantage because it is based on a low-level bomber.” Whitford, 201; and John Peters and John Nichol, *Team Tornado: Life on a Front-Line Squadron* (London: Signet, 1994), 191.

¹⁷¹ Tactics include using the aircraft’s Skyflash missiles at maximum range, before an enemy fighter can fire its own missiles, and when an enemy’s targeting radar illuminates the Tornado F3 before the latter can fire its missiles, turning and accelerating away as quickly as possible in the hope of escaping beyond the range of enemy radar or missiles. This phenomenon was described by Nichol: “The instant we get a firing solution [from the radar], we start to launch missiles, even knowing that if he turns away from us the missile will be wasted.... If we are locked-on by a radar before we have our missiles in the air, we have to turn away to defeat a possible missile shot, holding that course for about ten seconds and then turning back in. As we press back in, we are looking for our RHWR – our radar warning – to be clean.... There is absolutely no point in pressing on into a fight... if he is firing missiles and we have none in the air, because we are going to die before we even clap eyes on him.... Even if there is an enemy missile in the air, if we have launched our own ten seconds earlier it would defeat his missile shot, because if his aircraft disintegrates, his radar is no longer locked-on to us.” The Tornado F3s best hope of survival in air-to-air combat is to remain at long range, beginning attack passes from fifteen to twenty miles away, launching missiles once in range, and running away once missiles have hit a target or if the enemy aircraft’s targeting radar illuminates the Tornado before its missiles have been fired. Tornado F3 crews refer to these rather tactics for exchanging missile shots as the “rolling fight.” *Ibid.*, 192.

¹⁷² The Fox Hunter radar/Skyflash missile combination does not permit the Tornado F3 to engage enemy aircraft from appreciably longer ranges than the F-4 Phantom II / Sparrow combination that it eventually replaced. A crucial variable that is unknown is the relative kill-probability of the different missile systems. During the Vietnam War, the Sparrow (AIM-7D and E) achieved a kill rate of 8.9 percent. By the 1991 Gulf War, the improved AIM-7M Sparrow accounted for 72 percent of Iraqi aircraft downed, with 71 missiles having been fired. As the Skyflash has never been fired in anger, no comparative data exists for its kill probability. Whitcomb, 198; and Carver, 472.

¹⁷³ This included including the American AIM-120 AMRAAM and the Soviet R-77 “Amraamski” and R-37.

¹⁷⁴ In exceptional circumstances, the Tornado F3 can engage two targets at once, but they must remain comparatively close together throughout the flight time of the missiles, so that the Fox Hunter can continuously illuminate both of them. Lake and Crutch, 41.

¹⁷⁵ Tornado pilot John Peters described the situation: “AMRAAMs... are awful news for us, because they are ‘fire and forget’ missiles. With an AMRAAM we may only get a momentary warning, a brief blip on the screen when the enemy aircraft acquires us. The blip will disappear from the screen again, and we may think that we are safe. The first warning that the missile is in the air might be when it blows us to pieces.” Nichol and Peters, *Team Tornado: Life on a Front-Line Squadron*, 175-76.

¹⁷⁶ According to Tornado pilot John Peters’ experience, “it takes two Tornados to fight one F-15” despite the fact that the Tornado F3 costs as much as an F-15C and was introduced ten years after the American fighter. Nichol described Tornado F3 tactics for engaging F-15s in the book he jointly wrote with Peters. According to Nichol, “Our tactics consisted of trying to confuse the Americans’ radar picture so that they could not ‘sort’ us or decipher the way we were flying. It involved quite a bit of planning by the air defence leader, because in confusing the Americans’ radar picture, we were also doing a pretty good job of confusing our own. We were running in, turning back, descending, running back in, going up – getting all sixteen aircraft going forward and turning back.... We were hoping to get a few aircraft a bit further forward each time, until we were close enough to use our own missiles.” *Ibid.*, 194, 220.

¹⁷⁷ Publicly, the RAF claimed that the aircraft were confined to Saudi Arabia because their identification friend/foe systems were not compatible with the United States Air Force’s systems. At typical combat speeds, without afterburners lit, two fighters approaching each other at 480 knots (890 km/h) take approximately 30 seconds to cover 18 km (11 miles). Under these circumstances, a pilot may have as little as two seconds between the time that he can visually confirm that the opposing aircraft is an enemy and the time when the aircraft have passed. In general, this is too little time for a missile to arm and be fired. Under these circumstances, a dogfight is almost inevitable, because both aircraft will have to turn and maneuver to get on one another’s tail, in order to fire short-range infrared guided missile. Thus, if BVR kills are prohibited, there is a high likelihood that an air-to-air engagement will end in a dogfight. Lake and Crutch, 88.

¹⁷⁸ In both of these cases, the presence of enemy fighter aircraft and the necessity to confirm the identity of an aircraft before firing on it may have led to this otherwise non-deployment of Tornado F3s. Coalition aircraft achieved BVR kills during the Kosovo campaign. At the very least, the victory of the Dutch F-16 over the Serbian MiG-29 on the opening night of the war was achieved with an AMRAAM fired without a visual contact. *Ibid.*, 137-38.

¹⁷⁹ Serbia possessed fighter aircraft, including 24 MiG-29s. Peters admitted with respect to the MiG-29 that “we [Tornado pilots] were scared stiff of them.” However,

Serbia was not officially a party to the Bosnia War and its fighters did not intervene over Bosnia. Lake and Church, 116-17; and Nichol and Peters, *Team Tornado: Life on a Front-Line Squadron*, 212-13.

¹⁸⁰ Compared to most other fighter aircraft in production, including the American F-16 and F-18 and the Mirage 2000, the Tornado ADV was significantly more expensive, less capable in a dogfight and had no secondary ground-attack capability. And the one fighter in the same price range as the Tornado ADV, the American F-15, was more capable in every form of air combat. Initially British Aerospace attempted to compensate for the limitations of the aircraft through shrewd marketing. In fact, Tornado ADV marketing began long before the aircraft entered service, with a 1978 approach to Canada in which British Aerospace offered substantial industrial participation in the ADV. Even compared to other British combat aircraft, 14 percent exports was a historic low for the period stretching from 1960 to 2000. Lake and Crutch, 77.

¹⁸¹ When the Eurofighter program suffered from repeated delays, the United Kingdom leased 24 Tornado F3s to Italy to replace the latter country's F-104 Starfighters, which had exceeded their useful service lives. The contract signed between the United Kingdom and Italy in 1994 was for a five-year no-cost lease. The Tornados provided were aircraft withdrawn from British service as part of the RAF's post-Cold War cutbacks. The Italians paid to have them brought up to the latest British standard and purchased 96 Skyflash missiles to accompany them. Although the United Kingdom was willing to renew the Tornado F3 lease when the Eurofighter suffered from further delays, the Italian Air Force instead accepted a similar offer for American F-16s. Like their British counterparts, Italian Tornado F3s were not used in Serbian airspace during the Kosovo conflict. *Ibid.*, 55-56.

¹⁸² In a sense, the RAF fell victim to its willingness to gamble on an unproven technology. Although the Americans and Soviets were both developing variable geometry fighters at the time the RAF launched the ADV program in 1971, no variable geometry fighter was yet in service and the RAF did not appreciate its limitations. Only three variable geometry fighter aircraft have ever been built. Of these, the MiG-23 was the first to enter service. Series production of the first combat capable model of the MiG-23, the MiG-23M, began in 1972. However, air combat evaluations carried out with the pre-operational MiG-23S in 1970 revealed the aircraft's lack of maneuverability. In simulated air combat, the earlier MiG-21 and the small and economic American F-5 outmaneuvered the MiG-23. Eventually, specialized tactics were developed for the MiG-23. In a somewhat similar fashion to the Tornado ADV, the MiG-23 is limited to a single tactic for most air combat situations. The basic tactic of the MiG-23 is to dive towards opponents from high altitudes and fire its semi-active radar guided missile. If the missile misses or other enemy aircraft are in the sky, the MiG-23 must continue accelerating as rapidly as possible in the hope of escaping at low altitude. Like the ADV, the MiG-23 cannot turn. Although the MiG-23's shortcomings were gradually understood by the Soviets from 1970 onwards, the RAF was understandably not informed. Unlike the MiG-23 or Tornado ADV, the United States Navy's F-14 is a dogfighter and uses the

configuration of its fuselage to provide the lift and horizontal turning capability lacking in the other two aircraft. However, the F-14 has a low-thrust to weight ratio. See Gordon and Dexter, 19-71.

¹⁸³ Lake and Crutch, 58.

¹⁸⁴ France's postwar aircraft industry either built British aircraft under license or equipped new French designs with British jet engines; the Vampire and Ouragan and Mystere IV, respectively. Switzerland and the United States manufactured British military aircraft under license, while a host of European, Middle Eastern, South American and Asian states vied to purchase British warplanes. Even the United Kingdom's Cold War opponent, the Soviet Union, reverse engineered the Rolls-Royce Nene motor when it needed a jet engine powerful enough to propel the new MiG-15 fighter.

¹⁸⁵ Bill Gunston, *L'aviation militaire d'aujourd'hui* (Paris: Elsevier, 1979), 78-79.

¹⁸⁶ Also contributing to its decline was a failure of dedicated civil aviation programs and competition from American producers.

¹⁸⁷ This list includes aircraft that entered service after 1960 and before the end of the Cold War (1989). As such, it does not include the Hawker Hunter, whose production largely occurred during the 1950s, although the assembly line remained open until 1966. Neither does it include the EDF 2000 Eurofighter, which was developed from the 1970s onwards, but did not enter operational service until after 2000. For collaborative programs, such as the Jaguar and ground-attack Tornado, all export sales are credited to the United Kingdom, which negotiated the sales, even though only half the Jaguar's content, and a little less of the Tornado's, was produced in the United Kingdom. Jaguar exports are not included in the French totals, either for exports or total production. In terms of total production, the numbers cited for collaborative programs are RAF acquired aircraft plus export orders. However, it must be kept in mind that the United Kingdom *did not independently* manufacture 402 Tornados for RAF service, *but 42.5 percent of the components* incorporated in the 900 ground-attack Tornados acquired by Italy, West Germany and the United Kingdom. Likewise, the United Kingdom did not produce 200 Jaguars, but 50 percent of the content of the 400 Jaguars acquired by France and the United Kingdom. Naval aircraft are not included in this list, but would not change it appreciably, as production runs were shorter and export clients less numerous (one for both France and the United Kingdom). The Harrier II, which was essentially an American program, which the United Kingdom only joined as a partner at a comparatively late stage, is also not included. The eight states that purchased British combat aircraft during this period were—Saudi Arabia, Kuwait, Oman, Ecuador, Nigeria, the United States, Spain and India. Three of the eight states that purchased British aircraft during this period—Kuwait, Ecuador and Spain—also acquired French aircraft. Tornado F1 production figures are from: Alexandre Vautravers, "Manœuvres

internationales: un arrière goût de guerre froide,” *Revue Militaire Suisse* (July 2007) www.revuemilitairesuisse.ch/node/255 (last consulted August 3, 2007).

¹⁸⁸ Bereft of export orders on the same scale as those enjoyed by France, the United Kingdom’s aircraft industry produced only half as many combat aircraft as its French equivalent. Roughly speaking, the British and French aircraft industries produced equivalent numbers of aircraft for their national air forces. French industry produced the 2,841 aircraft listed in the table, plus the 200 Jaguars not included, for reasons discussed in the previous footnote. Subtracting the export orders (1,717) from this total, one arrives at a figure of the French producing 1,314 aircraft for national use. For the United Kingdom, subtracting exports from total production yields a figure of 1,175 aircraft delivered to the RAF by industry.

¹⁸⁹ The English Electric Lightning’s staggered turbojet engines gave the aircraft a phenomenal climb rate, not exceeded by other production aircraft until the late 1970s. In the Harrier, the United Kingdom introduced the world’s first production vertical take-off aircraft, which remained the best in its category for nearly two decades. Finally, the Tornado featured groundbreaking terrain-following avionics and a complex variable geometry wing.

¹⁹⁰ Although it could climb faster and was equipped with a better radar and missile system, the English Electric lightning was twice as heavy as the Mirage IIIC and correspondingly more expensive. The Lightning was difficult to maintain and could not be used in the ground attack role. The Hawker-Siddeley Harrier was novel in its introduction of VTOL technology, but the aircraft was complex; in United States Marine Corps service, it suffered from an accident rate twice as high as any contemporary American combat aircraft. In a conventional role, the Harrier’s performance was limited by the aircraft’s subsonic speed, mediocre endurance and lack of radar. In peacetime service, the Harrier’s loss rate averaged 25 aircraft per 90,000 flight hours and 50 aircraft per 213,000 flight hours. This compares unfavorably with contemporary American aircraft. For example, the F-15 suffered 4 losses per 90,000 hours and 15 losses per 213,000 hours. The F-16 suffered 10 losses per 90,000 hours and 30 losses per 213,000 hours. This meant that the Harrier suffered three times as many accidents as the F-15 and two-thirds more than the F-16 for every 213,000 hours flown. Dennis Jenkins, *Boeing/BAe Harrier* (North Branch, Minnesota: Specialty Press, 1998), 4.

¹⁹¹ Eventually, the United States Marine Corps and the Spanish Navy acquired the Harrier for very specific reasons. The Marines intended to use it for amphibious warfare, transferring Harriers from ships to rustic bases ashore, while the Spanish acquired the Harrier because it was the only jet aircraft capable of operating off the country’s small aircraft carrier, the *Principe d’Asturias*. International demand for VTOL aircraft grew slightly in the 1980s, driven by the spread of VTOL-capable aircraft carriers. When India purchased the ex-Royal Navy aircraft carrier *Hermes*, it acquired Sea Harriers to go along with it. When Italy and Thailand acquired small VTOL aircraft carriers, they also acquired VTOL aircraft—the McDonnell Douglas Harrier II. Spain and the United States

Marines also replaced their Harrier Is with the McDonnell Douglas Harrier II. So far, the RAF is the only military service to acquire VTOL aircraft without intending to fly them from VTOL aircraft carriers. All of the other states to acquire VTOL aircraft—the United States, the Soviet Union, Italy, India, Thailand and Spain—did so with the intention of flying them from warships.

¹⁹² The Soviet Union's rival Yak-38 did not receive a single export order. The Yak-38 was a much less capable aircraft than the Harrier and largely viewed as a technical failure. For example, when deployed to the Indian Ocean, the Yak-38 experienced trouble taking off in hot weather and had its operation radius restricted to a mere 40 nm (75 km). The Yak-38 equipped the Soviet Navy's four Kiev-class aircraft carriers. Although the Yak-38 was superficially similar to the Harrier, it was hardly a commercial competitor because the Soviet Union made no effort to export it. See John Fricker and Piotr Butowski, *Yakovlev's V/STOL Fighters: The Full Story of Russia's Rivals to the Harrier* (Leicester, the United Kingdom: Aerofax, 1995), 15-26.

¹⁹³ During the period in question, none of the aircraft produced in this category garnered significant export orders.

¹⁹⁴ France alone exported 1,771 lightweight fighters during this period.

¹⁹⁵ Sydney Camm, the Chief Engineer of Hawker-Siddeley and father of the Second World War Hurricane fighter, bombarded the RAF and Ministry of Supply with proposals (the P.1083, P.1090 and P.1121) to develop supersonic versions of the Hawker Hunter. Already a best-selling lightweight fighter of the late 1950s, Camm reasoned that the Hunter could be developed into a capable and economic supersonic fighter by equipping it with a thin-wing and a new jet engine. Camm was so committed to the last of his supersonic proposals—based loosely on the Hunter—that he convinced Hawker's board to develop the aircraft on company funds, even though the RAF did not support the project. Despite the success of the Hunter and Camm's reputation as an aircraft designer, the RAF was uninterested in sponsoring a supersonic lightweight fighter inheriting significant design elements from the Hunter. Butler, *British Secret Projects: Jet Fighters Since 1950*, 48-50, 89-92.

¹⁹⁶ One of the Hawker projects, the HS.1201, was specifically designed to provide a small, simple to maintain, lightweight fighter that would provide maximum value for limited cost. Although its airframe was highly conventional, the aircraft would be comparatively agile because of fly-by-wire flight controls. It would also be easy to service because its single motor would be mounted in a pod over the fuselage—a practice common in commercial aircraft but rare in warplanes. After the HS.1201, Hawker proposed building an aircraft superficially similar to the American F-16, labeled the HS.1202. Butler, *British Secret Projects: Jet Fighters Since 1950*, 143-48.

¹⁹⁷ The last British-produced lightweight fighter, the Hunter, was so commercially successful that Hawker-Siddeley Aviation was obliged to open an entirely new factory,

with 5,500 employees, to satisfy export demand. The opening of this aircraft factory was a unique occurrence in a country where the long-term trend of the aircraft industry's labor force was one of gradual decline. Bramson, 192-93.

¹⁹⁸ The requirement closely approximated the specifications of the contemporary Franco-German Alpha Jet, the Italian Aermacchi MB.339 and the Czech L.39. RAF Air Vice-Marshal Giddings characterized the Franco-German requirement as "slightly less demanding than, but broadly consistent with our own requirement." The United Kingdom considered either joining the Franco-German project or launching a joint venture with Italy. However, British aircraft manufacturers pleaded with the RAF: "given the necessary R&D support, it [Hawker-Siddeley or BAC] could produce an aircraft that will not only meet our draft [Air Staff Requirement] more nearly than the Franco-German trainer, but would be a superior product, with competitive potential in the export field." PRO AIR 2/18602 Air Vice-Marshal K.C.M. Giddings, *Franco German Trainer*, February 26, 1970; PRO AIR 2/18602 ACAS to Air Attaché Rome, n.d.; PRO AIR 2/18602 ACAS (OR), *Military Trainers*, April 1970.

¹⁹⁹ Figures for the Czechoslovakian L-39 account for only aircraft exported outside of the Communist world. Exports within the Communist bloc were not competitive and were rarely paid for in cash. Counting exports to communist states, 2,810 aircraft were exported, of which 2,081 were delivered to the Soviet Union. Of the aircraft listed, only the Hawk and M.339 are still in production. *L-39 Vycvikovy L-39.cz/L-39_uzivatele.html* (last consulted August 8, 2007); Dassault Aviation, *Alphajet* www.dassault-aviation.com/fr/passion/avions/dassault-militaires/alphajet.html (last consulted August 8, 2007); Aermacchi, MB.339 www.aermacchi.it/MB339.htm (last consulted August 8, 2007); and *The BAE Hawk* www.vectorsite.net/avhawk.html (last consulted August 8, 2007).

²⁰⁰ These were the SOKO Galeb and Yastreb.

²⁰¹ Hooker, 199-204.

²⁰² In 1972, the British government hoped to sell China 200 Harriers and the license to produce the Rolls-Royce Adour jet engine. At the time, Chinese relations with the United States were still tense as a result of the Vietnam War and the United States' continued non-recognition of China. The Sino-Soviet Conflict likewise meant that the Chinese could not acquire aircraft from the Soviet Union. In its internal debate on the sale of Harriers to China, the United Kingdom's Defense and Oversea Policy Committee concluded that, "The sale of Harrier would significantly strengthen the aerospace industry of the United Kingdom at a time when we are planning the first moves towards an integrated European aircraft industry." However, the British government agreed that it would not export Harriers to China if the United States objected too vigorously. PRO CAB 148/122 Cabinet Defence and Oversea Policy Committee, *Aircraft Sales to China*, December 11, 1972.

²⁰³ Although these sales to China were never concluded, the United Kingdom sold China the license to produce its most recent and powerful military jet engine—the Rolls-Royce Spey 202—in December 1975. The Spey 202 powered the United Kingdom’s imported F-4 Phantom II jet fighters and was proposed for the British version of the Mirage IV. The Chinese license agreement for the Spey was signed on 13 December 1975. Rolls Royce helped China establish its Spey factory in Xian and the first production engine was tested in 1979. However, changing policy led to the precipitate abandonment of Spey production in China. Hooker, 218-19.

²⁰⁴ House of Commons, *Select Committee on Defence, Foreign Affairs, International Development and Trade And Industry – Third, Second, Third, Fourth Reports*, February 2, 2000.

²⁰⁵ Robert Gardner; and Charles Gardner.

²⁰⁶ For example, the successive TSR.2, AFVG, UKVG and Tornado programs forced BAC to concentrated intellectual and financial efforts over 30 years to understanding aerodynamic phenomena and developing technologies specifically adapted to developing combat aircraft required by the RAF but irrelevant to building economic commercial aircraft.

²⁰⁷ Sydney Camm, chief engineer at Hawker and creator of the Harrier, complained that his design bureau was housed in an “inverted lavatory block.” Alan Bramson, *Pure Luck: The Authorized Biography of Sir Thomas Sopwith, 1888-1989* (Wellingborough, the United Kingdom: PSL, 1990), 199; and Robert Perry, *A Dassault Dossier: Aircraft Acquisition in France* (Santa Monica: RAND Corporation, 1973), 3-4.

²⁰⁸ Mary Kaldor, *The Baroque Arsenal* (London: Abacus, 1983).

²⁰⁹ Despite American advocacy of this alternative approach, the RAF remained convinced of the merits of its own approach. According to Field Marshal Michael Carver, “We mistrusted [the American] concept as leading to too highly centralized a system, which would not respond to the demands of... battle.... We believed in, and had put all our money into, very low flying techniques, relying more on pilot initiative than intimate control.” Carver, 443.

²¹⁰ In 1970, interdepartmental studies conducted under the auspices of the Ministry of Defense’s Chief Science Advisor “cast doubts on the feasibility, in any likely European operational environment of the seventies and eighties, of an aircraft, even with the low-level performance of the MRCA [Tornado], ever being able to attack defended targets with conventional weapons.” PRO PREM 15/1374 Solly Zuckerman to Prime Minister, *The Multi-Role Combat Aircraft*, July 8, 1970.

²¹¹ In a 1974 analysis of the future Warsaw Pact offensive air threat in Central Europe, RAF Squadron Leader D.J. Cutting calculated that the low-altitude surface-to-air missiles and concrete aircraft shelters then entering service with NATO would render a Warsaw Pact air offensive against NATO airfields excessively costly for the coming decade. According to Cutting, “It is currently estimated that [Warsaw Pact] aircraft losses to such point defenses [low-altitude surface to air missiles] would be as great or greater than the damage/losses inflicted on the target.... The high losses and low effectiveness of the very first raid would force the Soviet air commanders to rethink, and probably abandon, deep penetration, conventional-weapon, raids into 2ATAF [NATO’s 2nd Allied Tactical Air Force, which contained RAF Germany] rear areas.” PRO DEFE 48/574 Squadron Leader D.J. Cutting, *Critique of Warsaw Pact Air Attack Options to the Study of Air Defence Fighter Effectiveness in 1985*, July 4, 1974.

²¹² Ibid.

²¹³ Cutting’s analysis on the prospects of the Warsaw Pact air offensive comes to conclusions similar to the most detailed non-classified study on the subject—Joshua Epstein’s *Measuring Military Power: The Soviet Air Threat to Europe*. Published in 1984, Epstein’s analysis was that “Soviet Frontal Aviation falls short of the Phase I [attacks on airfields and NATO command-and-control] success criterion, and each of its less demanding alternates, by a *very wide margin* [italics in original].” Interestingly, Cutting’s analysis was written in 1974 and attempted to predict enemy effectiveness for a period ending in 1985. Having been published in 1984, Epstein’s analysis largely validated Cutting’s projections into the future. See Epstein, 174-75; and PRO DEFE 48/574 Squadron Leader D.J. Cutting, *Critique of Warsaw Pact Air Attack Options to the Study of Air Defence Fighter Effectiveness in 1985*, July 4, 1974.

²¹⁴ There is evidence that the RAF’s leadership began to rethink its doctrine of attacking enemy airfields as the Cold War was coming to a close. In a 1984 statement about an eventual air battle over Europe, Air Marshal Patrick Hine, who commanded the 2nd ATAF in West Germany and later became the RAF’s Chief of Staff, emphasized both air-to-air combat and counter-air operations as a means of breaking a Warsaw Pact air offensive. He commented:

We must, in my view strive to give any aggressor a bloody nose in his first swipe at us. His pilots will lack combat experience. They will be nervous and they will be flying over unfamiliar terrain on difficult missions. If we can inflict high attrition on his first one or two massive waves, then we may be able to gain the psychological upper hand. So I need to put up the strongest possible resistance to those initial attacks. . . . Many of our offensive air craft also have an air defense capability and it would in my judgment make sense to use them in this capacity, especially as we could not expect to get political clearance for offensive operations the other side of the inner German border before a major aggression against NATO had been identified. The more aircraft we can put up against him in his first

one or two attacks against us, than the less damage is likely to be inflicted on NATO airfields and our ability to mount offensive sorties against him and provide direct support for the army.

Only after the first Warsaw Pact air attacks had been blunted in the air would offensive counter-air operations become necessary. Unfortunately, the RAF's force structure was overwhelmingly oriented towards the latter mission. In 1985, the RAF counted only 20 fighter aircraft in West Germany, compared to 72 ground-attack Tornados. Ironically, whereas the French Air Force repeatedly requested costly strike aircraft, but received mostly lightweight fighters, the RAF decided that it needed greater air-to-air capabilities after it had received the sophisticated strike aircraft it had long desired. See Imperial War Museum Oral History Archive, 16197, Field Marshal Nigel Bagnall and Air Marshal Patrick Hine, "Concepts of Land-Air Operations in the Central Region: A British Perspective," May 23, 1984; and Taylor, 203.

Chapter VII:

French Military Interventions

I. Introduction

There is no domain where armed forces prize autonomy more and political leaders have greater motivation to interfere than the conduct of military operations. Most military officers hold the normative ideal that political leaders should decide when to employ force, but delegate the achievement of their objectives to military professionals. In military eyes, the “inexperienced meddling” and “piecemeal gradualism” of politicians cost lives and compromise the chances of victory.

Political decision-makers see things differently and rarely grant the military an entirely free hand. Military operations, even minor ones, have foreign and domestic policy ramifications. Calling-up reservists, mobilizing economic resources and employing disproportionate force can alienate domestic and international opinion, harming the state’s overall position. Moreover, militarily expedient acts, such as “hot pursuit” of rebels across borders, “rough interrogation” of prisoners and bombing military targets in civilian agglomerations can have prejudicial political effects out of all proportion to their tactical benefits.

During the Cold War, France intervened continuously in regional conflicts. In each case, civil military interactions weighed on: 1) the decision to intervene; 2) the nature of the intervention agreed upon; and 3) the selection and autonomy of field commanders.

Research indicates that the degree of military influence on interventions has a tangible impact on how force is employed. Military professionals believe that overwhelming force should be employed, with few restrictions, to guarantee success. Objectives should be clear from the outset and political leaders should mobilize popular support before committing troops to an operation. Military professionals should be given the authority and overwhelming resources to destroy an adversary's armed forces.¹ Phrases such as “piecemeal gradualism,” “political meddling” and “hands tied” reflect military opinions of political restrictions on the use of force.

While soldiers favor clear objectives, the unrestricted use of force and operational autonomy, civilian leaders frequently prefer less categorical commitments. Whereas professional soldiers underline worse case scenarios and view military operations as an all-or-nothing effort to deprive an adversary of its ability to fight, political leaders emphasize the use of limited force to contribute to foreign policy objectives. Diplomatically, a military presence can reassure allies and bluff or deter adversaries.

While soldiers prefer maximizing the chances of military success by demanding overwhelming force, civilian leaders must take competing non-military factors into account. Political decision-makers are rarely willing to spend more economic or political capital on an intervention than is needed to obtain a high probability of success. As one scholar put it, the military prefers optimizing the chances of success through overwhelming force, while civilian leaders tend to “satisfice” by reducing commitments to the minimum level that still provides an acceptable likelihood of success.²

Civilian policymakers also balk at granting the armed forces operational autonomy, which may be abused to involve the state in unplanned military adventures.

During the 19th century, field commanders saddled governments with unwanted conquests, while, during the Cold War, political leaders feared that an overzealous military might provoke nuclear war. Tight civilian control of field commanders and active involvement in military planning are two means for civilian policymakers to moderate the dangers of escalatory or impulsive military behavior.

In short, civilian leaders employ military force to achieve limited diplomatic objectives and are prone to restrict the authority of field commanders, while military leaders oppose the use of force unless the objectives are clear, the means overwhelming and the military highly autonomous. Table I, below, illustrates the differences between military and civilian views on military operations.³

<u>Subject</u>	<u>Civilians</u>	<u>Military Commanders</u>
Quantity of Force	Minimum Force	Overwhelming Force
Objective	Change adversary's political calculations	Destroy enemy military capabilities
Domestic Politics	Minimize political capital required to intervene	Mobilization of public opinion in favor of commitment
Civil-Military Interactions	Political control	Operational autonomy

Because soldiers and civilians view military force differently, their relative influence shapes how a state conducts military operations.

Until the Fifth Republic, military leaders commanded the autonomy they so prize. Napoleon Bonaparte set an early example when he disregarded the government's war

plan in 1796 and negotiated the 1797 armistice of Campo Formio without consulting the foreign ministry. Later, throughout France's colonial expansion, ambitious field commanders seized territories and provoked minor wars without government approval. At the onset of the First World War, the French legislature suspended its debates and the cabinet granted the General Staff broad powers. After the Versailles Treaty, the army opposed limited interventions in the Rhineland (1935) or Spain (1936), arguing that France must fully mobilize to deter Italy or Germany. Most recently, under the Fourth Republic, military commanders in Algeria assumed control of basic state functions such as education and law enforcement. When civilian leaders attempted to negotiate Algeria's independence, field commanders brought the regime down.

Catapulted to power by a civil-military crisis, de Gaulle curbed the authority of the high command and field commanders. To circumscribe the high command's influence, de Gaulle broke its monopoly on military expertise. With the President's Private Military Staff, de Gaulle created a tool for advising the head of state on military affairs. Established in the same spirit as the Private Military Staff, the Secretary General of National Defense (SGDN) and minister's military cabinet play similar roles, granting the prime minister and minister of defense access to independent expertise.

Borrowing from practices dating back to the Third Republic, the minister of defense presides over the chiefs of staff committee, making it difficult for the service chiefs to sweep inter-service disputes under the table to confront politicians with a single set of recommendations. The outcome is a form of divide-and-rule whereby civilians exploit divisions within the military.

Working closely with a larger number of officers, politicians have better information and more choice when it comes selecting officers to occupy the state's foremost commands. The president generally nominates the chief of staff of the armed forces from amongst his service chiefs or the chief of his private military staff. Other officers are also promoted for their ability to collaborate with political superiors.

Between parallel military staffs, political supervision of the chiefs of staff committee and the ability of civilian leaders to appoint military commanders, political leaders command multiple assessments of whether and how to conduct a military intervention.

Rather than delegating the pro-consular authority that Joffre exercised on the Western Front, Lyautey in Morocco or de Lattre in Indochina, the Fifth Republic's political leaders circumscribe the autonomy of field commanders. One way of accomplishing this has been strengthening other government agencies, such as the foreign ministry, intelligence services and the president's Africa-cell, to play a greater role in overseas interventions.

Depending on the nature of the intervention, high-powered ambassadors, foreign ministry crisis cells and intelligence personnel have played significant roles during many military interventions. Political leaders have also taken advantage of new communications technologies to enhance their control of operations. Under the Pompidou administration, France invested heavily in the Center for Military Operations (Centre Opérationnelle des Armées), whose large staff and advanced communications facilities, located underneath the ministry of defense building, permit authorities in Paris to oversee military operations worldwide.⁴

Taken as an ensemble, reforms promulgated under the Fifth Republic strengthened the ability of civilian leaders to undertake and manage military interventions, while diminishing the authority of the military high command and field commanders. Given this balance of civil-military authority, one would expect interventions to be conducted according to civilian leaders' preferences--minimal force, tight civilian control and limited and potentially vague objectives.

The remainder of this chapter will test these hypotheses. Of France's many interventions, this chapter will examine three specific cases—Chad (1969-72), Mauritania (1978) and the Persian Gulf Crisis (1990-91). These cases were selected to control for as many extraneous factors as possible. Between them, they involved all of the Fifth Republic's Cold War presidents--from the notoriously interventionist Giscard to the hands-off Pompidou. They also represent the spectrum of French interventions, from one of its smallest (Mauritania) to its largest since 1956 (the Persian Gulf, 1990-91).

II. Chad, 1968-1972

The Fifth Republic's first significant military intervention confronted policymakers with formidable challenges. Conducting a counterinsurgency in a large, poor country typically poses military and civil-military problems. France accomplished its objectives in Chad by circumscribing military authority, entrusting the "hearts and minds" campaign to a civilian agency and empowering a diplomat to oversee both civilian and military aspects of the intervention, adjudicating the inevitable disputes between the two.

After the Algeria War, de Gaulle eschewed foreign conflicts. Instead, France focused on building a nuclear deterrent, reforming NATO, partnering with West Germany and pursuing détente with the Soviet Union. However, French leaders gradually came to view the political convulsions wracking post-colonial Africa as a threat. The rapid accession of Sub-Saharan colonies to independence in 1960 left France's colonial infrastructure intact and the new states without experience in self-government. French administrators and teachers, of which there were 10,367 in 1967, fulfilled the same roles as before independence, France continued to control the monetary policy of its former colonies. Not surprisingly, French businesses also dominated the economies of former colonies, leading de Gaulle to conclude that privileged relations with francophone Africa enhanced France's international influence.⁵ To cement its authority after decolonization, France concluded military assistance treaties with 11 of its former colonies.

Unfortunately, inter-ethnic and civil-military problems shook many of France's African allies beginning in the 1960s.⁶ After the overthrow of three francophone African leaders in 1963, de Gaulle feared that further political turmoil would undermine France's African sphere of influence. In 1964, Paris militarily reinstated Gabon's president, after the latter was overthrown by a coup d'état, but three francophone heads of state fell to coups d'états the following year.

The Chadian Civil War, which began in 1965, posed an even greater problem for France. With a southern Christian/Animist majority and a northern Muslim minority, which historically dominated and enslaved its southern neighbors, Chad was inherently unstable.⁷ When independence brought democracy, Chad's Christian/Animist majority

elected a southerner, François Tombalbaye, president. Fearful of traditional Muslim authorities, Tombalbaye stripped tribal chiefs of their power and, thereby, created an administrative void, leaving the government without representatives in villages.⁸ Combined with disastrous financial management and ethnic favoritism, this shortsighted policy drove Chadian Muslims to despair.⁹

In 1965, frustration gave way to rebellion. Villages revolted in central Chad and the traditional tribal leader (the “Derdeï,”) of the nomadic Toubous sought support in Libya.¹⁰ Faced with peasant uprisings, the Chadian Army responded with brutality and incompetence, inadvertently swelling rebel ranks.¹¹ Within two years, distinct rebel movements came into being. In the center and east of Chad, the Chadian National Liberation Front (FROLINAT) constituted the most dangerous movement because of its size and proximity to the capital of Fort Lamy. Meanwhile, the smaller Chadian Liberation Front (FLT) dominated two western provinces. Finally, the Toubous occupying Chad’s enormous northern deserts formed a third movement. Only southern Chad, home to Tombalbaye’s ethnic power-base, remained loyal to the government.

Chad’s small army proved incompetent. Although the rebels were badly armed—only one in three possessing a firearm—government forces numbering a mere 3,000 troops, for a country twice as large as France, never occupied much of Chad’s vast interior.¹² Unmotivated and abysmally trained, government forces also disintegrated whenever they faced opposition, however inferior in weaponry.¹³

Although Chad itself was one of France’s least valuable former colonies, francophone African leaders viewed it as a test for whether France would uphold its commitments to allies. In January 1968, Madagascar’s Philibert Tsiranana urged Prime

Minister Pompidou to support Tombalbaye.¹⁴ Meanwhile, Jacques Foccart, Secretary General for African Affairs, reported similar declarations from other francophone rulers. The issue came to a head on 25 August 1968, when Tombalbaye officially requested French military assistance to lift the rebel siege of Aozou in northern Chad.¹⁵

Tombalbaye's request divided the French government. While Foccart and Ambassador Fernand Wibaux supported military intervention, General Michel Fourquet opposed involvement in what he considered a militarily intractable problem.¹⁶ Meeting with de Gaulle on a daily basis, Foccart convinced de Gaulle to order a limited intervention to save Aozou. Without firing a shot, a company of French paratroops broke the blockade less than two weeks after Tombalbaye's request. Their mission accomplished, the French returned home.¹⁷ Unfortunately, the Chadian garrison at Aozou mutinied after the siege, abandoning their post and fleeing southwards. Military indiscipline emboldened the rebels and granted them what arms could not.¹⁸

Soon rebels controlled Chad's three northern provinces, encircling army units in their garrisons, and began lashing out at government forces in central and eastern Chad. In January 1969 rebels repulsed a government offensive, inflicting 80 casualties.¹⁹ Then, less than 400 kilometers from the capital, insurgents annihilated four platoons of gendarmes in March.²⁰ With these reverses, the Chadian army lost the initiative to rebels, who conducted 227 attacks in the first half of 1969.²¹

A protégé of Foccart, Ambassador Wibaux diagnosed Chad's problems as poor administration and Tombalbaye's disenfranchisement of northern chieftains. Wibaux argued that only French military force could create an environment conducive to administrative reforms, but that it would be vain to seek military victory over the rebels.

After meeting with Tombalbaye, Foccart rallied to Wibaux's point-of-view and urged de Gaulle to send military forces.²²

As before, the armed forces opposed intervention. General Louis Dio personally advised de Gaulle that France "should never set foot in Chad again."²³ For a trained military mind, Chad's rebellions were a nightmare. Rugged terrain and intractable ethnic and religious divisions meant that Chad's problems could not be solved by a conventional military victory.²⁴ After recent turmoil in France (May 1968), de Gaulle was also unwilling to mobilize domestic opinion or significant financial resources.²⁵

Despite military objections, de Gaulle decided to intervene in Chad on 18 March 1969.²⁶ While planning the intervention, French leaders privileged civil, rather than military objectives. They created two distinct bodies: 1) a military force (entitled the Military Delegation) to combat the rebellion and retrain the Chadian army and 2) a Mission for Administrative Reform (MRA) to reinvigorate Chad's civil administration. To coordinate the activities of these structures, France's ambassador, Wibaux, was given overall authority over both.²⁷

When it came to selecting a military commander, political imperatives, rather than military desiderata guided French leaders. France's most distinguished soldier, General Marcel Bigeard had been promised command of operations in Africa.²⁸ However, Bigeard was a media icon after heroics at Dien Bien Phu, victory in the battle of Algiers, and his portrayal, under a pseudonym, in recent films.²⁹ De Gaulle personally rejected Bigeard's appointment, arguing, "Bigeard would be very good, but his presence would be too visible to the world and international opinion would conclude that we are directing the repression [of the rebellion]."³⁰ Instead, de Gaulle insisted on a lower-ranking and

publicly unknown commander, Brigadier-General Arnaud, who was merely termed France's "military delegate" in Chad.³¹

For the vague mission of "creating the security necessary for administrative reforms," the French government committed the minimum forces judged necessary.³² Besides 1,000 personnel already in Africa, the government dispatched only 390 troops from France. Because of restrictions placed on using conscripts, General Arnaud initially controlled only two French infantry companies, which were clearly inadequate against an estimated 2,330 rebels.³³

Worse, Arnaud's Chadian allies were a liability. The southerners of the army responded to rebel attacks with arbitrary reprisals on villagers, leading the French to deduce that Chadian officers "were the initiators and remain the partisans of a racial and religious total war against Islam.... They would like to turn the north of the country into a gigantic desert."³⁴ The Chadian Army's animosity towards Muslim civilians was matched only by its military ineptitude, as demonstrated on the many occasions spear-wielding rebels routed Chadian soldiers.³⁵ As if the situation was no bad enough, the army threatened the country's civilian government, prompting Tombalbaye to create his own paramilitary guard and Arnaud to retain French forces for anti-coup duty.³⁶

Vicious vis-à-vis civilians, inept against rebels and menacing to civilian government, only significant reforms would permit the Chadian Army to play a positive role. Arnaud's judgment was categorical, "This army is worse than worthless. Its value is negative. By its unthinking, undisciplined and uncontrolled actions, it creates critical or disastrous situations."³⁷

Less than a month after arriving, Arnaud launched an offensive. On 24 April, two Foreign Legion companies advanced on the besieged city of Mangalme, in Guera province, where the rebellion had begun. Not accustomed to disciplined opponents, nearly 200 rebels attempted to ambush the legionnaires, but were routed on 29 April. After this first bloody lesson in French military power, the rebels avoided further engagements. The rebels adapted to French tactics by dispersing into smaller groups, of three to five combatants and retreating whenever threatened.³⁸ Although the French achieved a psychological victory at Mangalme, the rebellion remained intact.³⁹

Mangalme demonstrated the tactical dilemma of the Chadian War. French troops could vanquish rebels, but had great trouble bringing them to battle and lacked the numbers to occupy Chad's vast territory. Only Chadian forces and civil administration could produce durable results by holding and administering re-conquered areas.

Having judged the Chadian Army incompetent, Arnaud imposed a re-training program, attaching French officers to Chadian units, cycling units through a training program and creating a military academy to educate Chadian officers.⁴⁰ Meanwhile, Pierre Lami, the civilian head of the MRA, struggled to restore government administration in newly liberated areas. Having identified Tombalbaye's campaign against chieftains as the primary cause for disorder, Lami re-empowered local chieftains and helped them recruit private armies, called goums.⁴¹

Unfortunately, Arnaud and Lami soon clashed. Once restored to power, local chieftains proved vindictive and used their private armies to bully villagers. Many MRA backed administrators went further, arguing for a scorched earth policy against

populations judged disloyal.⁴² Arnaud sought to curb these excesses, while Lami dismissed such behavior as unavoidable.⁴³

The hostility between the Arnaud, Lami and the Chadian Army exploded in August. Pressed by his military commanders, Tombalbaye ordered the extermination of the 15,000 Arab inhabitants of Dekaker.⁴⁴ This order outraged Arnaud. To calm acrimonious shouting between Arnaud and Tombalbaye, Ambassador Wibaux advised Tombalbaye to reconsider his decision.⁴⁵ After this dispute, Wibaux felt that Arnaud could no longer work with either his French or Chadian counterparts.⁴⁶

Within two days, Defense Minister Michel Debré ordered the Chief of Staff of the Armed Forces to find a replacement for Arnaud.⁴⁷ This unexpected demand for Arnaud's removal incensed General Fourquet, who had supported his strategy and ordered a military fact-finding mission, which concluded in Arnaud's favor.⁴⁸ Despite military protests, the government persisted in removing Arnaud.

Because of the circumstances behind Arnaud's removal, many officers refused to take his place.⁴⁹ Eventually, the high command's choice settled on Brigadier-General Edouard Cortadellas, a veteran of Indochina and Algeria. Cortadellas was at the end of his military career, with further promotion (theoretically) out of the question and retirement looming in 18 months. Well known for frankness and persistence, the high command calculated that Cortadellas would stand-up to diplomats and politicians.⁵⁰ After approval by Defense Minister Michel Debré, Cortadellas assumed command on 26 September.

Notwithstanding his dismissal, France government acceded to Arnaud's demands for additional resources.⁵¹ France deployed two additional infantry companies to Chad .

and replaced the unusable conscripts in country with volunteers, increasing France's available infantry from two companies to seven and bringing its total forces to 2,851 personnel and 34 aircraft by the end of 1969.⁵²

Once in Chad, Cortadellas persevered with Wibaux's strategy. Geographically, while Chadian soldiers defended oases in northern Chad, the French would conduct an offensive in central and eastern Chad. When French forces cleansed a region of rebel bands, the Mission for Administrative Reform (MRA) would reinstall local chieftains and recruit village militias. After a region was pacified, French forces would re-deploy elsewhere, to continue to the offensive.⁵³ Once central and eastern Chad were under control, French and Chadian forces would shift northwards to fight the Toubou revolt.

Unlike his predecessor, Cortadellas worked closely with Wibaux and supported the ambassador's efforts to restore chieftains, empower civilian prefects and create local militias. He built a positive relationship with Tombalbaye and the Chadian Army.⁵⁴ To enact his strategy, Cortadellas demanded more forces. Judging a larger French military presence problematic, Wibaux proposed enlarging the Chadian Army, which would provide Cortadellas with troops at a lower political and economic cost.⁵⁵ Partially heeding Wibaux's advice, Cortadellas suggested expanding the Chadian Army from six to 15 companies (1,900 to 4,300 men), but still argued that he needed more French soldiers and helicopters to spearhead the counterinsurgency.⁵⁶

Cortadellas traveled to Paris in early December 1969 to argue his case. Because France's intervention comprised both military and civil components, Cortadellas was obliged to make his case before the Defense Minister (Debré), the Foreign Minister (Schumann), the Secretary of State for Cooperation (Bourges), the Armed Forces Chief

of Staff (Fourquet) and the Secretary General for African Affairs (Foccart).⁵⁷ Expressing dismay at Cortadellas' demands, the government approved his plan to expand the Chadian Army, but refused to deploy additional helicopters or French troops. While France's contribution to the Chadian Army would be costly, obliging France to finance 52 percent of the Chadian defense budget and detach more than three times as many French officers and non-commissioned officers (610 in total) to command the Chadian units, political leaders judged this course of action cheaper than sending French forces.⁵⁸

With the support he obtained, Cortadellas launched his dry season campaign in central and eastern Chad. Continuing in Arnaud's footsteps, Cortadellas cleansed Guera province in late 1969.⁵⁹ Thereafter, Cortadellas shifted his offensive to Chari Baguirmi province. Operating in the wake of military units, the MRA established seven village militias in Guera and eight in Chari-Baguirmi by February.⁶⁰

In January, Cortadellas shifted his offensive once again, to the provinces of Ouaddaï and Salamat, where decimated bands had sought refuge. Because the rebels avoided battle, Cortadellas fractioned his units into smaller, more mobile groupings of platoon size.⁶¹ Once again, Chadian garrisons, village militias and the private armies of the Sultans of Ouaddaï and Sila followed in the wake of regular French forces.⁶²

In parallel with Cortadellas' operations, Wibaux and Foccart conducted a diplomatic offensive. Since its inception, Chad's rebel movements lacked external material support, but diplomatic errors earned Tombalbaye the enmity of the leaders of the Central African Republic (CAR), Sudan and Libya. On 11 January 1970, Foccart reconciled Tombalbaye to Central Africa's Jean-Bedel Bokassa, precipitating the extradition of rebel sympathizers to Chad.⁶³ Likewise, French authorities orchestrated a

rapprochement between Tombalbaye and Sudanese dictator Nimeiri.⁶⁴ Reconciling Tombalbaye to Libya's Mohmar Khaddafi proved more difficult. Upon French advice, Chad distanced itself from Israel and recognized Libya's new regime after Khaddafi's September 1969 coup d'état, but Chado-Libyan relations remained tense.⁶⁵ Less successfully, Wibaux dialogued with Abbas-Siddick, the nominal leader of the FROLINAT rebel movement, and France's Ambassador in Tripoli negotiated with the Toubou Derdeï (traditional ruler).⁶⁶

Deprived of foreign support and hammered by Cortadellas' implacable offensive, the rebellion collapsed in central and eastern Chad. Aggressive operations of French platoons drove rebel units from population centers, permitting the installation of Chadian units and the creation of village militias, of which 60 existed by June 1970.⁶⁷ With Chadian units in major population centers, patrols scouting the countryside, and militias and gendarmerie detachments in loyal villages, rebel bands faced increasing problems. As soon as government forces detected rebel bands, the Franco-Chadian high command encircled them with airmobile French forces, horse mounted paramilitaries and motorized Chadian Army units converging from multiple directions.⁶⁸ Cut off from the peasantry and deprived of the occasional combatants who provided the bulk (84 to 90 percent) of rebel manpower, the rebellion withered.⁶⁹

While rebels still extorted aid from isolated villages, rebel bands were repulsed every time they approached villages protected by pro-government militias.⁷⁰ By July 1970, government authority was established in central and eastern Chad, and the frequency of rebel attacks dropped to peacetime levels.⁷¹

While France pacified central and eastern Chad, civil-military tensions resurfaced between the Military Delegation and Mission for Administrative Reform (MRA). Village militias and sultans' armies (goums), but General Cortadellas mistrusted the sultans and worried that the creation of the sultans' salaried armies would undermine the unpaid militias he considered essential.⁷² Failing to convince Lami to join Cortadellas in a joint civil-military general staff, Wibaux suggested dismissing Lami. In April 1970, after three months of argument and a fact-finding mission by the Minister of Cooperation, Paris replaced Lami with another civil servant, Martin Paillard.⁷³ With the change in personnel, control of militias and goums shifted from the civilian MRA to General Cortadellas.⁷⁴

Unfortunately, successes in central and eastern Chad were counterbalanced by problems in the north. Following Khaddafi's overthrow of Libya's King Idriss in September 1969, Khaddafi convinced 600 Toubou tribesmen of Idriss' guard to join their rebel kinsmen in northern Chad.⁷⁵ Armed with modern firearms and trained in small unit tactics, this new infusion of troops dramatically increased the combat potential of the 400 dissident tribesmen already at large.⁷⁶ Nomadic and warlike, the Toubous were superlative guerrillas in Chad's arid and mountainous wastes, prompting one Frenchman to conclude, "Whether European [French] or southern Chadian, all of the Military Delegation's forces are unsuited to a struggle against the Toubous, who are rustic, courageous, fluid and perfectly at ease in their rocky deserts and mountains."⁷⁷

Emboldened by the new arrivals, the Toubous launched a concerted offensive. In September 1970, rebels launched simultaneous attacks on four separate objectives--Fada, Zoui, Bedo and Zouar. The Toubou attacks miscarried at Zoui and Fada. However, they

obtained limited, but psychologically significant victories at Zouar and Bedo. In early September, rebels blockaded Zouar's garrison of two companies (one French, one Chadian) in the village's fort. With Toubous dominating its supply lines, the garrison would starve if a relief convoy did not break the blockade.⁷⁸

Other Toubous ambushed a French paratroop company, on 11 October, near the oasis of Bedo. Although the paratroops riposted, attacking the flanks of the ambush, the Toubous resisted skillfully. By nightfall, the Toubous killed 11 paratroops and wounded 16, in exchange for an estimated 70 Toubou casualties (25 bodies left behind).⁷⁹ After Zouar and Bedo, the Chadian companies garrisoning northern Chad hunkered down in ancient Turkish forts.⁸⁰

Arriving so soon after central and eastern Chad seemed pacified, these reverses shocked France's government. Rebel victories could embolden potential rebels elsewhere in Chad, while even minor casualties, such as those suffered at Bedo, could turn the French electorate against the war. Summarizing his fears, Cortadellas reported, "The situation is entirely new and extremely grave. I no longer possess either the numeric superiority, firepower advantage or mobility to deal with more than one trouble spot at a time.... I have lost the initiative and can only hope to react [to enemy initiatives]."⁸¹

Cortadellas set about the urgent task of breaking the siege of Zouar. He assembled all his reserves--three paratroop companies (two French, one Chadian), an armored car platoon and air support--into a relief column. Personally accompanying this force on its 1,000-kilometer drive north, Cortadellas surprised the Toubous on 22 October. Arriving with astounding speed (200 kilometers per day), the Franco-Chadian column routed the Toubous, killing 41 and capturing 2.⁸²

Demanding more helicopters, Cortadellas now planned to wage a mobile counteroffensive.⁸³ Faced with this demand for greater means and the prospect of heavier casualties, the French government met on 19 October. While the Secretary General for African Affairs (Foccart) and Defense Minister (Debré) supported Cortadellas plan to combine offensive operations with diplomatic negotiations, the Foreign Minister (Schumann) and Prime Minister (Chaban-Delmas) argued that France should withdraw from a conflict that was becoming an unpopular quagmire. After a long debate, President Pompidou opted for the offensive.⁸⁴

After two months of preparations, including the arrival of a flotilla of naval helicopters, the French launched their largest offensive, codenamed Bison, on 10 January 1971.⁸⁵ With 1,250 soldiers (900 French and 350 Chadian), 150 vehicles, 18 helicopters, all available armored cars, and eight aircraft, Cortadellas intended to crush the 500 rebels in Tibesti province.⁸⁶ Air-supplied Franco-Chadian mobile units--motorized and mounted--patrolled 3,500 kilometers of inhospitable roads for nearly three months. Meanwhile, airmobile paratroops systematically cordoned and searched the region's oases. Traveling light, without heavy weaponry, Franco-Chadian forces received support from attack aircraft and helicopter gunships.⁸⁷

Despite the means available, the Bison offensive failed because guerrillas fled contact. During the offensive's first phase the targeted rebel band (150 combatants) escaped detection. During the next phase, French forces located a group of 20 rebels, but suffered two dead and five casualties in their haste to come to grips with them.⁸⁸

After the first two phases of Operation Bison, the Toubou Derdeï asked to negotiate from his safe haven in Tripoli. Impatient to conclude a settlement, France's

Foreign Ministry called for a ceasefire. Eager to finish with the rebellion in the north, Cortadellas pleaded to continue operations, while Wibaux, reasoning that military pressure would hasten negotiations with the Toubous, also urged Bison's continuation.⁸⁹

Backing diplomats over their field commander, President Pompidou halted the Tibesti offensive on 12 February. Using this pause, the Toubous hid their arms and fled to the mountains.⁹⁰ Thereafter, the Derdeï broke off negotiations. Having been suckered by the Derdeï's ruse, French forces failed to locate either rebels or arms when they renewed their offensive. Of 500 rebels active in Tibesti province, the two-month Franco-Chadian offensive neutralized only 16. Although Cortadellas hoped to renew offensive operations, Operation Bison exhausted his men and emptied his supply depots.⁹¹

While political leaders deduced that it was militarily impossible to defeat the Toubous, military commanders blamed diplomats for interrupting a promising offensive before it yielded decisive results. Before Cortadellas could renew his stockpiles, the government withdrew the reinforcements it had sent for the Tibesti offensive, including the navy helicopter flotilla.⁹²

Possessing fewer means, French troops conducted their last offensive in northern Chad in June 1971. With modest forces, but valuable intelligence, a French company and Chadian platoon decimated the Toubou band that mounted the bloody Bedo ambush in October 1970.⁹³ After the Saharan summer abated, a massive Franco-Chadian convoy re-supplied the isolated garrisons of northern Chad.⁹⁴

Disappointed with the stalemate in northern Chad, Khaddafi schemed to reignite the rebellion in central and eastern Chad. By dispatching camel caravans of modern

weaponry via the Sudan, he hoped that the previously ill-equipped rebels in eastern Chad would surprise government forces and regain the initiative.

When FROLINAT rebels began infiltrating Chad from sanctuaries in the Sudan in February 1972, they found themselves operating in a hostile environment. The MRA's efforts--digging 146 village wells and building 21 schools--won the peasantry to the government's cause.⁹⁵ Confident in their militias, of which there were over 100, villages denied rebels food and guides.⁹⁶ Between 18 February and 9 March, French and Chadian forces detected and engaged all four rebel bands. In each case, rebel units fled after brief encounters. Once defeated, local militias slaughtered many bedraggled rebel survivors, while others, repelled from villages, died of thirst or starvation.⁹⁷ Encouraged by French diplomacy, Sudan's dictator Nimeiri ordered his army to massacre the few rebels (approximately 400 of 1,000) that escaped to his territory.⁹⁸ The Franco-Chadian victories of February and March, combined with the Sudanese attacks in April, destroyed the rebellion in central and eastern Chad.⁹⁹

French diplomacy profited from the rebel setbacks to orchestrate a reconciliation between Chad and Libya. With Niger's President Hamani Diori mediating, Tombalbaye and Khaddafi agreed, in April 1972, to restore diplomatic relations. After further negotiations, Libya abandoned Chad's rebels in exchange for Chad breaking diplomatic relations with Israel and ceding the disputed Aouzou Strip to Libya.¹⁰⁰

Having isolated Chad's rebels and crushed their forces in the Center and East, France ended its military intervention on 26 August 1972, before Socialists could exploit the government's unpopular intervention in Chad in France's upcoming legislative elections.¹⁰¹ Although the Toubous remained defiant in Chad's desolate north, France

accomplished its political objectives in Chad. The rebellion was vanquished in the Center and East, where it threatened Chad's government and economy. In the process, French forces inflicted 5,100 casualties on the rebellion in exchange for 39 French soldiers killed and 102 wounded. Chadian forces, meanwhile, suffered 629 casualties.¹⁰²

<u>Group</u>	<u>Killed</u>	<u>Wounded</u>	<u>Missing</u>	<u>Total</u>
French Forces	39	102		141
Chadian Forces	291	296	42	629
Total	330	398	42	770
Rebels	3,800	1,300		5,100

Rationing resources, the French government accomplished significant results for a minimal expenditure of lives and money.

France achieved tremendous economy of force, with its expeditionary force never exceeding 3,500 soldiers, thanks to the adroit coordination of military, diplomatic and administrative initiatives. Patient diplomacy permitted France to gradually end foreign support for the rebellion and sow discord between the Toubous in northern Chad and FROLINAT in the Center and East. Meanwhile, the creation of village militias, the restoration of local chieftains and the MRA's development activities progressively isolated rebel bands from the rural populations capable of housing and feeding them. Chadian military and paramilitary forces, which grew from 7,100 personnel in 1969 to 10,700 personnel in early 1972, guaranteed the security of government employees and

administrative facilities in pacified territories.¹⁰³ Finally, small French military forces, relying heavily on helicopter mobility, broke rebel offensives and prevented rebel groups from establishing a "liberated zone" within Chad.

Ambassador Wibaux played a critical role in synchronizing military, diplomatic and administrative initiatives. His authority over the Military Delegation and the Movement for Administrative Reform (MRA) permitted him to shape French strategy within Chad. When broader issues arose, such as the dispatch of additional reinforcements or diplomatic initiatives to third parties (Sudan, Libya, the Central African Republic and the Derdeï), the French cabinet decided matters at the cabinet level.

While France's subordination of co-equal civil and military authorities to a diplomat produced a flexible and integrated political-military campaign, the process frustrated both the military high command and the field commanders. Disregarded when it came to deciding whether to intervene, slighted in the selection of the field commander and overruled when Ambassador Wibaux wanted to dismiss the Military Delegate, the high command impotently observed the intervention from Paris. On the ground in Chad, French field commanders enjoyed more authority, but also suffered from more frequent disputes, outlined in Table III, with their civilian counterparts.

**Table III:
Civil-Military Disputes During Chadian Intervention (1968-72)**

Question	Contending Parties	Result
Decision to Intervene	Foccart (civilian) vs. Generals Fourquet and Dio	France Intervenes
Chadian atrocities (summer 1969)	Military Delegation vs. MRA (civilian)	Military delegate dismissed
Reinforcement Request (late-1969)	Military Delegation vs. Ambassador Wibaux	Compromise: Chadian Army enlarged but no new French troops or helicopters sent
Sultans' armies and village militias (early 1970)	Military Delegation vs. MRA	Military Delegation given control of militias, MRA's head (Lami) dismissed
Negotiations with Derdeï vs. continuing Bison offensive (February 1971)	Military Delegation and Ambassador Wibaux vs. Foreign Ministry	Offensive suspended

The most acerbic civil-military problem during the first year opposed successive opposed successive military commanders with the head of the Mission for Administrative Reform (MRA) over the control and behavior of militias and private armies. When matters became unmanageable, Wibaux recommended first the replacement of the Military Delegate (August 1969) and then the dismissal of the MRA's director (February 1970). With more tractable individuals heading both civil and military organizations, the MRA and Military Delegation collaborated fruitfully. Thereafter, civil-military disputes revolved around reinforcements and the synchronization of political and military actions. In no case did the Military Delegation receive all of the forces he judged necessary to

defeat the rebellion, however he received enough to pacify Chad's most productive regions while diplomats isolated the rebellion from international backers.

In sum, France's intervention in Chad proved successful because of the fusion of military, diplomatic and administrative initiatives under civilian leaders. However, contempt for purely military factors led France to concentrate on the economically useful and more densely populated Center and East, leaving the North in the hands of Toubou rebels who would ultimately seize power six years after the end of France's intervention.

III. Mauritania 1977-78

France's Mauritanian intervention was the first undertaken under Valerie Giscard-d'Estaing's presidency. Compared to other operations, the Mauritanian intervention posed particularly delicate challenges in terms of political-military coordination. France pursued specific foreign policy aims--obtaining the release of French hostages and halting POLISARIO raids on Mauritania's iron mine--while striving to avoid involvement in the broader regional conflict over the Western Sahara. Drawing on the institutional and technical tools available, France's president accomplished his aims by subjecting both military and diplomatic efforts to an unprecedented degree of micro-management. Although distasteful to military professionals, these modalities resulted in an extremely efficient use of military force.¹⁰⁴

Mauritania's problems began when its government claimed part of Spain's Western Sahara. In the wake of Morocco's invasion of the economically valuable northern portion of the Western Sahara in November 1975, Mauritania and Morocco

divided the territory. In the Madrid Accords, signed on 14 November, Spain left the territory in Moroccan and Mauritanian hands from February 1976.

The Western Sahara's nomadic arabo-berber inhabitants, the Sahraoui, rejected absorption. The Saharaoui nationalist organization, POLISARIO, declared the Western Sahara independent and began training combatants with Libyan and Algerian assistance.¹⁰⁵

With modern weapons, the Sahraoui developed guerrilla tactics suited to their desert environment. In an up-dated version of the traditional nomadic "razzia" or raid, POLISARIO columns of approximately 25 to 50 vehicles and 200 to 300 combatants struck from their Algerian sanctuaries.¹⁰⁶ Using assault rifles, machine guns and anti-tank rockets, the Sahraoui brutally attacked unsuspecting victims, before disappearing into the desert at a speed of 50 kilometers per hour.

The skill and violence of the Sahraoui offensive surprised both Morocco and Mauritania. Although caught off-balance and ill-equipped, Morocco possessed a solid military establishment. For Mauritania, the situation was worse. Bereft of financial resources and possessing a small army, Mauritania proved incapable of countering POLISARIO. The situation degenerated in mid-1977 when the Sahrouai shifted from attacking army posts to Mauritania's only significant economic resource, the iron mine at Zouerate.¹⁰⁷

Zouerate's remoteness entailed vulnerability because that the only means of profitably commercializing its iron was via the world's longest trains, comprised of 200 wagons and seven locomotives apiece, which plied the lone railway linking the mine to

the port of Nouadibou, 650 kilometers away.¹⁰⁸ Established under French colonial rule, Zourate still depended on French engineers and businessmen for its operation.

With Mauritania so dependent on a single resource, Zouerate and the Zouerate-Nouadibou railway became ideal targets for the Sahraoui. However, French management of Zourate meant that French expatriates would suffer in the process. On 1 May 1977, a column of 60 POLISARIO vehicles raided Zourate, killing two Frenchmen and capturing six. After this dramatic beginning, the Sahraoui continued their attacks, demonstrating Mauritania's powerlessness to stop them.

The Sahraoui campaign threatened France's profitable exploitation of Zouerate and endangered its expatriates. Worse, Mauritania's poverty and political fragility raised the specter of its collapse as a functioning state, accentuating centrifugal tensions between Arabo-Berber tribes in the north and black tribes in the south. Chaos or Mauritanian desperation could provide the Soviet Union or its Cuban allies with an opportunity to intervene.¹⁰⁹

French leaders felt they must act to avert Mauritania's collapse or shift in allegiance, but wanted to avoid broader involvement in the Western Sahara conflict. Because Mauritania's government based its legitimacy on anti-colonialism and engagement with the Arab world, French President Valerie Giscard-d'Estaing worried overt French support would discredit the government France intended to consolidate.

French leaders faced a serious dilemma finding a means to covertly defeat mobile and skilled Sahraoui attacks. Lacking easy solutions, Giscard ordered French Atlantique anti-submarine patrol aircraft, based in Senegal, to fly reconnaissance missions over Mauritania after three more Sahraoui attacks in July 1977.¹¹⁰ Using panoramic radars,

French aircraft developed a picture of POLISARIO movements and tactics. With Presidential authorization, the air force supplemented the Atlantique patrols with an equally informative Mirage IV photoreconnaissance mission.¹¹¹

Four further raids in October 1977, wherein the Sahraoui kidnapped two more French expatriates, convinced Giscard to intervene.¹¹² With its citizens targeted and eight already imprisoned in southern Algeria, France had to either evacuate its expatriates from Mauritania, crippling the Mauritanian economy, or riposte.

Drawing on his private military staff, the chief of staff of the armed forces and the service chiefs, Giscard demanded proposals for dealing with POLISARIO. After preliminary staff work, the high command presented Giscard with three competing plans. The Navy suggested stationing the aircraft carrier *Foch* off the Mauritanian coast where its attack aircraft could retaliate against Sahraoui attacks. The chief of Giscard's private military staff, General Claude Vambremeersch, argued for sending France's rapid response paratroop battalion, the 3rd Marine Infantry Parachute Regiment (RPIMa), to protect Zouerate and the railway. Finally, the Air Force proposed sending a squadron of Jaguar fighter-bombers to Dakar, Senegal, whence it could intervene against POLISARIO columns. Table IV below illustrates the options presented to Giscard.

**Table IV:
Options for Mauritania Intervention**

Service	Proposal	Advantages	Disadvantages
Army	Paratroops to defend railway	- Proven in past interventions	- Presence in Mauritania - Casualties likely - Intervention visible
Navy	Aircraft carrier in international waters	- Proximity to coast renders air strikes effective	- Visible and costly
Air Force	Airstrikes launched from Senegal	- Minimal presence in Mauritania - Discretion - Maximizes political control	- Success judged improbable

The presence of army officers, Generals Guy Méry and Claude Vambremeersch, at the head of both the inter-service joint staff and Giscard's Private Military Staff favored the use of paratroops. Vambremeersch was so confident in his proposal that he ordered the 3rd Marine Infantry Parachute Regiment to prepare to deploy.¹¹³ Giscard, however, ruled-out the deployment of paratroops, whose presence would be impossible to conceal and probably result in French casualties. The Navy's alternative kept French soldiers out of harm's way and minimized France's presence in Mauritania, but an aircraft carrier was costly and lacked discretion, inviting criticism from domestic and international opponents. Finally, the air force proposal had the advantages of minimizing French casualties and being comparatively discreet and economic. However, excepting air force officers, military leaders doubted that air power based in Senegal would be effective.

Naval aircraft could deploy offshore from Nouadibou, the terminus of the beleaguered railway and quickly respond to attacks on Zouerate, which was less than 650 kilometers distant. Contrarily, air force jets had to traverse at least 1,100 kilometers--requiring two aerial refuelings--before they reached the scene of an attack. In the meantime, rebels would have every chance of escaping.¹¹⁴ Nothing like the air force's proposed strategy had been attempted and many doubted whether it would work.

Weighing the alternatives, Giscard adopted the air force's proposal. Using air power rather than ground forces maximized Giscard's political control as he could direct individual operations via the Center of Military Operation's state-of-the-art telecommunications equipment.¹¹⁵ Air forces based in Senegal under a false pretext were also discreet, shielding both France and Mauritania from a backlash in public or international opinion. In his final decision, Giscard privileged political expediency over military efficiency.¹¹⁶

Because of the political delicateness of the situation, Minister of Defense Yvon Bourges appointed General Michel Forget, deputy commander of French tactical air forces (FATAC). After serving as Chief of Bourges' Military Cabinet, Forget had a good working relationship with the Minister, who felt that he possessed the necessary flexibility and political judgment for the assignment.¹¹⁷

In November 1977, Forget's small air armada, eventually consisting of 23 aircraft, trickled into Dakar. Initially, Forget possessed six Jaguar fighter bombers, in addition to transport, aerial refueling and maritime reconnaissance aircraft.¹¹⁸ While most French forces assembled in Senegal, Forget and a small staff installed themselves in Nouakchott, Mauritania, where Forget stationed his two flying command posts. To guard the secret of

the mission, Forget and his staff traveled to Mauritania in civilian clothing, under cover as councilors to the French Embassy.¹¹⁹

Besides Forget and his staff, France deployed one other unit to Mauritania itself. Having seen its proposal to send a paratroop battalion rejected, the Army nonetheless convinced Bourges to include a small detachment from a special forces regiment (the 13th Parachute Dragoons Regiment or 13th RDP) specialized in covert reconnaissance missions. With the Air Force manifestly indifferent to their presence, the approximately 100 elite soldiers of the 13th RDP established four observation posts designed to inform Parisian decision makers of POLISARIO and Mauritanian Army movements.¹²⁰ Table V below shows the components of France's intervention.¹²¹

Service	Means	Based
Air Force	6-10 Jaguar Fighter-Bombers	Senegal
	2 C135F airborne refuelling aircraft	Senegal
	2 C-160 airborne command posts	Mauritania
Navy	4-5 Atlantique maritime reconnaissance aircraft	Senegal
Army	Four observation posts (<100 personnel)	Mauritania
	1-2 helicopters (pilot rescue)	Mauritania
Total	approximately 350 personnel and 23 aircraft	

In parallel to military deployments, Giscard and the Foreign Ministry attempted to resolve France's dispute with POLISARIO diplomatically, via the intermediary of Algeria's President Houari Boumediene.¹²² From November to January, France dispatched a succession of intermediaries to convince Boumediene to release the eight

French hostages and persuade POLISARIO to abandon attacks on Zouerate and the Zouerate-Nouadibou railway.¹²³

To synchronize military strikes and diplomatic initiatives, Giscard insisted on controlling both. From a military point of view, Forget had carte blanche to fly reconnaissance flights and launch fighter-bombers. However, Giscard reserved the right to decide whether to open fire. In Paris, the Center for Military Operations would receive General Forget's reports. From the Center, the Chief of Staff of the Armed Forces, General Méry, had to call the Chief of Giscard's Private Military Staff, General Vambremeersch. Vambremeersch, in turn, had to seek Giscard's permission to bomb. Once Giscard made a decision, Vambremeersch, Méry and Forget had to relay the order to attack to the Jaguar fighter-bombers already in flight.¹²⁴

When POLISARIO's next attack came, on 2 December, the Atlantique patrol aircraft detected the Sahraoui column after Mauritanian authorities signaled its attack.¹²⁵ As planned, Forget vectored France's Jaguars towards the column. The Atlantique maintained a radar lock on the Sahraoui column, the Jaguars succeeded in refueling three times en route to the target and Forget's communications links functioned impeccably. However, Giscard still hoped to resolve the Mauritanian problem diplomatically, without using force. When the Jaguars were poised to attack, Giscard ordered them to desist.¹²⁶ Instead of assaulting the POLISARIO column, the Jaguars flew photoreconnaissance passes over the Sahraoui vehicles and fired a warning shot in front of the lead POLISARIO vehicle.¹²⁷

Perplexed at not receiving permission to fire, General Forget nonetheless drew valuable lessons.¹²⁸ The Atlantiques could not detect POLISARIO movements prior to a

raid, but once Mauritanian authorities signaled an attack, it became comparatively easy for the Atlantiques to follow the raider's subsequent movements. Meanwhile, the photos taken by the Jaguars revealed that the Sahraoui possessed formidable anti-aircraft weapons, including twin 14.5mm canons and SA-7 surface-to-air missiles.¹²⁹

Not intimidated by the warning shot, the Sahraoui renewed their attacks on the Zouerate-Nouadibou railway ten days later, on 12 December. At mid-morning, a POLISARIO column of 43 vehicles raided an iron-ore train, massacring Mauritanian workers and burning the damaged train.¹³⁰ Alerted, Forget went airborne in his command post and ordered the Jaguars to take off.¹³¹ However, as the fighter-bombers approached their target, Paris delayed giving Forget a definite order to attack.

Unbeknownst to Forget, France's Ambassador to Algeria was at that instant negotiating with President Boumediene. Giscard refused to authorize an attack until he knew Boumediene's response. If the Ambassador secured a diplomatic solution, Boumediene would view an air strike as an affront and possibly backtrack. In the event, Boumediene proved intractable. When he exited his meeting, the French Ambassador contacted Giscard's staff to report. Informed of the failed diplomatic effort, General Vambremeersch, the Chief of Giscard's Private Military Cabinet, telephoned Giscard's portable telephone. Driving when the call arrived, Giscard's automobile entered a tunnel as General Vambremeersch explained the situation. After several long minutes of silence, Giscard ordered an attack.¹³²

After waiting for what seemed an eternity, Forget received permission to attack. Evening was fast approaching and the Jaguars had burned much of their fuel. Beginning their attack at 5 pm, the Jaguars strafed the column at 500 knots. Whenever they hit, the

Jaguars' canons ignited the POLISARIO vehicles. In a matter of minutes, the Jaguars destroyed a quarter of the POLISARIO column, whose defensive fire failed to hit any of the French aircraft.¹³³

Although the Jaguars mauled the POLISARIO column, the advanced hour prevented them from rearming and returning before nightfall. However, the Atlantiques managed to track the Sahraoui raiders throughout the night. Knowing that the surviving raiders had driven 300 kilometers, but were still far from their Algerian sanctuaries, Forget ordered the Jaguars airborne at dawn.¹³⁴ After a flight of 1,200 kilometers, the Jaguars reached the raiders at mid-morning on 13 December. By denying permission to attack, Giscard disappointed the pilots eager to finish what they had begun the previous evening.

No sooner were the Jaguars on the ground, than Paris abruptly changed its mind, ordering an attack. With the order to attack arriving at 3 pm, barely enough daylight remained (three hours) to refuel, rearm and overtake the Sahraoui raiders, who were now 1,350 kilometers from Dakar. Divided into two patrols, the first Jaguars reached their prey at 5:20 pm, while the follow-on wave arrived at twilight (6 pm). By the time they finished their attacks, an additional 20 POLISARIO vehicles were aflame.¹³⁵

Over the course of two days, the Jaguars destroyed two-thirds of the vehicles comprising the Sahraoui raiding force. If not for Paris' slowness in authorizing an attack on 12 December and its refusal to order on the morning of 13 December, the POLISARIO column would have been annihilated. As it was, its decimated remnants skulked back to Algeria under the cover of darkness.

Impressed by France's destruction of the POLISARIO column, Boumediene decided to release French hostages, but opted to embarrass Giscard in the process. On 13 December, the day of the Jaguars' second attack, Boumediene contacted the head of the French Communist Party, Georges Marchais. After a long meeting, Marchais, announcing that he "wanted to publicly resolve the matter of the French hostages taken at Zouerate."¹³⁶ The next day, Boumediene declared that he would release the hostages before Christmas. After helping the French Communist Party take credit for the liberation of the hostages, Boumediene invited Socialist leader François Mitterrand to Algiers, to whom he perhaps intended to entrust the hostages.

When the Sahraoui launched their next attack, on 18 December, Giscard wasted no time in ordering the Jaguars to attack. Having learned from their prior woes, the Sahraoui raiders responded swiftly, filling the sky with lead and sending several SA-7 missiles skywards. The Sahraoui anti-aircraft barrage damaged four or five of the Jaguars, including one badly enough that it crash-landed at Nouadibou.¹³⁷ In return, the Jaguars destroyed half the POLISARIO column of 50 vehicles.¹³⁸

The mauling of this second raiding force, coupled with France's display of resolve, convinced Boumediene to hand the eight hostages to United Nations Secretary General Kurt Waldheim, on 23 December, rather than offer them to French opposition politicians. For its part, POLISARIO changed tactics, substituting small sabotage actions for the large motorized raiding forces that provoked French intervention.¹³⁹

France did not respond to POLISARIO's lower intensity attacks, including a 30-vehicle raid on the Mauritanian garrison at Choum, and General Forget returned to Paris, replaced by the lower ranking Brigadier-General Maffre.¹⁴⁰ Now that the hostages had

been released, Algerian and Sahraoui leaders doubted whether France would respond to renewed motorized raids on Zouerate. On 2 May 1978, a motorized Sahraoui raiding force set out once again for the railway. However, POLISARIO underestimated Giscard, who order the Jaguars to attack. On 2 and 3 May, the Jaguars pounded the Sahraoui column, inflicting losses similar to those visited on the two previous columns.¹⁴¹

After this raid, POLISARIO ceased attacking Zouerate and the railway. Having avoided involvement in the broader dispute over the Western Sahara, France contented itself with this victory. Deploying no more than 350 military personnel and suffering no casualties, France's triumph was one of the most economic in military history. With diplomacy and air strikes, France obtained the release of its imprisoned citizens and demonstrated both its willingness to defend its economic interests. Expatriates remained at Zouerate and French industry continued to consume its iron ore. Thanks in part to its revenues from Zouerate, Mauritania survived as a unified state.¹⁴²

Considering the results, France's intervention in Mauritania was an exemplar of political-military integration. Drawing on parallel chains of command, Giscard extracted three proposals for how France should intervene. After careful debate, it emerged that air strikes mounted from Senegal best met his criteria of discretion, limited force and a high degree of political control. Once the intervention began, Giscard's centralization of military and diplomatic decisions in his own hands permitted him to coordinate overlapping political and military initiatives.

While France's intervention was an undeniable success, its conduct irritated military commanders. With the exception of the air force's leadership, the high command was skeptical of a plan that employed miniscule military means and relied on unproven

techniques.¹⁴³ Once the operation began, most officers objected to Giscard's micromanagement. They viewed ordering air strikes via cellular telephone as a violation of a field commander's normal freedom of action and a sign of presidential megalomania. As Table VI reveals, Giscard's approved half of his general's requests to attack.

**Table VI:
Mauritania (1977-1978): Missions**

Date	Permission to Attack?	Result
12/2/77	No	Photographs of POLISARIO column
12/12/77	Yes (delayed)	Destruction of one-quarter of column
12/13/77 (AM)	No	Wasted sortie permits column to near Algeria
12/13/77 (PM)	Yes	Approximately 20 vehicles destroyed, remaining third escape after nightfall
12/18/77	Yes	Approximately half of column destroyed, Four to five Jaguars damaged, hostages released (23 December)
1/12/78	No	POLISARIO column withdraws
5/2/78	Yes	POLISARIO column badly damaged

Not privy to the secret diplomacy occurring in Algiers, Giscard's decisions appeared haphazard to the military establishment. Reflecting years later, Forget argued, "The need for detailed permission from Paris is not an easy requirement to meet. A better equilibrium must be found between the invasive demands of political decision-makers and the need for field commanders to dispose of a minimal degree of operational

autonomy."¹⁴⁴ France's intervention in Mauritania succeeded, but the conditions of its success violated military norms for how military operations ought to be managed.

IV. The Gulf War, 1990-1991

Giscard's successor, President François Mitterrand, France continued intervening in Africa and the Middle East, and displayed the same penchant for minimal force and discretion as his predecessor. However, the Persian Gulf Crisis of 1990 and 1991 posed unique challenges because the size of the Iraqi Army obliged France to assemble its largest expeditionary force since 1956 and the world's media scrutinized every diplomatic and military development.¹⁴⁵ To complicate matters further, France participated as a junior partner in an international military operation for the first time since the 1950s.¹⁴⁶ Using France's parallel staff system, Mitterrand tailored France's contribution to the coalition to support his foreign policy aims. However, politically motivated deployments proved inappropriate in the Persian Gulf, where there was a risk of high-intensity combat, and Paris' micro-management hindered French cooperation with allies.

On 2 August 1990, Iraq's invasion of Kuwait surprised and discomfited French political and military leaders. Although France monitored Iraq's negotiations with Kuwait over financial debt and the ownership of two Persian Gulf islands, it mistook invasion preparations for political brinkmanship. Until 1990, France enjoyed a privileged relationship with Iraq, with France's political elites viewing Baathist Iraq as a secular and modern counterweight to the region's fundamentalist oil monarchies.¹⁴⁷ Considered a state receptive to French influence, in a region dominated by American, British and Soviet interests, France had furnished Iraq with sophisticated armaments.¹⁴⁸

Despite previously close relations, Mitterrand immediately condemned Iraq's occupation of Kuwait and began struggling to resolve the crisis diplomatically.¹⁴⁹ To influence the political evolution of the crisis, Mitterrand concluded that France must be militarily present in the region. From August until October, Iraq appeared poised to invade Saudi Arabia and needed to be deterred from this additional act of aggression.¹⁵⁰

Without deploying to Saudi Arabia, where France had not been explicitly invited, Mitterrand hoped to manifest France's strength and resolution. Prodded by Mitterrand, French military planners developed two plans for creating a military presence in the Middle East.¹⁵¹ Armed Forces Chief of Staff General Maurice Schmitt suggested deploying a French aircraft carrier to launch retaliatory strikes should Iraq invade Saudi Arabia. Admiral Jacques Lanxade, Chief of the President's Private Military Staff, considered the narrow waters of the Persian Gulf too dangerous for aircraft carriers and argued that, if the carrier were deployed to the Mediterranean, its aircraft would have to cross Syrian or Turkish territory to strike Iraq. Lanxade proposed basing a regiment of 42 anti-tank helicopters (instead of aircraft) aboard an aircraft carrier. Afloat in the Red Sea, the helicopter regiment could transfer to Saudi soil should Iraq invade Saudi Arabia.¹⁵² Mitterrand needed no one's permission to station a warship in international waters and France would avoid the stigma of "defiling" Saudi Arabia's soil with the presence of infidel soldiers.

Weighing the arguments and counterarguments, Mitterrand opted for Lanxade's solution--deploying the aircraft carrier *Clemenceau* to the Red Sea equipped with a regiment of Army anti-tank helicopters. After Mitterrand gave his orders on 10 August, the armed forces commenced their operation three days later.

When Sheik Zaid of the United Arab Emirates expressed fears of an Iraqi bid for hegemony over the Arabian Peninsula, the Foreign Ministry argued that France should militarily reassure a longtime ally. At first, the French Army planned to send American-made Stinger missiles for air defense. Arguing that France would thereby miss an opportunity to export weaponry, the General Delegation for Armaments (DGA) wanted to send a French surface-to-air missile--the MATRA Mistral--despite its suffering development problems and not yet being in service.¹⁵³ Privileging commercial prospects over military efficiency, the government ordered the Mistral deployed.

While Mitterrand was content with his strategic choices, French journalists and newspapers misconstrued the government's actions. Rather than signaling France's willingness to defend Saudi Arabia, they editorialized the dispatch of a helicopter carrier to the Red Sea as mere posturing. To remain credible, the French government began, in late August, studying means of reinforcing France's presence in the Persian Gulf and contributing to Saudi Arabia's defense.

Hoping to minimize the political costs of deploying military forces, Mitterrand specified that France could not send conscripts.¹⁵⁴ Working within Mitterrand's limits, General Schmitt recommended deploying a brigade drawn from the 6th Light Armored Division, which was France's most powerful non-conscript unit.¹⁵⁵ Largely professional (see chapter on French doctrine) and equipped with wheeled armored vehicles, the 6th Light Armored Division was logistically and politically simple to deploy, and could participate meaningfully in a defensive battle against armored divisions.¹⁵⁶

Focused on sending a light armored brigade, Schmitt neglected to examine air options. The head of Prime Minister's Michel Rocard's Military Cabinet, General Menu,

argued that France should privilege air power. Seizing on Menu's logic, Air Force Chief of Staff General Jean Fleury suggested Mitterrand appoint an air force general to command French forces in Saudi Arabia.¹⁵⁷

Faced with proposals for predominantly land and air deployments, Mitterrand compromised, sending a mixture of land and air forces under the command of an army general, with an air force deputy.¹⁵⁸ While French planning progressed, Iraq maladroitly provided a pretext for Mitterrand to deploy these forces. On 14 September, the Iraqi Army violated international law in seizing France's embassy in Kuwait. French public indignation swelled against Iraq and Saudi Arabia invited Mitterrand to deploy a contingent.¹⁵⁹ The French government decided to deploy the army brigade and air contingent, comprising a total of 5,700 personnel (detailed in table VII) the next day.¹⁶⁰

<u>Component</u>	<u>Personnel</u>
Ground Component (Wadi al-Batin)	4,294
72 AMX-10 RC (light tank / armored car)	
65 helicopters (40 anti-tank Gazelles, 25 other)	
24 long-range anti-tank missile vehicles (VAB-HOT)	
Air Component (Al Ahsa base)	614
Logistics Component	635
<u>Headquarters (Riyadh)</u>	<u>209</u>
Total French Contingent	5,752

On 17 September, Mitterrand appointed General Michel Roquejoffre as overall commander of French forces in Saudi Arabia.

While Mitterrand believed that France must participate in both the defense of Saudi Arabia and the eventual liberation of Kuwait, he mistrusted American aims.¹⁶¹ French policymakers suspected that the United States preferred to liberate Kuwait militarily, crushing Iraq's military potential, rather than permit Iraq to negotiate a face-saving withdrawal.¹⁶² French diplomats hoped to stop the slide to war and feared that military subordination to the United States would hinder France's diplomatic effort.

Reconciling the government's desire for military autonomy with the practical requirement for some form of integration fell on General Schmitt and Defense Minister Chevenement, who traveled to Saudi Arabia on 15 September. Both Americans and Saudis expected the French to join the American command structure and reserved facilities for them.¹⁶³ To everybody's surprise, the French demanded complete autonomy. Unable to convince the French to join a coalition structure, Saudi commander General Kaled ben-Sultan suggested the French land at Yanbu--Saudi Arabia's furthest port from Kuwait--where French forces would remain out-of-the-way, but contribute nothing to the coalition.¹⁶⁴

Deploying to Yanbu postponed, rather than solved the delicate matter of France's integration in the coalition. Hoping to maximize France's leverage and advance Europe's integration, Mitterrand proposed that France and the United Kingdom form an autonomous European contingent in Saudi Arabia. After the British rejected Mitterrand's initiative, France had no choice but join either the American or the Saudi command structure.¹⁶⁵ Believing it less onerous, the French accepted nominal Saudi authority.¹⁶⁶

Studying allied military dispositions, General Schmitt proposed a formula that maximized de facto French autonomy. Defending critical air and port facilities at Jubail and Dahrān, the Americans left the direct route from Kuwait City to the Saudi capital Riyadh virtually unguarded. Schmitt therefore proposed using France's brigade to cover Riyadh, where, isolated by 150 kilometers of desert from other coalition forces, save one Saudi brigade, the French remained virtually independent.¹⁶⁷ Both American and Saudi authorities accepted Schmitt's proposal, which gainfully employed the French while satisfying their political requirements.¹⁶⁸ Meanwhile, the French concluded a similar arrangement for their air forces.¹⁶⁹ By expanding and modernizing the small unused airfield at Al Ahsa, the French remained distinct from the massive Anglo-American force at Dahrān.¹⁷⁰

Having preserved French military autonomy, Mitterrand prepared his diplomatic offensive.¹⁷¹ French strategy rested on condemning Iraq's aggression, using the United Nations to apply military and economic pressure, and negotiating Iraq's peaceful withdrawal from Kuwait.¹⁷² Seeking to orchestrate a face-saving compromise that would permit Iraq to evacuate Kuwait without losing domestic and international credibility, French diplomats hoped the promise of an international conference on the Israel-Palestine problem would provide Iraq with a pretext to declare victory for the broader Arab cause and evacuate Kuwait.¹⁷³

Foreign Minister Roland Dumas and Defense Minister Chevenement proposed holding an international conference on the Israeli-Palestinian Conflict after Iraq's withdrawal from Kuwait. Mitterrand later suggested a series of conferences on Middle Eastern disputes, including Israel/Palestine, Lebanon and Iraq/Kuwait. France conveyed

similar messages to Iraq via two of France's traditional allies in the Arab World--Algeria and Morocco--and numerous high-level emissaries.¹⁷⁴ In its final formulation, the French proposal comprised four elements: 1) Iraq should declare its intention to evacuate Kuwait, 2) the coalition would halt its military preparations, 3) Iraq would withdraw from Kuwait, and 4) the international conferences would begin.¹⁷⁵

Unfortunately, Baghdad proved no more receptive to France's proposals for a face-saving withdrawal than it had to American threats or Arab mediation. Instead, Iraq seized on France's less bellicose rhetoric to attempt to divide the coalition. Having retained western expatriates as hostages, Iraq released French hostages on 23 October to placate France and sow discord between it and other coalition members, whose citizens remained imprisoned. However, preferential treatment of French hostages exercised no impact on national policy and France's military buildup continued.¹⁷⁶

While France struggled for a diplomatic solution, coalition military planners doubted their ability to repel an Iraqi attack on Saudi Arabia, until the American Army's first mechanized division, the 24th Mechanized Division, arrived in early October.¹⁷⁷ Defending a secondary invasion corridor, the military threat facing the French diminished more slowly than in the American zone, remaining critical until 15 October.¹⁷⁸

As Iraq's opportunity to attack waned, coalition military planners began examining the liberation of Kuwait. At President's Bush's behest, American military planners began studying offensive military operations in early October. Unfortunately, the French government's refusal to integrate with American forces and micro-management of its forces impeded France from participating in or influencing the planning process. Despite American offers of a seat in the planning staff, General

Roquejoffre could neither commit French forces to a given mission without Paris' permission nor sanction an operational plan that his political superiors had not approved.¹⁷⁹

After discussions between American planners and the Pentagon, on 9 November, President Bush announced his decision to reinforce American forces for the land offensive.¹⁸⁰ The American decision to double the size of its contingent was followed, on 29 November, by the United Nations Security Council's adoption of Resolution 678, authorizing the coalition to liberate Kuwait after 15 January 1991.¹⁸¹

The American buildup raised the question of how France would participate in the offensive. After the United States announced its troop increases, other coalition partners did likewise.¹⁸² If its contribution was to remain politically significant, France had to increase its military presence in the Middle East. Without possessing detailed knowledge of American military plans being prepared, General Roquejoffre studied how French forces could participate in an allied offensive.¹⁸³ France's light armored division had the speed and firepower for a battle of movement, but lacked the heavy armor and artillery to defeat fortified enemy positions or engage Iraq's elite armored divisions. Roquejoffre concluded that his forces could execute reconnaissance, flank guard or exploitation missions, but not conduct a frontal assault on Iraqi defenses.

France's dilemma of deciding how to participate in Kuwait's liberation became more acute in early December, when the United States briefed France on its war plans. According to American planners, United States Marines and Arab forces would attack the heart of Iraq's defenses in Kuwait, to lure Iraqi reserves to the southeast.¹⁸⁴ Then, the main attack--by the armored forces of the American VII Corps--would strike the Iraqi

defenses in a giant left-hook, hopefully surrounding Iraqi forces in Kuwait¹⁸⁵ To protect the coalition's flank, the light forces of the American XVIII Corps would conduct a massive sweep westwards of the main attack, overwhelming scattered Iraqi forces and blocking road junctions against a counterattack launched from Baghdad.¹⁸⁶ Now informed of American plans, France had to decide how it would participate in the coalition's overall strategy.

From the outset, French leaders disagreed on where they should make their effort.¹⁸⁷ Defense Minister Chevenement wanted to join the Arab offensive into Kuwait, emphasizing France's independence vis-à-vis the United States, its close ties with the Arab world and its benign intentions towards Iraq. Admiral Lanxade contradicted Chevenement, proposing that France should participate in the main attack, where its engagement would be most appreciated and remarked. Uncomfortable with Lanxade's reasoning, General Schmitt argued that France's light armored forces were best suited to XVIII Corps' flank protection mission.¹⁸⁸ Table VIII, below, illustrates the competing options for how French forces would participate in the coalition offensive.

<u>Coalition Forces</u>	<u>Mission</u>	<u>Supporters</u>
Joint Forces Command (Arab)	- Liberation of Kuwait - Diversionary Attack	Defense Minister Chevenement
VII Armored Corps	- Main Attack	Admiral Lanxade
XVIII Airborne Corps	- Flank Attack	General Schmitt

Roquejoeffre to prepare three distinct plans. Mitterrand lengthily pondered the three

alternatives (presented on 6 December) before committing France's division to the XVIII Corps offensive.¹⁸⁹ While sensitive to military advice, Mitterrand's choice was shaped by political calculations. By operating on the coalitions' westernmost edge, French forces would possess a greater autonomy and would only encounter second-line Iraqi units. French would keep its casualties to a minimum and have the cache of operating deep inside Iraq.¹⁹⁰

French leaders now faced the question of determining the forces that would participate. As the coalition's military buildup continued, French policymakers feared that their own contingent would appear trivial if not reinforced to divisional size, as the United Kingdom had already done.¹⁹¹ Although sending a division appears simple at first glance, its exact size and composition were soon subject to lively debate. All agreed to send an additional light armored battalion, motorized infantry battalion, helicopter regiment and artillery battalion. Ideally, Mitterrand wanted to send 10,000 personnel, including those already in Saudi Arabia, and refused to exceed 15,000. As former paratroops, Schmitt and Roquejoffre pushed to include a powerful paratroop formation in France's order of battle. Roquejoffre went so far as negotiating Schwarzkopf's loan of American helicopters to carry French paratroops in an air assault on Nassiriyah.¹⁹²

Coming from France's Rhine Army, Army Chief of Staff General Alain Forry pleaded with Mitterrand to send a tank battalion. Forry worried that exclusion from the largest intervention since 1956 would demoralize France's armored and mechanized forces. To bolster his argument, Forry created France's first professional tank battalion out of cadre and volunteers drawn from a plethora of separate units. Having begun this

process in October, Forray had a deployable, albeit makeshift battalion to offer Mitterrand in December.¹⁹³

Weighing the conflicting recommendations of his military commanders, Mitterrand ordered Forray to send his tank battalion, but refused Roquejoeffre's request for paratroops.¹⁹⁴ Counting all reinforcements, France's total force peaked at 14,708 troops, just short of Mitterrand's ceiling of 15,000.¹⁹⁵ Over three times larger than its September and October deployments, France's Gulf War contingent, detailed in table VIII below, was the largest it had employed since 1956 and the coalition's fifth overall (after the United States, Saudi Arabia, Egypt and the United Kingdom).¹⁹⁶

<u>Component</u>	<u>Personnel</u>	<u>% Increase over November</u>
Ground Component	9,541	122%
96 AMX-10 RC (light tank / armored car)		
60 anti-tank Gazelle helicopters		
44 AMX-30B2 main battle tanks		
24 long-range anti-tank missile vehicles (VAB-HOT)		
18 towed 155mm howitzers (TR F1)		
12 ERC-90 Armored Cars		
Air Component (Al Ahsa base)	1,780	190%
26 Jaguar Fighter-Bombers		
14 Mirage 2000 Fighters		
4 Mirage F1CR Photo-Reconnaissance Aircraft		
Logistics Component	2,573	305%
<u>Headquarters (Riyadh)</u>	<u>350</u>	<u>67%</u>
Total French Contingent	14,708	156%

By the expiration of the United Nations embargo on 15 January, Mitterrand possessed a military force in Saudi Arabia designed, down to the selection of each battalion, to serve France's political aims.¹⁹⁷

In a final triumph of political principle over military expediency, Mitterrand promised that the international coalition would not use nuclear weapons, regardless of Iraqi use of chemical and biological weapons. Mitterrand's proclamation flew in the face of American strategy and French military advice, which aimed to deter Iraqi chemical or biological attack with threats of nuclear reprisals. Although conscious of the risk of coalition casualties, Mitterrand considered preserving the nuclear taboo more important than preventing Iraq from using other forms of weapons of mass destruction.¹⁹⁸

Having demonstrated France's independence by undermining the United States' deterrent, France's government braced for its final efforts to negotiate a diplomatic solution. Although Mitterrand believed that war could not be averted, he ceded to Foreign Minister Dumas' demand for France to attempt once again to parley Iraq's withdrawal from Kuwait.¹⁹⁹ In Mitterrand's televised New Years Eve speech, the French president reiterated his call for international conferences to address crucial Middle Eastern issues, including Iraq/Kuwait, Israel/Palestine and the foreign occupation of Lebanon. Shortly thereafter, Mitterrand's envoy to Baghdad promised Iraq a series of face-saving international conferences after it evacuated Kuwait.²⁰⁰

Faced with Saddam Hussein's intransigence, Mitterrand made a final effort, on 14 January, to save a former regional ally from destruction. Proposing that Iraq's *willingness* to evacuate Kuwait should be linked to an international conference on the Palestinian question, Mitterrand infuriated the United States and offered Iraq the most favorable

conditions he could expect on the eve of war.²⁰¹ Overly confident in his armed forces, Iraqi President Saddam Hussein only rewarded France's efforts with diplomatic silence.

After the failure of France's final diplomatic effort, the coalition unleashed its massive air offensive on 17 January. During the first days of the air offensive, Mitterrand still hoped that Iraq's evacuation could be negotiated and, therefore, acceded to Defense Minister Chevenement's proposal that French aircraft only strike targets in Kuwait and not Iraq.²⁰² Because neither France's allies nor domestic public opinion understood the reasons for French restraint, Schmitt and Lanxade persuaded Mitterrand to lift the ban after five days.²⁰³

During the air offensive, French aircraft conducted 2,100 sorties, or two percent of the coalition's total.²⁰⁴ After France's first disastrous air raid, where four out of 12 Jaguar fighter bombers were damaged, Iraqi air defenses failed to inflict meaningful damage. Meanwhile, the Jaguar's niche capability to strike high value targets with AS-30L laser guided missiles led American planners to repeatedly call upon them.²⁰⁵

To compensate for reinforcements that France either could not or would not send, Schwarzkopf reinforced France's light armored division--code named the Daguet Division--with an American paratroop brigade, two artillery brigades and a multiple rocket launcher battalion.²⁰⁶ Once the coalition land offensive began on 24 February, France's light armored division cut through the defenses of Iraq's 45th Infantry Division. Under-strength, but reputedly combative and comparatively intact, the 45th Division defended its sector as best it could with approximately 40 tanks and 30 artillery pieces.²⁰⁷ Divided into two columns, one heavy based around the tanks of the 4th Dragoons and one

light centered on the wheeled AMX-10RCs, French forces simultaneously struck the center and flank of the Iraqi defenses.²⁰⁸

Beginning at 9:30 am on 24 February, French tanks and infantry assaulted the Iraqi 45th Division's entrenched front line brigades (supported by 11 dug-in tanks and 18 artillery pieces) from oblique angles via the southeast.²⁰⁹ Although Iraqi artillery attempted to riposte, the speed of the French advance meant that their shells fell harmlessly in the desert.²¹⁰ By 1:00 pm, the Iraqi front line broke, obliging the French to spend the rest of the day collecting over 2,000 prisoners of war.²¹¹

The following day witnessed the climax of France's ground offensive. Before dawn, French and Iraqi artillery sprang to life. Then, French tanks and infantry overran the Iraqi artillery pieces.²¹² Faced with the final disintegration of their combat position, the Iraqi 45th Division's armored reserve charged into the fray with ten tanks and assorted armored vehicles. Once detected, two French tank platoons intercepted and annihilated the Iraqi armor before the Iraqis could fire a single shot.²¹³

After the French heavy column overran the 45th Division's forward defenses, the lighter French column surged from the desert, striking the final French objective, the Iraqi As Salman airbase. Combat groups comprised of foreign legionnaires and armored cars stormed the airbase after a two-hour artillery bombardment, destroying Iraqi automatic canons, machine guns and a solitary Type-69 tank.²¹⁴ Fleeing or hiding, the airfield's demoralized defenders offered no resistance.²¹⁵

By the end of 25 February, French forces had accomplished all of their military objectives, a full day before originally planned. Occupying As Salman, France's light armored division was well placed to protect the international coalition's western flank. In

barely 36 hours, the French had advanced 150 kilometers and destroyed the Iraqi 45th Infantry Division, despite the latter's best efforts to resist. By the end of the ground war, the French captured over 3,000 Iraqi prisoners and seized 5,000 Iraqi small arms.²¹⁶

For France, the 1991 Gulf War ended in an incontestable military victory. As may be seen, overarching political concerns marked every stage in France's preparation for war. Sending a helicopter carrier, Roquejoffre's appointment, the deployment of forces astride the Wadi al-Batin, the reinforcements dispatched in December and France's participation in the XVIII Corps' flanking maneuver were all political decisions taken by President Mitterrand himself. Weighing the conflicting recommendations advanced by his military advisors, Mitterrand chose those options that advanced his foreign policy goals of contributing to the coalition, manifesting France's independence and facilitating a diplomatic solution. Table X below illustrates the recommendations tendered to Mitterrand by military advisors and the Minister of Defense and Mitterrand's ultimate choices.

Table X:

Alternative Advice and Mitterrand's Choices
Retained Options in Italics

<u>Sources of Advice</u>	<u>Initial Deployment</u>	<u>Commander of Expedition</u>	<u>December Reinforcements</u>	<u>Military Plan</u>
Chief of Staff of Armed Forces	Aircraft Carrier	<i>Army General</i>	Two paratroop battalions	<i>Flanking attack (XVIII Corps)</i>
Chief of President's Private Military Staff	<i>Helicopter Carrier</i> . . . .	. . . .	. . . .	Main attack (VII Corps)
Field Commander (Roquejoffre)	. . . .	. . . .	Two paratroop battalions	<i>Flanking attack (XVIII Corps)</i>
Minister of Defense	. . . .	. . . .	. . . .	Operations only in Kuwait
Army Chief	. . . .	. . . .	<i>Tank Battalion</i>	. . . .
<u>Air Force Chief</u>	. . . .	<u>Air Force General</u> . . . .	. . . .	. . . .
Mitterrand Choices	Helicopter Carrier	Army General	Tank Battalion	Flanking attack (XVIII Corps)

More rarely, in two instances--France's categorical declaration against the use of nuclear weapons and his restriction of bombing to Kuwait--Mitterrand privileged suggestions of his civilian advisors over united military opposition.

Although Mitterrand succeeded in integrating every military deployment and action into his overall political strategy, France's military means did not optimally serve its political ends. There is strong evidence that France's carefully calculated military actions failed to send the signals and exert the influence that Mitterrand intended. In a crisis that witnessed hundreds of thousands of American troops deploying to deter, then defeat hundreds of thousands of Iraqi troops, international statesmen neither knew nor cared why France sent a helicopter carrier rather than an aircraft carrier, or deployed to the Al Ahsa instead of Dahrhan. Worse still, French actions lent themselves to misinterpretation. Critics Mitterrand's decision to send a helicopter carrier as a sign of

France's hesitancy to act forcefully, rather than its willingness to participate in Saudi Arabia's defense. Later, France's autonomous military posture enticed Iraq to try to entice France into leaving the coalition.

When it came to operating alongside allies accustomed to delegating greater power to their field commanders, Paris' micro-management of French military plans and deployments weakened France's influence within the military coalition. Although Schwarzkopf was predisposed to give the French an important role, Roquejoffre's inability to integrate or commit French forces prohibited the French from exercising any influence on planning and relegated their forces to the coalition's military periphery.²¹⁷

After the war's end, American, British and Saudi generals all lamented their difficulty working with the French. France's diplomatic initiatives and Paris' micro-management of French tactical deployments convinced Schwarzkopf that the French were unreliable allies, who may have even pursued a covert agenda.²¹⁸ The Saudis likewise found the French awkward partners and were frustrated at the lack of coordination between their two forces.²¹⁹ Although not collaborating directly, the British recognized that France's decision-making process operated much differently, according little to no autonomy to the commander in the field.

V. Conclusion

Although the three military interventions examined were undertaken under four presidents and differed in terms of the types of operations involved, all shared certain similarities. To paraphrase Clausewitz, French military operations were an extension of state's foreign policy by other means. Civilian leaders shaped decisions such as how

many troops to send, which battalions to deploy and where to conduct military operations. By micro-managing operations, French leaders successfully integrated diplomatic and military initiatives into a coherent ensemble. Keeping operations small, discreet and tightly controlled, French leaders managed to intervene more frequently than any state save the United States, whose military resources and commitments were much greater. However, in assessing the institutional decision-making process, one must weigh difficulties operating in international coalitions and politically motivated, yet operationally dubious decisions against France's comparative advantages in political-military integration and minimizing the political costs of intervention.

Political micro-management of military operations remained constant regardless of who ruled France and the state of telecommunications. Neither de Gaulle nor Pompidou devoted much personal attention to France's 1968-72 intervention in Chad and telecommunications did not yet enable presidents to direct military operations from afar. Nevertheless, by dividing responsibility for the intervention between the Military Delegation and the civilian Mission for Administrative Reform (MRA), Paris circumscribed the authority of its field commanders and created institutional tension between the two bodies which advanced competing recommendations on many occasions. By subordinating both bodies to a diplomat, leaders ensured that broad foreign policy considerations would dominate strategy. Even so, the French government decided many matters directly from Paris.²²⁰

After the Center for Military Operations (Centre Opérationelle des Armées) was established and lavishly equipped with telecommunications equipment, French presidents meddled increasingly in operational and even tactical details. During the Mauritania

intervention, Giscard personally ordered each air strike--on one occasion from his mobile telephone--while supervising France's diplomatic initiatives with equal diligence. Later, during the 1990-1991 Persian Gulf Crisis, Mitterrand and his government immersed themselves in the smallest details of French deployments, battle plans and relations with allies. To the dismay of French generals and allies, civilian micro-management continued into the initial phases of the air campaign.

To compensate for their deficiencies in personal military knowledge, civilian leaders drew upon France's parallel military staffs for alternative recommendations. During the Mauritanian intervention, Giscard chose amongst a menu of three options--deploying a paratroop regiment, an aircraft carrier or fighter bombers--presented by competing staffs and services. What Giscard did at the beginning of the Mauritanian intervention, Mitterrand erected as a principle during the 1990-1991 Gulf Crisis. At every juncture, Mitterrand elicited a host of proposals, permitting him to select courses of action consonant with France's political objectives.

Invariably, political leaders preferred certain forms of action to others. In each intervention, the initial commitment was the minimum compatible with France's objectives. In Chad, the two paratroop companies initially deployed proved wholly inadequate and were later reinforced. In Mauritania, Giscard selected the smallest and least conspicuous of the military options presented him, which succeeded contrary to the expectations of the military establishment. During the Gulf Crisis, Mitterrand deployed forces sized to meet his objective of ensuring a visible, yet autonomous presence.²²¹

Politicians favored minimal force because it limited the political capital they would likely expend during an operation. Ordinarily, political leaders gamble their

reputations for probity and sound judgment to convince voters that the cause being defended is just or necessary, that casualties suffered are not in vain and that the final peace agreement will advance national interests. However, given the complexity of the issues involved and the uncertainty of the outcomes, French presidents rarely felt comfortable risking their political standing on military interventions. Minimizing the size and type of forces involved constituted one means of limiting the political costs of intervening.²²²

While minimal force lowered domestic political costs, it also palliated the diplomatic difficulties of intervening. Counseled by diplomats and foreign policy advisors, French presidents understood that forces of anti-colonialism, Arab nationalism and pan-Islamic solidarity opposed Western interventions in Africa and the Middle East. Keeping intervention forces deliberately small and their actions discreet lessened the outcries raised by offended states at the United Nations, the Organization of African Unity and the Arab League.²²³

Together, minimal force and political discretion permitted France to remain exceptionally active in international affairs. France intervened more than any state save the United States between 1958 and 1989, exceeding the Soviet Union and the United Kingdom.²²⁴ Table IX details many of France's more important interventions.

**Table XI:
Selected French Interventions, 1962-1995**

<u>Location</u>	<u>Peak Strength</u>	<u>Nature of Mission</u>	<u>Combat Deaths</u>	<u>Result</u>
Gabon 1964	600	Regime Change	2	success
Chad 1968-72	3,500	Counterinsurgency	39	qualified success
Mauritania, 1977-78	350	Deterrence / Coercion	0	success
Chad, 1978-80	2,600	Stabilization	18	failure
Zaire, 1978	~1,000	Hostage Rescue	5	success
Lebanon, 1978-79	1,370	UN Peacekeeping	≥ 2	failure
Central Africa, 1979	~500	Regime Change	0	success
Lebanon, 1982-84	3,000	Peace Enforcement	88	qualified failure
Chad, 1983	3,500	Deterrence / Defense	14	qualified success
Chad, 1986-87	3,000	Deterrence	1	success
Comoros Islands, 1990	1,500	Coercion/Regime Change	0	success
Gulf War, 1990-91	14,700	Conventional Combat	2	success
<u>Croatia/Bosnia, 1992-95</u>	<u>7,200</u>	<u>UN Peacekeeping</u>	<u>20</u>	<u>qualified failure</u>
Mean (sample of 13)	~3,290		15	69% successes, 31% failures

As may be seen, France conducted a disproportionate number of interventions, most of which remained of modest size. Through its interventions, France shaped international affairs, protecting friendly regimes, defending economic interests, overthrowing enemies and manifesting France's commitment to certain states.²²⁵

The ability to remain discreet, limit losses and maintain tight political control enabled French leaders to intervene in circumstances when their foreign counterparts would not. However, the flip side of minimum force is that French forces sometimes lacked the resources needed to accomplish the objectives fixed for them. With only half of France's interventions unqualified successes and a third failures, greater publicity and numbers involved would have embarrassed politicians and hindered their ability to use force in the future.

Despite the limited means, French interventions accomplished their objectives more often than not because military operations were well integrated into a broader effort along with diplomatic and political initiatives. France rarely sought to impose its will by defeating enemy military forces, but used force to: add weight to deterrent threats, complicate an adversary's calculations, give courage to friendly regimes and confer urgency to negotiations.²²⁶ In Chad, military force acted in synergy with diplomatic, administrative and developmental efforts to halt the insurgency's military progress, deprive it of external support and turn the peasantry against the rebellion. During the Mauritanian intervention, the deft combination of air strikes and negotiations accomplished France's objectives at negligible cost. In other cases as well, armed forces and diplomacy combined to produce results unobtainable by either acting alone.

Not only was force frequently an adjunct to diplomacy, but French leaders viewed military force as a *sine qua non* for participating in diplomatic processes. Such was the case in Lebanon, the Persian Gulf and the former Yugoslavia, when France sent military forces with the expectation that its voice would therefore carry greater weight negotiations.

If France generally proved capable of conducting an inordinate number of interventions and carrying most forward to a successful conclusion, its policymaking institutions nonetheless betrayed distinct weaknesses. Excessive political interference in operational matters negatively impacts the military effectiveness of French forces. Comparatively unimportant in low-intensity operations, every reduction in military efficiency counts in high-intensity combat against a determined adversary.

In Chad, the misguided decision to halt operations during negotiations with the Derdeï robbed French forces of their sole chance of defeating the Toubou rebellion. Unable to participate in Saudi Arabia's defense while at Yanbu and lacking a clear protocol for collaborating with the Saudis thereafter, France's politically motivated deployments could have spelled disaster had the Iraqis attacked during the coalition's build-up in the Persian Gulf.²²⁷ Political decisions to send Mistral, instead of Stinger, missiles, and renounce nuclear retaliation against chemical or biological attacks, sacrificed military security in a way that could have proven tragic against a more enterprising and able foe.

Political micro-management of military operations also hindered France's ability to collaborate with allies. Because France's policymaking process centralizes decision-making in the hands of political leaders in Paris, who must select amongst the rival options presented by parallel staffs, field commanders possess comparatively little freedom when dealing with their foreign homologues. Working besides foreign commanders who can make operational decisions on their own, the need to constantly refer matters to Paris negatively impacts both the overall flexibility of the coalition as well and French commanders military influence within allied councils. During the

Persian Gulf Crisis (1990-91) these factors frustrated coalition partners, reduced France's sway over planning and introduced unneeded military risks. In this context, it is not surprising that three out of the four French failures (Lebanon in 1978-79 and 1982-84, and the former Yugoslavia) listed in Table XI involved coalitions, while eight out of its nine successes were essentially national efforts.²²⁸

When United States Defense Secretary Casper Weinberger and General Colin Powell published their doctrine on military interventions, they emphasized the use of overwhelming force to achieve clear military goals, before withdrawing according to a pre-established plan. Drawing on scant resources, but adroitly combining minimal force with diplomacy, France achieved success time-after-time while disobeying every stricture of the Weinberger-Powell doctrine.

Endnotes

¹ In France, General Jean Colin best summarized military preferences. In his words, "It is the strict duty of government not to engage in a foolish war, without hope of acquiring sooner or later military superiority.... Once war is decided, it is absolutely necessary that the general [commander-in-chief] remains free to conduct it as he sees fit, ready to be relieved if he proves unenergetic or incompetent. The campaign plan must be the personal creation of the general. Government intervention in the conduct of operations almost never produces happy results." Jean Colin, *Les transformations de la guerre* (Paris: Economica, 1989, orig. 1911), 240-41.

² Richard Betts, *Soldiers, Statesmen and Cold War Crises* (New York: Columbia, 1991), 160.

³ On the institutional preferences of soldiers and civilians, see Richard Betts, *Soldiers, Statesmen and Cold War Crises* (New York: Columbia University Press, 1991, original edition 1977); Peter Feaver, *Armed Servants: Agency, Oversight, and Civil-Military Relations* (Cambridge, Massachusetts: Harvard University Press, 2003), 58-75; and Graham Allison and Philip Zelikow, *Essence of Decision: Explaining the Cuban Missile Crisis, Second Edition* (New York: Longman, 1999), 143-242.

⁴ The Centre Opérationelle des Armées reputedly occupies two stories and 2500 m². On many occasions, French Defense Ministers descended in the COA to personally monitor/direct operations. Jérôme de Lespinois, *L'Armée de terre française de la défense du sanctuaire à la projection: tome 1, 1974-1981* (Paris: l'Harmattan, 2001), 36; and Jacques Isnard, "Enterré à Paris: Le centre nerveux des opérations," *le Monde* (19 January 1991).

⁵ French authority in Sub-Saharan Africa continued to manifest itself in terms of francophone African support for French positions at the United Nations and France's ability to call on African cooperation during crises. Maurice Vaïsse, *La grandeur: Politique étrangère du général de Gaulle, 1958-1969* (Paris: Fayard, 1998), 484-89.

⁶ Between 1960 and 1970, France expended approximately 0.38 percent of its GNP on aid to France's former African colonies. Most of this sum was spent on goods and services obtained from France, meaning that the money was ultimately pumped back into France's economy. Considering the political and economic influence obtained for this expenditure, France's African policy was economic. Vaïsse, 488.

⁷ In central and northern Chad, where state institutions were further advanced, the French government's intermediaries were traditional rulers. In the south, where no strata of political authority existed higher than the village level, French authorities designated compliant locals as their intermediaries. *Les Interventions Militaires Françaises au Tchad* (Vincennes: SHAT, 1989, unpublished study), 57-66.

⁸ Jacques Foccart and Philippe Gaillard, *Foccart Parle: Entretiens avec Philippe Gaillard, Tome 1* (Paris: Fayard, 1995), 302.

⁹ SHAT 11 S 130 Fernand Wibaux, Ambassadeur Haut Représentant de la République Française au Tchad à Michel Jobert, Ministre des Affaires Etrangères, “Rapport de fin de mission,” 31 March 1974.

¹⁰ Ibid.

¹¹ Ibid and Foccart and Gaillard, 304.

¹² The Chadian army expanded from 1,515 men in 1965 to 1,900 in 1968, while the gendarmerie grew from 414 to 1,230 between 1964 and 1968. *Les Interventions Militaires Françaises au Tchad*, 268-69.

¹³ Jacques Foccart, *Journal de l’Elysée – II: 1968-1969, Le Général en Mai* (Paris: Fayard, 1998), 640; and SHAT 11 S 130 Fernand Wibaux, Ambassadeur Haut Représentant de la République Française au Tchad à Michel Jobert, Ministre des Affaires Etrangères, “Rapport de fin de mission,” 31 March 1974.

¹⁴ Vaïsse, 492.

¹⁵ Foccart and Gaillard, 305.

¹⁶ Wibaux, who had served as ambassador to Mali between 1961 and 1964, was a protégé of Foccart. Foccart obtained Wibaux’s nomination to Chad on 14 January 1968, to replace Guy de Commines, who Foccart considered unsuited to African diplomacy. Foccart, *Journal de l’Elysée – II: 1968-1969, Le Général en Mai*, 17, 37 and 305.

¹⁷ SHAT 11 S 130 Fernand Wibaux, Ambassadeur Haut Représentant de la République Française au Tchad à Michel Jobert, Ministre des Affaires Etrangères, “Rapport de fin de mission,” 31 March 1974.

¹⁸ Ibid.

¹⁹ At this time, the Chadian army numbered 1,900 personnel. Hence, the repulse of operation “Mokofi” cost the army 4 percent casualties. Gustave Jourden, “La Fin du Regime du President Tombalbaye: Le Tchad de 1969 à 1975,” Centre des Hautes Etudes pour l’Afrique et l’Asie Modernes (1988), 18.

²⁰ In 1969, the Chadian gendarmerie possessed 15 mobile platoons. The annihilation of four of these deprived the gendarmerie of 27 percent of its mobile combat strength. *Les Interventions Militaires Françaises au Tchad*, 221.

²¹ Jourden.

²² The internal French military study of the Chadian intervention claims that Tombalbaye demanded French assistance on 10 March. According to Foccart's journal, he was in Chad on 5 March. In his journal, Foccart does not mention a broad request for intervention, but rather a more limited demand for air support, to be provided by French aircraft already present in Chad. Foccart, *Journal de l'Elysée – II: 1968-1969, Le Général en Mai*, 635-46; and *Les Interventions Militaires Françaises au Tchad*, 221.

²³ *Les Interventions Militaires Françaises au Tchad*, 222.

²⁴ The French high command possessed virtually no intelligence about the size, composition or objectives of the rebels. *Les Interventions Militaires Françaises au Tchad*, 231-40.

²⁵ PRO FCO 25/145 French Embassy, Paris to West African Department, Foreign Office, 16 September 1968.

²⁶ After Foccart's 5 March trip to Chad, de Gaulle sent Minister of Cooperation Yvon Bourges to Chad on 15 March for a second opinion on whether to intervene. While Foccart and Bourges traveled to Chad and formulated first-hand opinions on intervention, no military leader was sent. From Foccart's journal, it appears that de Gaulle was favorable to intervention from 11 March. *Les Interventions Militaires Françaises au Tchad*, 222; and Foccart, *Journal de l'Elysée – II: 1968-1969, Le Général en Mai*, 647.

²⁷ In the instructions to the French commanding general, it was stipulated that, "The place you occupy in the French military hierarchy in Chad makes you the 'military adjutant' to France's ambassador. Your job is to suggest to the ambassador means for obtaining a given objective. It is also your job, once a request has been made, to give the orders necessary for the accomplishment of the corresponding mission." While the general was thereby subordinated to the ambassador, the ambassador could not directly order military operations. In a somewhat contradictory passage, the instructions stipulate, "You are responsible to the Ministry of the Armies for everything concerning operations and the employment of French forces in Chad. In this capacity, you must not take any major military decision without consulting the Ministry of the Armies."

Wibaux was a career diplomat in the sense that he spent his professional life fulfilling diplomatic missions. However, as a protégé of Foccart, Wibaux did not enter the Quai d'Orsay (Foreign Ministry) through normal recruitment channels. Later in his career, Wibaux developed a reputation for being a diplomat who could be sent to resolve delicate situations. He served as ambassador to Senegal in 1978, when France deployed aircraft to that country to covertly assist Mauritania in combating Polisario. In 1984, the government appointed him ambassador to Lebanon after terrorists assassinated one ambassador and his successor proved incapable. SHAT 11 S 140 "Instruction personnelle et secrète pour le General Délégué Militaire auprès du Président de la République du Tchad," n.d. [March 1969].

²⁸ SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 6-7.

²⁹ The two films were Gilles Pontecorvo's 1966 *The Battle of Algiers* and Mark Robson's 1966 *Lost Command*. The latter film was based on Jean Larteguy's popular novel *Les centurions*. Jean Martin played the Bigeard character (Colonel Mathieu) in the former film, while Anthony Quinn played him (Lieutenant-Colonel Pierre Raspeguy) in the latter film.

³⁰ Significant debate surrounded the selection of an operational commander. Tombalbaye suggested Kergaravat, who had formerly commanded Forces in French Equatorial Africa. However, Kergaravat had entered the arms trade upon his retirement and therefore would have been a politically problematic appointment. Foccart favored sending Bigeard. De Gaulle initially appeared favorable to Bigeard's appointment (on 12 November 1968). But later rejected Bigeard as too visible (on 11 March 1969). The French Army's Chief of Staff explained de Gaulle's reasoning in the following terms: "Bigeard is too visible. His nomination would be a signal to the international press." De Gaulle appears to have left the identification of a commander to Minister of Defense Pierre Messmer and Secretary of State for Cooperation Yvon Bourges. Foccart, *Journal de l'Elysée – II: 1968-1969, Le Général en Mai*, 435, 647; SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 7.

³¹ As the Ministry of Defense's internal study concluded, "The commander of the intervention was not... a proconsul in the way commanders in Hanoi and Algiers had been.... Although he [the military delegate] retained some autonomy... it was nothing compared to his predecessors during past wars." *Les Interventions Militaires Françaises au Tchad*, 362; and Foccart, *Journal de l'Elysée – II: 1968-1969, Le Général en Mai*, 660.

³² SHAT 2 S 61 Rapport de Fin de Mission du Général Arnaud, Délégué Militaire au Tchad, n.d.

³³ The French 6th Overseas Marine Infantry Regiment (6e RIAOM), possessing 600 personnel, was already based in Chad as France's rapid response force for interventions in central Africa. However, the 6th RIAOM played no military role until the French government decided to intervene. Even then, the government's decision to only employ volunteers meant that the 6th RIAOM's combat role was restricted until its conscripts could be replaced, which occurred in September and October 1969. Thus, at first the only combat troops under Arnaud's control consisted of the two Foreign Legion (2e REP) paratroops companies sent on 16 April. See *Les Interventions Militaires Françaises au Tchad*, 241-42; and SHAT 11 S 133 Bulletin de Renseignements Mensuel (période du 1er au 31 Août 1969), 31 Aout 1969.

³⁴ SHAT 2 S 61 Le général délégué militaire au Tchad au général Fourquet (CEMA), 18 October 1969.

³⁵ Jacques Foccart, *Journal de l'Élysée – II: 1968-1969, Le Général en Mai* (Paris: Fayard, 1998), 640.

³⁶ The Chadian Security Companies (CTS) consisted of 500 soldiers in 1969, compared to 1,900 for the Army. They answered directly to the President and were recruited on along tribal lines so as to guarantee their loyalty. *Les Interventions Militaires Françaises au Tchad*, 265; and SHAT 2 S 61 Le général délégué militaire au Tchad au général Fourquet (CEMA), 28 April 1969.

³⁷ SHAT 2 S 61 Le général délégué militaire au Tchad au général Fourquet (CEMA), 28 April 1969.

³⁸ SHAT 11 S 130 Compte Rendu du Général de Brigade Magendie sur sa mission au Tchad, du 2 au 6 Juillet 1969, effectuée sous l'autorité du Général de Division Aérienne Mitterrand, 7 July 1969; and SHAT 2 S 61 Le général délégué militaire au Tchad au général Fourquet (CEMA), 29 May 1969.

³⁹ The rebels lost 15 dead, inflicting no casualties, on 29 April. *Les Interventions Militaires Françaises au Tchad*, 313-14.

⁴⁰ Albeit necessary, Arnaud's plan humiliated the Chadian officer corps. Most Chadian officers saw themselves relieved of their commands and sent to training courses, while French officers replaced them in commanding Chadian troops. By proposing an eight-month curriculum, Arnaud also shortened the theoretical duration of officer training. SHAT 2 S 61 Rapport de Fin de Mission du Général Arnaud, Délégué Militaire au Tchad, n.d.; *Les Interventions Militaires Françaises au Tchad*, 264-65; and SHAT 11 S 130 Fernand Wibaux, Ambassadeur Haut Représentant de la République Française au Tchad à Michel Jobert, Ministre des Affaires Étrangères, "Rapport de fin de mission," 31 March 1974.

⁴¹ SHAT 2 S 61 Lieutenant-Colonel Lacroix, Fiche au sujet de la participation des populations à la Mission de pacification, 4 June 1969.

⁴² SHAT 11 S 130 Compte Rendu du Général de Brigade Magendie sur sa mission au Tchad, du 27 au 29 Août 1969, effectuée sous l'autorité du Général de Division Aérienne Mitterrand, 1 September 1969.

⁴³ According to Arnaud, Lami stated regularly "one must do it the African way" and "you need to handle it the Chadian way." Early June appears to be the first occasion that Arnaud complained of Lami violating the laws of war and French army rules on the treatment of prisoners. SHAT 2 S 61 Le délégué militaire au Tchad au général Fourquet, 4 June 1969.

⁴⁴ SHAT 2 S 61 Rapport de Fin de Mission du Général Arnaud, Délégué Militaire au Tchad, n.d.

⁴⁵ The second meeting on Dekaker occurred on 13 August. There is no archival trace as to what finally transpired after Tombalbaye agreed to reflect on his decision. SHAT 2 S 61 Réunion du comité de défense du 13 août 1969, 30 August 1969.

⁴⁶ The decision to replace Arnaud appears to have been made on 8 August. However, Tombalbaye was not immediately informed. As a result, he wrote French President Georges Pompidou, arguing for Arnaud's removal. According to Tombalbaye, "Incapable of establishing a good human relationship, General Arnaud failed to distinguish himself as a commander in my eyes and those of my officers. We have had the impression since his arrival that he is holding back his troops." SHAT 2 S 61 Président François Tombalbaye à Président Georges Pompidou, 30 August 1969.

⁴⁷ SHAT 2 S 61 Ministre de l'Etat Chargé de la Défense Nationale au général Fourquet (CEMA), 8 August 1969.

⁴⁸ The investigative mission was led by Air Force General Mitterrand, brother to (later) President François Mitterrand. General Mitterrand's investigation found entirely in favor of General Arnaud, and against his detractors. The mission argued that, "To replace the Military Delegate [Arnaud] after he has categorically declared his opposition to this tactic [genocide], will lead Chadian authorities to conclude that the French government is disavowing his [Arnaud's] stance." In operational terms, the mission concluded that, "The successful execution of the Arnaud plan is the only semblance of a solution that is imaginable and feasible." SHAT 11 S 130 Compte Rendu du Général de Brigade Magendie sur sa mission au Tchad, du 27 au 29 Août 1969, effectuée sous l'autorité du Général de Division Aérienne Mitterrand, 1 September 1969; and Jacques Foccart, *Journal de l'Elysée – III: 1969-1971, Dans les bottes du Général* (Paris: Fayard, 1999), 106.

⁴⁹ One promising general, on the fast-track for army's highest commands, requested the office. However, the high command rejected his candidacy for fear that his reputation would be sullied in Chad, it took more than a month to find Arnaud's successor. The order for Arnaud's replacement was issued on 8 August, but Cortadellas was not convoked until 15 September. Cortadellas did not actually arrive in Fort Lamy until 26 September. The long delay in replacing Arnaud irritated Foccart and Debré, especially after Arnaud leaked information about the Chadian Army's exactions to *le Monde*. Foccart, *Journal de l'Elysée – III: 1969-1971, Dans les bottes du Général*, 116-19; SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 1; and SHAT 2 S 61 Ministre de l'Etat Chargé de la Défense Nationale au général Fourquet (CEMA), 8 August 1969.

⁵⁰ The Army's Chief of Staff claimed that several generals responded to offers of the Chad command by stating that, "They would have followed orders, but without enthusiasm." However, faced with governmental parsimony, the high command wanted an officer who would "be the shock troop of the Armed Forces' General Staff in

obtaining the necessary political and financial decisions.” SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 6-7.

⁵¹ Foccart, *Journal de l'Élysée – III: 1969-1971, Dans les bottes du Général*, 94; 116-19.

⁵² Given that France possessed an airbase at Fort Lamy during peacetime, the air presence increased from 7 to 34 aircraft available during 1969. Before returning to France, Arnaud also convinced the government to sustain its intervention until July 1970, 14 months after the beginning of combat operations. *Les Interventions Militaires Françaises au Tchad*, 243-44; and Claude d'Abzac-Epezy and Véronique de Touchet, "L'aviation militaire française au Tchad, des origines à nos jours," *Revue historique des Armées* no. 225 (December 2001): 124.

⁵³ Although it is never openly discussed, French strategy towards Chad bore the imprint of France's final campaigns in Algeria—notably the Challe Offensive. During this offensive, French elite forces (paratroops, Foreign Legion and marines) would cleanse a region of significant enemy forces, leaving its pacification to less capable conscripts and militias. SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 76-78.

⁵⁴ By establishing a combined Franco-Chadian General Staff and helping Tombalbaye repress a Chadian Army mutiny, Cortadellas won the confidence of Tombalbaye. As an early diplomatic jost, Cortadellas vacated the National Assembly. Because Chad's National Assembly was out-of-session at the time of Arnaud's arrival, Arnaud established his staff in the National Assembly building. Arnaud resisted vacating the building as the Assembly's session approached. Cortadellas, however, made an immediate point of doing so. SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 26-37.

⁵⁵ The Ministries of Finances and Defense both eschewed responsibility for financing operations in Chad. Finances argued that the cost of military operations should be absorbed by the Ministry of Defense. Facing budgetary pressure as a result of France's nuclear program, which consumed up to half of the procurement budget at this time, the Ministry of Defense argued that operational expenses should be paid out of extraordinary funds, rather than the Ministry's normal budget. Meanwhile, while the Ministry of Cooperation was obliged to make a financial contribution, it insisted on accounting rules that prevented up to half of the funds allotted from being spent.

⁵⁶ The expansion of the Chadian Army to 15 companies was originally proposed by Chadian Colonel Félix Malloum in 1966. The 15 companies would be supported by an armored squadron and a mortar battery. The Chadian state possessed four distinct military and paramilitary formations (Army, Gendarmeries, Chadian Security Companies [CTS] and Nomadic Guards). Cortadellas planned to expand all four, which would raise the total Chadian military/paramilitary establishment from 7,102 personnel to 13,000 personnel.

The length of time needed to educate a Chadian lieutenant was a subject of ongoing debate. Arnaud favored an abbreviated training period of eight months, which would furnish practically trained officers in a reasonable time. Chadian officers opposed such a short training period because they felt that it would impinge on their corporate expertise, lessening their professional status vis-à-vis foreign colleagues who maintained the three year training period mandated by St. Cyr. Shortly after arriving (five days), Cortadellas argued that both lieutenants and captains needed to undergo a two year training/retraining period, which effectively would place all Chadian units in French hands, as the highest operational echelon was the company. Ambassador Wibaux opposed such a long training period. He argued, "The sacrosanct rule of three years to form a platoon leader and five a captain was probably unnecessary in a country where the problems were relatively simple, if urgent. Revolutionary armies have never taken so long to form, and our 30-year-old Republican and Napoleonic generals did not perform poorly despite their generally low intellectual level."

Cortadellas quickly formed the opinion that the Chadian Army's three colonels, Malloum, Odingar and Djogo, posed a threat to the regime and opposed France's role in Chad. Djogo was considered the least dangerous and was temporarily neutralized by being sent to Paris, for the Ecole de Guerre. Malloum, rightly, was considered the most dangerous. Malloum ultimately mounted a coup d'état in 1975.

While Chadians could provide significant manpower, Cortadellas believed that higher quality French forces were needed for mobile offensive operations. During the Algerian War, in which both Arnaud and Cortadellas served, French strategy involved the combined actions of several distinct categories of forces. Firstly, the so-called general reserve of elite units (paratroops and legionnaires) which spearheaded most offensive operations. These numbered less than 20,000. Then, conscripts and reservists provided the vast quantity of second rate units needed to guard supply lines, protect bases and establish a military presence throughout Algeria (known as "quadrillage" or gridding). These forces made up the bulk of France's 500,000 troops in Algeria. Finally, village self-defense units prevented the FLN from terrorizing or establishing a presence in pro-French villages. The self-defense forces, also known as "harkis," numbered up to 200,000.

In many respects, France's strategy in Chad was an evolution of its doctrine in Algeria, except the means were restricted and the methods less brutal. Cortadellas now argued that he needed 20 rather than the 10 helicopters he already possessed. According to Cortadellas, "A unit without vehicles can pacify a zone with a radius of 20 km. A unit with wheeled vehicles can pacify a radius of 100 km. Given Chad's size, these means of transportation cannot suffice to 'cover' the countryside.... Only helicopters will do the job." Cortadellas therefore reasoned that he needed double the ten helicopters that Arnaud obtained from Paris. SHAT 2 S 61 Le délégation militaire au Tchad au général Fourquet, 26 October 1969; SHAT 11 S 141 Fiche, Synthèse du Projet de 'Reorganisation des Forces Tchadiennes' établi par le Général Délégué Militaire au Tchad, 4 December 1969; *Les Interventions Militaires Françaises au Tchad*, 265-66; SHAT 2 S 61 Le délégation militaire au Tchad au général Fourquet, 1 October 1969; SHAT 11 S 130 Fernand Wibaux, Ambassadeur Haut Représentant de la République Française au Tchad à Michel Jobert, Ministre des Affaires Etrangères, "Rapport de fin de mission," 31 March

1974; and SHAT 2 S 61 Le délégation militaire au Tchad au général Fourquet, 18 October 1969. *Les Interventions Militaires Françaises au Tchad*, 266.

⁵⁷ SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 64-81.

⁵⁸ Foccart, *Journal de l'Élysée – III: 1969-1971, Dans les bottes du Général*, 160-62; SHAT 2 S 61 le Général Fourquet au général délégué militaire au Tchad, 30 October 1969; SHAT 11 S 141 Fiche à l'attention du Général de Division Aérienne, Sous-Chef d'Etat-Major des Armées, 4 December 1969, and SHAT 11 S 130 Fernand Wibaux, Ambassadeur Haut Représentant de la République Française au Tchad à Michel Jobert, Ministre des Affaires Etrangères, "Rapport de fin de mission," 31 March 1974.

⁵⁹ SHAT 11 S 141 Etat-Major Franco-Tchadien, Conception pour les opérations des forces franco-tchadiennes pendant la saison sèche, 7 November 1969.

⁶⁰ SHAT 11 S 141 Etat-Major Franco-Tchadien, Conception pour les opérations des forces franco-tchadiennes pendant la saison sèche, 7 November 1969; SHAT 2 S 61 Pierre Lami, Rapport relative au concours apporté par la M.R.A. à l'action operationelle des forces armées, 26 January 1970; and SHAT 2 S 61 Pierre Lami, Rapport relative au concours apporté par la M.R.A. à l'action operationelle des forces armées, 26 January 1970.

⁶¹ Adopting the old colonial technique of "ink blots", French units established themselves in important population centers and pushed patrols outwards. SHAT 11 S 141 Etat-Major Franco-Tchadien, Conception pour les opérations des forces franco-tchadiennes pendant la saison sèche, 7 November 1969.

⁶² The armies of these sultans were entitled "Goums." Those of Sila and Ouaddaï were established in November 1969. The former counted 40 goumiers (soldiers) and the latter 60. SHAT 2 S 61 Pierre Lami, Rapport relative au concours apporté par la M.R.A. à l'action operationelle des forces armées, 26 January 1970.

⁶³ Because of his personal dislike for Tombalbaye, beginning in 1968, Bokassa tolerated FROLINAT's presence on Central African soil. In early 1969, he went so far as publicly invite FROLINAT's leadership to meet him in the CAR's capital, Bangui. SHAT 11 S 140 A propos de contacts entre la RCA et le FROLINAT, 21 March 1969; SHAT 11 S 130 Fernand Wibaux, Ambassadeur Haut Représentant de la République Française au Tchad à Michel Jobert, Ministre des Affaires Etrangères, "Rapport de fin de mission," 31 March 1974; Foccart, *Journal de l'Élysée – III: 1969-1971, Dans les bottes du Général*, 204; and Jourden, 22.

⁶⁴ SHAT 11 S 130 Fernand Wibaux, Ambassadeur Haut Représentant de la République Française au Tchad à Michel Jobert, Ministre des Affaires Etrangères, "Rapport de fin de mission," 31 March 1974.

⁶⁵ Israel's Ambassador to Chad was extremely active. Although Israel did not provide any direct support to Tombalbaye, an incident in 1970 convinced Khaddafi of the contrary. Tombalbaye accepted Zairian dictator Sese-Seko Mobutu's offer to train two companies of Chadian troops as "para-commandos." Because Israeli instructors ran Zaire's commando training center, they arranged for the Israeli ambassador to Chad and Israeli officers to officially inspect these Chadian companies. A published photo of Israelis reviewing Chadian troops convinced Khaddafi that Israeli commandos were operating along his southern border. SHAT 11 S 130 Fernand Wibaux, Ambassadeur Haut Représentant de la République Française au Tchad à Michel Jobert, Ministre des Affaires Etrangères, "Rapport de fin de mission," 31 March 1974; Foccart, *Journal de l'Élysée – III: 1969-1971, Dans les bottes du Général*, 479, 494, 522; and SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 125-26.

⁶⁶ To convince Chadian and international opinion of Africa's support for Tombalbaye, Foccart also masterminded Tombalbaye's election as President of the Common Organization of Africa, Madagascar and Mauritius (OCAM) in early 1970. SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 65-70; and Foccart, *Journal de l'Élysée – III: 1969-1971, Dans les bottes du Général*, 210-15.

⁶⁷ A total of 30 village militias and goums existed by January 1970. This number was doubled during the dry season offensive (January to June). Village militias had received 500 rifles by January, consisting mostly of Second World War surplus MAS 36 rifles. By June, the French had distributed the greater part of 2,410 firearms. By way of contrast, French intelligence estimated that the rebels in central and eastern Chad possessed 124 firearms in August 1969 and 230 firearms in September 1971. SHAT 2 S 61 Pierre Lami, Rapport relative au concours apporté par la M.R.A. à l'action opérationnelle des forces armées, 26 January 1970; SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 101; SHAT 11 S 133 Délégation Militaire au Tchad, Etat-Major 2ème Bureau, Bulletin de renseignements mensuel, 31 August 1969; and *Les Interventions Militaires Françaises au Tchad*, 236-37.

⁶⁸ Cortadellas provides a picturesque description of these battles. According to him, "Generally, the encircled band would withdraw to hill, where the chiefs would assemble on the summit. Mounted and armed with the best weapons, a group of white-clad men constitute both the general staff and ultimate line of defense. Around and in front of them would be the mass of spearmen. Driven to fanaticism by either Islamic preaching or kat leaves, the spearmen charge our forces, withdrawing only once they have suffered heavy losses, in exchange for which we suffer very little. Once the fanatical human waves [of spearmen] break, the men in white withdraw on horseback with their weaponry. Once we possessed sufficient numbers of helicopters, they had great difficulty escaping and we captured numerous chiefs before summer 1970." SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 114-15.

⁶⁹ According to Cortadellas, most rebel bands in central and eastern Chad comprised 40 to 50 full-time rebels, armed with firearms. Whenever they launched a

major assault on an objective, "They would compensate for their small numbers by exciting villagers, either through an impassioned Islamic sermon about holy war or, simply, through coercive threat. A guerrilla force of 300 to 400 individuals would frequently have only 40 to 50 true rebels." Enrolled villagers were often armed with no more than spears. See SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 113-14.

⁷⁰ SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 122; and Foccart, *Journal de l'Elysée – III: 1969-1971, Dans les bottes du Général*, 225.

⁷¹ SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 100.

⁷² SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 85-90; and SHAT 2 S 61 le Général Délégué Militaire au Tchad au Ministre, 20 January 1970.

⁷³ SHAT 2 S 61 Le Secrétaire d'Etat aux Affaires Etrangères à Monsieur Fernand Wibaux, Ambassadeur de France, 16 April 1970.

⁷⁴ SHAT 2 S 61 Le Secrétaire d'Etat aux Affaires Etrangères à Monsieur le Général d'Armée Aérienne Michel Fourquet, Chef d'Etat-Major des Armées, 7 July 1970.

⁷⁵ SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 125-26.

⁷⁶ SHAT 11 S 133 Délégation Militaire au Tchad, Etat-Major 2ème Bureau, Bulletin de renseignements mensuel, 31 August 1969.

⁷⁷ SHAT 11 S 130 Compte Rendu du Général de Brigade Magendie sur sa mission au Tchad, du 27 au 29 Août 1969, effectuée sous l'autorité du Général de Division Aérienne Mitterrand, 1 September 1969.

⁷⁸ Because of its geography, in a valley surrounded by high canyons, aircraft could not use the runway at Zouar if rebels occupied the canyon's heights. Likewise, supplies parachuted to the garrison would likely be recuperated by the rebels because of the position's geography. SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 129-35; and *Les Interventions Militaires Françaises au Tchad*, 321-22.

⁷⁹ *Les Interventions Militaires Françaises au Tchad*, 322-23.

⁸⁰ SHAT 11 S 140 Etat-Major des Armées, Fiche à l'attention de Monsieur le Ministre d'Etat Chargé de la Défense Nationale, 17 October 1970.

⁸¹ SHAT 2 S 61 le Général Délégué Militaire au Tchad, Strictement Reservé au Général d'Armée Aérienne Fourquet, 15 October 1970.

⁸² SHAT 11 S 140 Compte-rendu de l'opération: Picardie II, 10 November 1970; SHAT 2 S 61 Général M. Loubet, Compte-Rendu de mission au Tchad du 23 au 27

Novembre, 4 December 1970; and SHAT 2 S 61 Général M. Loubet, Compte-Rendu de mission au Tchad du 23 au 27 Novembre, 4 December 1970.

⁸³ Cortadellas began planning this campaign once he had firm intelligence about the Toubou contingent from Libya. SHAT 2 S 61 Cortadellas, Situation au B.E.T. et mesures envisagées, 17 September 1970; SHAT 11 S 140 Délégation Militaire au Tchad, Etude sur une operation à mener au Tibesti, 1 October 1970; and SHAT 11 S 140 le Général d'Armée Aérienne Fourquet à Monsieur le Ministre d'Etat Chargé de la Défense Nationale, 13 October 1970.

⁸⁴ Foccart, *Journal de l'Elysée – III: 1969-1971, Dans les bottes du Général*, 461, 468-71.

⁸⁵ Roger Vercken, *Histoire succincte de l'Aéronautique navale (1910-1998)* (Paris: Ardhan, 1998), 153-54.

⁸⁶ SHAT 11 S 140 Opération Bison: Ebauche de conception du colonel commandant le 6ième RIAOM commandant désigné de l'opération, 19 December 1970.

⁸⁷ *Les Interventions Militaires Françaises au Tchad*, 329-36; and SHAT 11 S 140 Presentation de l'Opération Bison, Borkou-Tibesti, 15 June 1971.

⁸⁸ SHAT 11 S 140 Etat-Major des Armées, Opération Bison, 4 February 1971; and *Les Interventions Militaires Françaises au Tchad*, 329-36.

⁸⁹ SHAT 11 S 130 Fernand Wibaux, Ambassadeur Haut Représentant de la République Française au Tchad à Michel Jobert, Ministre des Affaires Etrangères, "Rapport de fin de mission," 31 March 1974.

⁹⁰ *Les Interventions Militaires Françaises au Tchad*, 329-36.

⁹¹ SHAT 11 S 140 Presentation de l'Opération Bison, Borkou-Tibesti, 15 June 1971.

⁹² Jackie Neau, *L'Intervention de la France dans le conflit tchadien, 1969-1975* (Paris: Mémoires d'Hommes, 2006), 89-90; and SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 182-83.

⁹³ The presence of the band was revealed by Chadians angered by exactions committed on 10 June. Lacking sufficient helicopter support, French paratroops rented five Chadian civilian trucks. Searching small oases, the French captured two rebels, one of whom indicated the location of the main rebel band, which comprised approximately 150 combatants. Hindered by its small number of helicopters, the French were obliged to deploy one platoon at a time. The French managed to fix the rebel band and inflict casualties on it until nightfall, when the remaining rebels escaped, leaving behind 55 dead and 35 badly wounded. Neau, 147-55.

⁹⁴ Because of the distances and difficulties involved in re-supplying regions in northern Chad, keeping the region furnished with consumables was extremely costly. One French study concluded that 3.5 liters of fuel were consumed in transport from Fort Lamy to northern Chad for each liter of fuel stockpiled in the North. *Les Interventions Militaires Françaises au Tchad*, 339-45.

⁹⁵ Neau, 93.

⁹⁶ SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 183.

⁹⁷ SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 195-202; and *Les Interventions Militaires Françaises au Tchad*, 347-53.

⁹⁸ Jourden, 29-30; and SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 202-03.

⁹⁹ SHAT 11 S 130 Mémoires du Général Cortadellas, n.d., 203.

¹⁰⁰ Chad never signed a treaty giving the Aozou Strip to Libya, but accepted its occupation without protest. Claude Faure, *Aux Services de la République* (Paris: Fayard, 2004), 586-87.

¹⁰¹ Jourden, 31.

¹⁰² *Interventions Militaires Françaises au Tchad*, 358-59.

¹⁰³ At the end of 1971, Chadian forces consisted of:

Chadian Army: 4,300 men

National Nomadic Guard: 3,700 men

Gendarmerie: 1,800

Chadian Security Companies (Presidential Guard): 900

See SHAT 11 S 141 Fiche, Synthèse du Projet de 'Reorganisation des Forces Tchadiennes' établi par le Général Délégué Militaire au Tchad, 4 December 1969; and *Interventions Militaires Françaises au Tchad*, 270.

¹⁰⁴ While Chad was the first significant military intervention of the Fifth Republic, it foreshadowed France's growing international activism. Developments in the international system and President Valéry Giscard d'Estaing's greater willingness to use force culminated in a succession of military interventions. Between 1977 and 1979, France intervened militarily in Mauritania, Chad (for the second time), Zaire (twice), Lebanon and the Central African Republic. Although the individual circumstances varied, all of these interventions demonstrated France's desire to uphold its traditional spheres of influence. In Africa, the main threats were Libyan expansionism and Soviet and Cuban activism. French efforts in Chad and Lebanon proved disappointing, while

interventions in Zaire, Mauritania and the Central African Republic were successes. Rather than examine all of Giscard's military interventions, this section focuses on French operations in Mauritania against the POLISARIO rebel movement.

¹⁰⁵ Algeria supplied a safe haven from which the rebels could operate. Well disposed towards revolutionaries, Libya provided weaponry and financial assistance, delivered across the oases of southern Libya and Algeria along the so-called "Khaddafi Trail." Cuban advisors also assisted with training the rebels. Interview with General Michel Forget, Paris, 26 January 2006.

¹⁰⁶ In interviews, Forget estimated the average size of POLISARIO columns at 50 vehicles, while Méry estimated them as having 25 to 30 vehicles. Interview with General Michel Forget, Paris, 26 January 2006; SHAT 3 K 4 Entretien avec Général Guy Méry, 11 December 1996.

¹⁰⁷ Interview with General Michel Forget, Paris, 26 January 2006.

¹⁰⁸ Interview with General Michel Forget, Paris, 26 January 2006.

¹⁰⁹ With a Soviet naval air station operating in neighboring Mali, Cuban advisors assisting POLISARIO and communist influence on the rise throughout Africa, it was not farfetched that the Soviet Union would capitalize on a Mauritanian request for assistance to extend its influence.

¹¹⁰ SHAT 3 K 4 Entretien avec Général Guy Méry, 11 December 1996.

¹¹¹ As already explained, POLISARIO operated out of southern Algeria. The photo-reconnaissance Mirage IVs were normally only used for strategic targeting for French nuclear weapons. Their photoreconnaissance sortie was directed against the Sahraoui sanctuaries in southern Algeria. Flying the sortie required presidential approval because it involved violating Algerian airspace and the use of French aircraft normally attached to French strategic forces. Interview with General Michel Forget, Paris, 26 January 2006.

¹¹² SHAT 3 K 4 Entretien avec Général Guy Méry, 11 December 1996.

¹¹³ Jean Guisnel, *Les généraux: Enquête sur le pouvoir militaire en France* (Paris: La Découverte, 1990), 20.

¹¹⁴ According to Forget, it took a minimum of 75 minutes for the Jaguars to fly from Dakar to their destination. Additional time must be counted to signal the attack and launch the aircraft. Interview with General Michel Forget, Paris, 26 January 2006.

¹¹⁵ Interview with General Michel Forget, Paris, 26 January 2006.

¹¹⁶ According to Méry, "All of these other ideas were progressively excluded because of Mauritanian objections. We had no treaty of cooperation or defense. We had to find a discreet means of helping Mauritania without Franco-Mauritanian collusion becoming evident to the world at large." Deploying a fighter-bomber squadron to Dakar would be relatively discreet. French military forces would operate from Senegalese rather than Mauritanian territory, and could disguise their deployment under the cover of pre-arranged exercises in Senegal and the Ivory Coast. SHAT 3 K 4 Entretien avec Général Guy Méry, 11 December 1996.

¹¹⁷ Interview with General Michel Forget, Paris, 26 January 2006; and Guisnel, 21.

¹¹⁸ Forget's forces comprised 6 (later 12) Jaguars fighter-bombers, two C-160 Transall aircraft equipped to serve as flying command posts, two KC-135 aerial refueling aircraft, two Puma helicopters and four (later 5) Breguet Atlantique maritime reconnaissance aircraft. In addition to the 16 to 23 aircraft, a unit of French Commandos de l'Air (Air Commandos) was deployed to Dakar to protect the aircraft. SHAT 3 K 4 Entretien avec Général Guy Méry, 11 December 1996.

¹¹⁹ Forget and his staff were all lodged in rented private apartments, rather than on a military base, in a hotel or at the embassy. This was also considered part of the effort of keeping their intervention discreet. SHAT 3 K 4 Entretien avec Général Guy Méry, 11 December 1996.

¹²⁰ According to General Gaget, the primary purpose of the 13th RDP was to inform Forget of POLISARIO and Mauritanian activities. Forget, however, claims that they never provided him with valuable intelligence, but served as an independent source of information to decision-makers in Paris. Robert Gaget, *Au-delà du possible: Recherche du renseignement en régions hostiles* (Paris: Grancher, 2002), 180-86; and Interview with General Michel Forget, Paris, 26 January 2006.

¹²¹ SHAT 3 K 4 Entretien avec Général Guy Méry, 11 December 1996; and Michel Forget, "Mauritanie 1977: 'Lamantin,' Une intervention extérieure à dominante 'air.'" n.d.. (unpublished paper, adapted and published in *Revue Historique des Armées* no. 1 (1992)).

¹²² After Pompidou launched the diplomatic process, Giscard became France's first president to visit Algeria after independence. Although Giscard's 1975 visit to Algeria proved a first step in normalizing relations between the two states, Franco-Algerian relations remained distant. Giscard did not receive a personal message from Boumediene between 1975 and 1978. Valéry Giscard d'Estaing, *Le Pouvoir et la Vie* (Paris: Compagnie 12, 1991), 361-96.

¹²³ SHAT 3 K 3 Entretien avec Général François Gerin-Rose, 10 October 1996.

¹²⁴ SHAT 3 K 3 Entretien avec Général François Gerin-Rose, 10 October 1996; SHAT 3 K 4 Entretien avec Général Guy Méry, 11 December 1996; and Interview with General Michel Forget, Paris, 26 January 2006.

¹²⁵ SHAT 3 K 4 Entretien avec Général Guy Méry, 11 December 1996.

¹²⁶ Interview with General Michel Forget, Paris, 26 January 2006.

¹²⁷ Interview with General Michel Forget, Paris, 26 January 2006.

¹²⁸ Forget was not informed about the diplomatic efforts running in parallel to France's military intervention. Interview with General Michel Forget, Paris, 26 January 2006.

¹²⁹ The Moroccans had already signaled the presence of SA-7s, which they suspected of downing their own piston-engine aircraft. However, this intelligence had not been presented as firm to Forget. Interview with General Michel Forget, Paris, 26 January 2006; and Jean-Pierre Otelli, *Pilotes dans la tourmente* (Paris: Altipresse, 2005), 135-80.

¹³⁰ Forget, "Mauritanie 1977: 'Lamantin,' Une intervention extérieure a dominante 'air.'"

¹³¹ Interview with General Michel Forget, Paris, 26 January 2006.

¹³² SHAT 3 K 3 Entretien avec Général François Gerin-Rose, 10 October 1996.

¹³³ Interview with General Michel Forget, Paris, 26 January 2006; and Michel Forget, "Mauritanie 1977: 'Lamantin,' Une intervention extérieure a dominante 'air.'" n.d..

¹³⁴ Ibid.

¹³⁵ Ibid.

¹³⁶ Guisnel, 23.

¹³⁷ The Jaguar that landed at Nouadibou was shipped disassembled back to France. Interview with General Michel Forget, Paris, 26 January 2006; Guisnel, 23; and Michel Forget, "Mauritanie 1977: 'Lamantin,' Une intervention extérieure a dominante 'air.'" n.d..

¹³⁸ Michel Forget, "Mauritanie 1977: 'Lamantin,' Une intervention extérieure a dominante 'air.'" n.d..

¹³⁹ A Mauritanian garrison was overwhelmed at Touagil on 25 January 1978. But the Mauritanian Army successfully repulsed attacks on Tichla (2 February) and Touagil (again, 28 February). Michel Forget, "Mauritanie 1977: 'Lamantin,' Une intervention exterieure a dominante 'air.'" n.d..

¹⁴⁰ As deputy commander of French tactical aviation (FATAC), Forget's assignment to Mauritania was considered temporary from the outset. Once the most delicate phase of the operation had passed--the liberation of the eight French hostages--Forget returned to FATAC's headquarters in Metz, to be replaced by a more junior officer. See Interview with General Michel Forget, Paris, 26 January 2006.

¹⁴¹ Ibid.

¹⁴² While France accomplished all of its objectives, the same cannot be said for the Mauritanian government. In part because of its debacle in the Western Sahara, the Mauritanian Army overthrew President Ould Daddah in 1978 and renounced its claim to the Western Sahara in 1979. Morocco persisted, however, and eventually defeated the insurgency after decades of effort.

¹⁴³ Interview with General Michel Forget, Paris, 26 January 2006.

¹⁴⁴ Michel Forget, "Mauritanie 1977: 'Lamantin,' Une intervention exterieure a dominante 'air.'" n.d..

¹⁴⁵ Not counting the Algerian War, which was a counterinsurgency waged in what was considered metropolitan France, France's last intervention exceeding its Gulf War contribution occurred during the 1956 Suez Crisis. The size of the Iraqi Army drove France's exceptionally large intervention. Possessing an army of 1,000,000 at the end of the Iran-Iraq War, the Iraqi Army was frequently qualified as the world's fourth largest. Schwarzkopf estimated that it counted 63 divisions, including eight of the elite Republican Guard, with a total of 5,747 tanks, 10,000 other armored vehicles and 3,500 artillery pieces. Iraq's armed forces possessed many weapons considered sophisticated, including Soviet T-72 tanks, South African G8 artillery pieces, French GCT self-propelled guns, Brazilian Astros II multiple rocket launchers and Roland II surface-to-air missiles. Its air force also possessed capable MiG-29, Su-24 and Mirage F1 combat aircraft. Former United States military attaché to Syria, Lieutenant-Colonel Rick Francona estimated that the Iraqi Army was the second most powerful (after the Israelis) and third most professional (after the Jordanians and Israelis) in the Middle East. Its chemical weapons capabilities were particularly feared in 1990. By the end of the Iran-Iraq War, the Iraqis had synthesized combat gases including nerve gases (Tabun and Sarin), vesicants (mustard gases), and hydrogen cyanide. The Iraqis had extensive experience combining different types of gas to maximize battlefield effects and combining gas in artillery fire-plans. Interview with Lieutenant-Colonel Rick Francona, California, 6 January 2000; and Frédérick Guelton, *La guerre américaine du Golfe*:

Guerre et puissance à l'aube du XXIe siècle (Lyon: Presses Universitaires de Lyon, 1996), 64-95.

¹⁴⁶ During the 1950s, French forces participated as junior partners in the Korean War and the Suez Crisis. France occasionally operated in concert with allies during its subsequent interventions. In Chad (1969-72) and Mauritania (1977-78), French forces cooperated with those of their hosts. In 1978, France collaborated with Belgium and the United States (which provided transportation) during the Second Shaba (Zaire) Crisis. In 1983, French forces worked with their Zairian counterparts in Chad. And in 1984, France, Italy and the United States all intervened in Lebanon. Notwithstanding these examples of collaboration with allies, France was at least an equal partner in its interventions since the advent of the Fifth Republic.

¹⁴⁷ During the Iran-Iraq War, most of France's political elite favored Iraq, as a counterweight to Iranian power and fanaticism. However, Mitterrand's government could be divided between those who viewed Iraq as the lesser of two evils, including Charles Hernu (Defense Minister 1981 to 1985) and Roland Dumas (Foreign Minister 1984 to 1986 and 1988 to 1993). Pro-Iraq decision-makers included Defense Minister Jean-Pierre Chevenement and former Foreign Minister (1981-1984) Claude Cheysson. Jacques Chirac, then Mayor of Paris, had had a close relationship with the Iraqi government while Prime Minister under Giscard. Although retired, Pierre Gallois, one of France's nuclear theorists, also favored Franco-Iraqi collaboration. Interview with François Heisbourg, Paris, July, 13, 2004; Pierre Gallois, *Le sablier du siècle* (Lausanne: L'âge d'homme, 1999), 475; and Interview with Admiral Jacques Lanxade, Paris, 14 January 2005.

¹⁴⁸ Iraq was France's second largest arms supplier. Amongst the arms it supplied were: (133) Mirage F1 fighters, Gazelle helicopters, Exocet anti-ship missiles, laser-guided missiles (AS-30L), self-propelled GCT artillery, Roland surface-to-air missiles and light armored vehicles. Kenneth Timmerman, *Le lobby de la mort: Comment l'Occident a armé l'Irak* (Paris: Calmann-Lévy, 1991); and Interview with Admiral Jacques Lanxade, Paris, 14 January 2005.

¹⁴⁹ Hubert Védrine, *Les mondes de François Mitterrand: à l'Elysée, 1981-1995* (Paris: Fayard, 1996), 519-27.

¹⁵⁰ The French government was divided as to the real threat posed to Saudi Arabia. General Schmitt and Admiral Lanxade, drawing mainly on American military intelligence, considered the threat to be real. Defense Minister Chevenement and Jean-Louis Bianco, Secretary General to the President, suspected the United States of dramatizing the situation to justify their military deployments. To convince Mitterrand that the threat was real, Lanxade convinced the United States to send an officer with satellite photographs of Iraqi tank concentrations. Lanxade's initiative convinced Mitterrand that there was cause for alarm. Jean-Pierre Chevenement, *Une certaine idée*

de la République m'amène à... (Paris: Albin Michel, 1992), 38; and Interview with Admiral Jacques Lanxade, Paris, 14 January 2005.

¹⁵¹ Interview with General Maurice Schmitt, Marseilles, 21 January 2005.

¹⁵² Interview with Admiral Jacques Lanxade, Paris, 14 January 2005.

¹⁵³ No. 37 DEF/CGA/OCF/RI/CD/91 Contrôle Général des Armées, Rapport de Synthèse, 6 August 1991, p. 61.

¹⁵⁴ In 1990, France possessed no entirely professional armored or mechanized infantry battalions. Most of the lighter professional forces that France possessed--paratroops, helicopter units, armored car battalions and motorized infantry--lacked the firepower to halt Iraq's armored divisions.

¹⁵⁵ The 6th Light Armored Division comprised seven regiments: two infantry, two cavalry (armored), one artillery, one of combat engineers and one logistic. In many respects, the key weapons system of the division was the AMX-10RC. As a wheeled armored vehicle, the AMX-10RC would have normally been classified as an armored car. However, its comparatively heavy weight (15 tons) and firepower of the vehicle led the French to classify it as a light tank. Armed only with aluminum armor, the AMX-10RC could not survive a hit from an enemy tank round. However, the AMX-10RC's 105mm canon enabled the vehicle to many types of enemy tanks, except for the most recent generations. Because of the better quality of the AMX-10RC's optics, many French commanders estimated that it could destroy an enemy T-55 at 2,000 meters, whereas the T-55 could only realistically hit the AMX-10RC at a range of 1,000 meters. Only later-model AMX-10RCs were equipped to fire sabot ammunition. However, 80 percent of the sabot-capable vehicles were sent to the Gulf. Interview with Commandant Pierre Frouin, Paris, 4 March 2000.

¹⁵⁶ Interview with General Maurice Schmitt, Marseilles, 21 January 2005.

¹⁵⁷ Fleury suggested that the commander should be General Lartigau, the commander of French tactical aviation (FATAC). Jean Fleury, *Faire Face: Mémoires d'un Chef d'Etat-Major* (Paris: Jean Picollec, 1997), 260-63.

¹⁵⁸ On 27 August, the French General Staff began studying deploying part of the 6th Light Armored Division, while the Air Staff began examining air options several days later.

¹⁵⁹ Interview with General Maurice Schmitt, Marseilles, 21 January 2005.

¹⁶⁰ The major units comprised in the initial force included: one infantry regiment, one combat helicopter regiment, one (soon two) cavalry regiment(s) (with light tanks/armored cars) and one combat engineer regiment. The force initially comprised 36

(soon 72) AMX-10RC armored cars possessing a formidable anti-tank capacity (105mm canons), 24 VAB's armed with HOT anti-tank missiles, 34 combat aircraft and 42 helicopters (20 anti-tank Gazelles armed with HOT missiles, 10 Gazelles armed with 20mm canons and 12 Puma transport helicopters). See Erwan Bergot, *Opération Daguet: les français dans la guerre du golfe* (Paris: Presses de la Cité, 1992), 32; Guelton, 102-03; and Interview with General Michel Roquejoffre, 23 January 2005.

¹⁶¹ Some, including Defense Minister Jean-Pierre Chevenement, suspected that the United States had encouraged Iraq's invasion of Kuwait in order to destroy Iraqi military power. According to Chevenement, French intelligence analysts supported this theory. However, most of Mitterrand's entourage rejected this conspiracy theory. Chevenement, 39.

¹⁶² Interview with Admiral Jacques Lanxade, Paris, 14 January 2005.

¹⁶³ Interview with General Maurice Schmitt, Marseilles, 21 January 2005.

¹⁶⁴ According to Saudi General Khaled ben-Sultan, the Saudis originally suggested that the French use Yanbu in jest. For Sultan, being at Yanbu, the French would be no more useful than in Cairo, Egypt. On being told that French forces would be militarily useless in Yanbu, the French emissary responded that it did not matter, because what imported was France demonstrating its resolution to participate in the international coalition. Khaled ben-Sultan, *Desert Warrior: A Personal View of the Gulf War by the Joint Forces Commander* (New York: HaperCollins, 1995), 271-72.

¹⁶⁵ Bernard de Montferrand, *Défendre l'Europe: La tentation Suisse* (Paris: Economica, 1999), 23.

¹⁶⁶ Although nominally subordinate, the Franco-Saudi relationship remained vague. Paris resisted signing a protocol fixing either the mission or responsibilities of French forces. Infuriatingly for the Saudis, Roquejoffre also appeared unable to negotiate or commit to any course of action. Ultimately, France only signed a protocol with Saudi Arabia on 4 November, more than two months after troops had arrived and once the threat of an Iraqi attack had largely disappeared. In retrospect, Roquejoffre considered it fortunate that France was not obliged to fight while cooperation with the Saudis was difficult.

According to General Sultan, "What complicated matters was that Chevenement insisted on every local move being cleared through him in Paris. The British Commander, Sir Peter de la Billière, had London's authority to delegate command over British servicemen to the Americans, if he thought it appropriate. But Roquejoffre had no such authority from Paris. Whatever we asked him to do, he had to clear this with his high command before responding. Questions would fly back and forth, delaying any decisions." Khaled bin-Sultan, *Desert Warrior: A Personal View of the Gulf War by the Joint Forces Commander* (New York: HaperCollins, 1995), 271; and Michel

Roquejoeffre, "Les leçons de la guerre du Golfe," *Relations internationales* (Summer 1995): 9.

¹⁶⁷ Should the Iraqis attack, the French planned to slow and weaken them in a mobile anti-tank battle. Entirely separate so long as fighting did not occur, Schwarzkopf and Schmitt agreed that France's brigade would enter under American "operational control," according to procedures laid out under the Ailleret-Lemnitzer Accord of 1967, if French and American forces were obliged to cooperate an Iraqi attack. The Ailleret-Lemnitzer Accord established the modalities under which French forces would intervene in support of NATO, once de Gaulle had withdrawn from the integrated force structure. Interview with General Maurice Schmitt, Marseilles, 21 January 2005.

¹⁶⁸ General Roquejoeffre issued clear orders that the French should not attempt to defend any fixed position, but wage a mobile defense, trading space for time and inflicting attrition on an advancing Iraqi troops. In their analyses of the Iraqi offensive threat, the French estimated that as many as three Iraqi armored divisions, with 900 tanks, could be sent towards Riyadh. To best meet this threat, the French planned to deliver halting blows with their brigade. The 2nd Foreign Legion Infantry Regiment constituted the center of the French position, with armored car (light tank) units deployed to cover either flank. With a large number of Milan anti-tank missiles (105 versus 42 normally deployed by a regiment) the Legion's infantry would strike enemy tanks, temporarily halting the Iraqi offensive. Theoretically, covered by the armored cars on their flanks, the French infantry would mount their motorized vehicles and speed rearwards to establish another halting position. The French opted for extremely dense anti-tank defenses. According to French manuals, five Milan missiles are considered necessary for the defense of two kilometers. By receiving anti-tank sections from other regiments, the 2nd Foreign Legion Infantry Regiment concentrated 105 missiles along a frontage of 4.5 kilometers, achieving nine times the normal anti-tank density. 2^{ème} Régiment étranger d'infanterie, *Journal des marches et opérations: "Opération Daguet,"* n.d.; 2^{ème} Régiment étranger d'infanterie, *Rapport sur l'opération Daguet: du 20 septembre 1990 au 11 avril 1991*, annexe I, section I, n.d.; and Interview with General Michel Roquejoeffre, 23 January 2005.

¹⁶⁹ Eventually, the French and Saudis agreed on a zone west of the Wadi al-Batin, where French forces began arriving on 5 October. Interview with General Michel Roquejoeffre, 23 January 2005.

¹⁷⁰ The Saudis initially offered Buraydah. However, because Buraydah was less than 350 kilometers from the border and not protected by American Patriot surface-to-air missile batteries, Air Force Chief of Staff General Fleury refused the offer. Afterwards, Roquejoeffre's Air Force deputy, General Gellibert, obtained the use of Al Ahsa. Fleury, 263; Chevenement, 44-45; and Interview with General Maurice Schmitt, Marseilles, 21 January 2005.

¹⁷¹ Védérine dates the beginning of France's diplomatic push to 24 September, the same day as French combat forces began disembarking in Saudi Arabia, Mitterrand declared before the United Nations that, "If Iraq declares its intention to withdraw its troops [from Kuwait] and free the hostages, then anything may be possible." Védérine, 534.

¹⁷² According to Védérine, American diplomats wanted to avoid seeking a Security Council Resolution in late-November. They argued that Article 51 of the United Nations Charter (the right to self-defense) justified the use of force. French policymakers argued for a specific United Nations resolution. Védérine, 533-38.

¹⁷³ Mitterrand had argued for an international conference on the Israeli-Palestinian problem since 1984. When Iraq invaded Kuwait, Mitterrand refused linking an Iraqi evacuation to the scheduling of a conference on Israel-Palestine. However, he continued championing the conference in the hope that Hussein would seize on it as a face-saving pretext for evacuating Kuwait. Although Mitterrand was skeptical about the chances of his initiative succeeded, he argued that the west needed to make greater efforts in favor of an Israeli-Palestinian solution, lest western powers be accused of a double standard--punishing Iraq for its occupation of Kuwait, but accepting Israel's occupation of Palestine. Lanxade argues that Mitterrand had little faith in France's initiative succeeded, but nonetheless embraced the Foreign Ministry's strategy on the slight hope it might bear results. Védérine, 534-38; and Interview with Admiral Jacques Lanxade, Paris, 14 January 2005.

¹⁷⁴ Mitterrand's emissaries included Claude Cheysson, Edgar Pisani and Michel Vauzelle. As Foreign Minister between 1981 and 1984, Cheysson had particularly close relations with Iraq and its leaders. Although a European Commissioner at the time, Cheysson hoped that his personal relations with Iraqi leaders would render his effort more credible. Considered a "progressive" left-wing Arab regime, whose political ideology was similar to Iraqi Ba'athism, Algeria, it was hoped, would also be able to convey French proposals to Iraq. Védérine, 533-35; and Jacques Bernière, "Le contexte diplomatique de la guerre du golfe," *Cahiers du CEHD No. 21: La participation militaire française à la guerre du golfe* (Paris: Ministère de la Défense, 2001), 24.

¹⁷⁵ In addition to their own proposal, Mitterrand also supported the Soviet Union's efforts to negotiate Iraq's withdrawal according to a similar formula. Soviet Vice-Minister of Foreign Affairs, Yevgeni Primakov, conversed with Mitterrand about the Soviet proposals on 7 October. Like the French formula, the Soviet proposal also depended on Iraq evacuating Kuwait before anything else could be done. However, once Iraq evacuated Kuwait: 1) an Israeli-Palestinian peace process would begin in which all of the Security Council's permanent members would participate, 2) the Arab League would organize bilateral negotiations between Iraq and Kuwait on their territorial disputes (the islands of Warba and Bubyán and the Rumelia oil field), and 3) the creation of a regional collective security system. See Védérine, 536-37; and Evguéni Primakov, *Missions à Bagdad: Histoire d'une négociation secrète* (Paris: Seuil, 1991), 57-70.

¹⁷⁶ Bernière, 24.

¹⁷⁷ Pentagon wargames and United States Air Force analyses indicated that the window of vulnerability closed fairly quickly. However, Schwarzkopf mistrusted analyses that counted heavily on air power stopping an enemy land offensive. For him, Saudi Arabia was not safe until American heavy (armored and mechanized) combat units became available in October. In retrospect, the window of vulnerability was probably comparatively brief. As the Battle of Khafji demonstrated, small land forces supported by massive air forces can inflict enormous casualties on attacking armored forces in a desert environment. See Rick Francona, *Ally to Adversary: An Eyewitness Account of Iraq's Fall from Grace* (Annapolis: Naval Institute Press, 1999), 48-53.

¹⁷⁸ Intelligence evaluated the forces capable of attacking along the Wadi al-Batin three armored divisions, with 900 tanks. Given that the French and Saudis initially deployed only two brigades, they were below the threshold of possessing at least a third the forces of their opponents. French forces are also universal in declaring the Saudi brigade to have been worthless. Lacking the trained mechanics to maintain their vehicles, the brigade's tanks were immobile. After Iraq invaded Kuwait, the brigade transported its tanks to their new positions aboard tank transporters (large trucks). Once arrived, they used their tanks as static bunkers.

With French forces in short supply and Arab forces (eventually Egyptian and Syrian divisions deployed to the area) of uncertain value, the French still feared an Iraqi attack as late as mid-November. As mentioned before, the road to Riyadh via the Wadi al-Batin was poorly defended compared to areas further to the east where American forces concentrated. Franco-Arab planning therefore continued for how French forces would react to either a penetration or outflanking of the main Arab defensive position. Interview with General Michel Roquejoffre, 23 January 2005; General Maurice Schmitt, Marseilles, 21 January 2005; SHAT 3 k 81 Entretien avec le Général Pierrick Boquet, n.d.; and Division Daguët, Etude des possibilités d'action de la Div Daguët, 8 November 1990.

¹⁷⁹ Interview with General Michel Roquejoffre, 23 January 2005.

¹⁸⁰ Comprising the heavily armed VII Corps from Germany, two divisions from the continental United States and the 2nd Marine Division, the reinforcements virtually doubled the United States' presence in Saudi Arabia. Falcona, 69-77.

¹⁸¹ At an early November meeting between American Secretary of State James Baker and President Mitterrand, Baker expressed his opinion that Article 51, on legitimate defense, of the United Nations Charter permitted the coalition to liberate Kuwait. Mitterrand opposed Baker's reasoning, declaring that France would not participate unless the liberation was legitimated by a specific Resolution. According to Admiral Lanxade, President Bush acquiesced to Mitterrand's demands during a later

meeting between the two presidents on 18 November. Lanxade, *Quand le monde à basculé* (Paris: Fayard, 2001), 74-75.

¹⁸² The United Kingdom and Egypt both doubled their military contributions, from a single brigade to a full armored division in the former case and from one to two divisions in the latter case.

¹⁸³ On 29 November, General Roquejoffre queried General Yeosock, commander of the American 3rd Army, about the nature of American offensive plans. Yeosock responded that no plan had yet been agreed upon. The Americans were considering either broadly outflanking Iraqi forces with a vast turning movement through the Iraqi desert or a narrower turning movement, attacking northwards towards Kuwait City via Hafar al Batin-Al Ruqui-Kuwait City. Interview with General Michel Roquejoffre, 23 January 2005.

¹⁸⁴ The Marines consisted of two divisions. The Arab forces were divided into two ensembles. The Joint Forces Command (JFC) East, operating to the east of the Marines, comprised two mechanized brigades formed of Saudi and Gulf Cooperation Council (GCC) forces and a Saudi National Guard infantry brigade. JFC North, operating on the western flank of the Marines, comprised two Egyptian divisions (3rd Mechanized and 4th Armored), one Syrian division (9th Armored), two Saudi brigades and two Kuwaiti brigades.

Iraq's defenses on the Saudi-Kuwait border were the most heavily fortified. Iraq deployed 14 infantry divisions along the border, meaning that each division defended an average of 16 kilometers. The divisions were entrenched behind large sand berms and trenches. Some of the trenches were filled with oil, equipped for ignition.

As a diversion, the Marines were to attack at the beginning of the coalition assault. Judged less competent, the Arabs were supposed to attack 48 hours later. For political reasons, the Arab coalition members were given the task of liberating Kuwait City. Interview with Lieutenant-Colonel Rick Francona, California, 6 January 2000.

¹⁸⁵ By far the largest of the coalition's corps, the VII Corps consisted of five armored and mechanized divisions, including the 1st Armored Division, the 1st (Mechanized) Infantry Division, the 3rd Armored Division, the 1st Cavalry (Armored) Division and the British 1st Armored Division. Altogether, the VII Corps counted 146,000 men, 1,600 tanks and 800 combat helicopters.

The VII Corps aimed to destroy the Iraqi Republic Guard, which itself comprised eight divisions. See "Interview with General Frederick Franks, Commander of VII Corps," *Frontline: The Gulf War*, www.pbs.org/wgbh/frontline/gulf/oral/franks (consulted June 2000).

¹⁸⁶ The XVIII Corps consisted of the 24th Mechanized Infantry Division, the 101st Airmobile Division, a brigade of the 82nd Airborne Division and, eventually, the French Daguet Division.

¹⁸⁷ In his memoirs, Schmitt recalls Schwarzkopf proposing the flank guard mission to the French (probably on 6 December). However, Roquejoffre's earlier conversations (on 29 November) with General Yeosock, commander of the American 3rd Army, indicating that France could choose where its forces would participate. In practice, Roquejoffre prepared three contingency plans, which Mitterrand chose between. Maurice Schmitt, *De Diên Biên Phu à Koweït City* (Paris: Grasset, 1992), 213-14; and Interview with General Michel Roquejoffre, 23 January 2005.

¹⁸⁸ Arguing against employing France's division further alongside VII Corps, "The proper mission for French forces was covering the coalition against an attack from Baghdad. The destruction of entrenched Iraqi forces necessitates a true armored division, equipped with 200 AMX-30B2 tanks and two regiments of self-propelled artillery. However, the Daguet Division lacked such forces, but its light armored vehicles and combat helicopters were well adapted to fighting a swift mobile battle against Iraqi forces attacking from the northwest. It is worth mentioning that even our AMX-30B2 main battle tanks were outclassed by the Czech and Soviet T-72 tanks equipping Iraq's Republican Guard. The T-72s possessed 125mm canons and could fire while moving, while our tanks had 105mm canons and could only fire accurately once stationary." Interview with General Michel Roquejoffre, 23 January 2005; Interview with Admiral Jacques Lanxade, Paris, 14 January 2005; Interview with General Maurice Schmitt, Marseilles, 21 January 2005; and Maurice Schmitt, *De Diên Biên Phu à Koweït City* (Paris: Grasset, 1992), 214-15.

¹⁸⁹ France's three contingency plans were code named Nabuchodonosor 1 to 3. Interview with General Michel Roquejoffre, 23 January 2005; Interview with Admiral Jacques Lanxade, Paris, 14 January 2005; and Interview with General Maurice Schmitt, Marseilles, 21 January 2005.

¹⁹⁰ Interview with General Michel Roquejoffre, 23 January 2005; Interview with Admiral Jacques Lanxade, Paris, 14 January 2005; and Interview with General Maurice Schmitt, Marseilles, 21 January 2005.

¹⁹¹ According to Cohen, Mitterrand initially did not want to send more than 5,000 troops to Saudi Arabia. However, once convinced that he needed to send at least a small division, he sent more reinforcements than Roquejoffre requested under any of the operational plans he presented on 6 December. Samy Cohen, *La défaite des généraux: Le pouvoir politique et l'armée sous la Ve République* (Paris: Fayard, 1999), 128; and Interview with General Michel Roquejoffre, 23 January 2005.

¹⁹² The paratroop force proposed would have included two battalions, a command element and combat engineers. The United States promised to loan American Chinook helicopters for its use. Interview with General Michel Roquejoffre, 23 January 2005; and Michel Roquejoffre, "Les leçons de la guerre du Golfe," 20.

¹⁹³ Michel Bourret, "Opération Daguet: L'Armée de terre française dans la guerre du golfe," *Batailles & Blindés: Histoire de la Guerre Mécanisée et des Engins Militaires* Hors Série 2 (April-May 2006): 5; and Interview with General Michel Roquejoffre, 23 January 2005.

¹⁹⁴ Mitterrand announced his choice on 10 December. Interview with Admiral Jacques Lanxade, Paris, 14 January 2005.

¹⁹⁵ The figures were given by General Roquejoffre directly from his notes. Interview with General Michel Roquejoffre, 23 January 2005.

¹⁹⁶ Because of the constraint of not being able to send conscripts, France's land contingent, entitled the Daguet Division, was comprised of units drawn from several peacetime divisions. Most of the 6th Light Armored Division was deployed, except for the division's organic artillery regiment (the 68th Artillery Regiment) and part of the 21st Marine Infantry Regiment. The 68th Artillery was a conscript unit and was still equipped with obsolete BF 150 (155mm) artillery pieces. Two composite helicopter regiments, drawn from nine peacetime regiments, were sent from the 4th Airmobile Division. The 9th Marine Infantry Division, whose composition was similar to the 6th Light Armored Division, contributed 12 infantry companies and armored car (AMX-10RC) squadrons, and the 11th Artillery Regiment. The 11th Paratroop Division contributed only commando patrols and an armored car squadron (ERC-90). To fill specific equipment needs, the French government had recourse to two unique expedients. For mine clearing, France acquired six former East German mine flails to attach to modified French tanks. France also sent the prototype of the cancelled Orchidée helicopter, which was originally designed for acquiring land targets at long range (150 kilometers) in Europe, to guide French combat helicopter operations. Because of the need to assemble a tank battalion and logistics support (comprising 1,200 personnel, or 10 percent of the total), it was ultimately necessary to personnel from 192 of 195 "basic units" comprising the French Army. While the entire army was made to contribute to forming the Daguet Division, four divisions of the Rapid Action Force (FAR) supplied 80 percent of its personnel. The 6th Light Armored Division furnished alone approximately half of the Daguet Division's strength. See Bergot, 89-118; Yves Débay, "Special 6e Division légère blindée," *RAIDS* no. 51 (August 1990): 19-43; Louis Gautier, *Mitterrand et son Armée* (Paris: Grasset, 1999), 157-71; Jérôme de Lespinois, *L'Armée de terre française: de la défense du sanctuaire à la projection, vol. 2, 1981-1996* (Paris: l'Harmattan, 2001), 673-94; and "L'armée de terre française souhaite envoyer le radar Orchidée en Arabie Saoudite," *le Monde* (16 December 1990).

¹⁹⁷ It remains a subject of some debate how many forces France could have sent to the Gulf had Mitterrand decided to make a larger effort. Roquejoffre argues that France could have spared several additional combat battalions had the need been felt. His basis for this is that France had prepared to replace the 6th Light Armored Division with the 9th Marine Division if the standoff continued, could have sent the two paratroop battalions he requested and had recently relieved a helicopter regiment. Thus, a maximal French effort

could have seen many more forces deployed. General Forray contends that France possessed 40,000 troops in professional units in 1991. Of these, 15,000 were in Africa, 15,000 in the Gulf (actually 13,000) and 10,000 in reserve. Based on these figures, Forray argues that France provided the largest contingent it could while still retaining a strategic reserve to respond to unforeseen contingencies. Schmitt reasons that France sent all of the forces that it could comfortably dispatch. However, if the crisis involved a region with greater ties to France, such as Tunisia, France would have scrapped together larger professional forces. General Quesnot, Lanxade's successor as Chief of the President's Private Military Staff, agrees with Schmitt that more troops could have been sent, but it would have required reducing French forces in Africa. In its secret report, the CGA concluded that France's effort was close to its maximum. The CGA highlighted logistical limitations of France's ability to project forces. Undoubtedly, the size of France's contingent was determined by political rather than military factors. France could have sent more forces. How many, though, remains a matter of speculation and disagreement amongst the best placed decision-makers. "Débat," *Cahiers du CEHD No. 21: La participation militaire française à la guerre du golfe* (Paris: Ministère de la Défense, 2001), 120-21; Interview with General Michel Roquejoffre, 23 January 2005; de Lespinois, 688; and No. 37 DEF/CGA/OCF/RI/CD/91 Contrôle Général des Armées, Rapport de Synthèse, 6 August 1991, 1-10.

¹⁹⁸ Neither Lanxade nor Schmitt argued that the coalition should use nuclear weapons or that France should explicitly threaten their use. However, both believed that France's silence would reinforce the United States' threat. In describing Mitterrand's motivations, Lanxade emphasized his desire to uphold the uniqueness of nuclear weapons. Cohen, on the other hand, argues that Mitterrand's motivations were diplomatic, hoping that France's independent and measured approach would impress moderate Arab states. Interview with Admiral Jacques Lanxade, Paris, 14 January 2005; and Interview with General Maurice Schmitt, Marseilles, 21 January 2005.

¹⁹⁹ Both Védrine and Lanxade contest that Mitterrand did not believe that France's final diplomacy would succeed. See Védrine, 535; and Interview with Admiral Jacques Lanxade, Paris, 14 January 2005.

²⁰⁰ Foreign Minister Dumas wanted to lead the last-minute negotiating effort himself. Mitterrand refused, preferring a less eminent messenger. Instead, Mitterrand sent the President of France's National Assembly's Foreign Affairs Commission, Michel Vauzelle. Védrine, 535-36.

²⁰¹ The American ultimatum at Geneva (9 January) threatened military action unless Iraq unilaterally withdrew by 15 January. The French proposal suggested that an Iraqi statement that it was willing to withdraw sufficed to postpone the allied offensive. Then withdrawal would be followed by a conference on the Palestinian question.

Chevenement blames the United States and United Kingdom from refusing to submit France's propositions to a Security Council vote on 14 January. However, Iraq could have still embarrassed the international coalition by accepting France's last minute proposal. The French proposal bore strong similarities to the proposals floated by Soviet

diplomats in the preceding months. Moreover, a number of Arab states had also subscribed to the same fundamental ideas. A last minute Iraqi embrace of France's proposal would have divided the coalition between states that hoped to destroy Iraq's military potential and others thankful to obtain Hussein's bloodless withdrawal from Kuwait. Védrine, 536; Bernière, 24; Lanxade, 78-79; Interview with Admiral Jacques Lanxade, Paris, 14 January 2005; and Chevenement, 48-49.

²⁰² Mitterrand's statement that his government should be prepared for negotiations during hostilities dated from 19 December, nearly a month before the air campaign began. He appears to have held little hope for a diplomatic solution once hostilities had actually begun. Chevenement, 47-50.

²⁰³ Lanxade presented the matter to Mitterrand in manner that the president was unlikely to refuse bombing targets in Iraq. On 21 January, Lanxade called Chairman of the American Joint Chiefs of Staff, Colin Powell, asking that Powell assign France targets in Iraq. On 22 January, the Americans transmitted a target list to Schmitt, containing targets in Iraq. Schmitt transmitted the targets to Paris, where Lanxade posed the question to Mitterrand whether he would approve the Iraqi targets proposed by American planners for French aircraft. Presenting in this way, it was more difficult for Mitterrand to refuse striking Iraq. France's first raid on Iraq occurred on 24 January. Lanxade, 82-83; and François Régault, "La participation aérienne française aux opérations," *Cahiers du CEHD No. 21: La participation militaire française à la guerre du golfe* (Paris: Ministère de la Défense, 2001), 80.

²⁰⁴ The United States conducted 89 percent of the coalition's missions and the British five percent. Régault, 88.

²⁰⁵ Michel Roquejoffre, "Débat," *Cahiers du CEHD No. 21: La participation militaire française à la guerre du golfe* (Paris: Ministère de la Défense, 2001), 104.

²⁰⁶ The American paratroop brigade, with 2,115 men, substituted for the two French paratroop battalions that Mitterrand refused to send. The American artillery, comprising 116 canons, accounted for 87 percent of the artillery (not counting mortars) under French control. Lacking professional artillery personnel, France could not realistically have sent more than the 18 guns it deployed. Although France had purchased American multiple rocket launchers (MLRS) they were not yet in service. Interview with General Michel Roquejoffre, 23 January 2005.

²⁰⁷ American intelligence on the eve of the ground war indicated the 45th Division remaining largely intact, possessing 50 to 75 percent of its heavy weapons. Having participated extensively in counterinsurgency operations against the Kurds, the 45th Division was reputedly combative and comprised mostly of professional soldiers. The French captured 3,077 prisoners along with 5,424 individual arms. The French captured or destroyed 26 artillery pieces and counted 25 destroyed tanks. Roquejoffre claimed after the war that the division originally possessed 11,000 personnel. However, many

Iraqi divisions were under strength and the 45th Division may have had considerably fewer combatants. Falcona, 133; Bernard Janvier, "La division Daguet et les aspects opérationnels," *Cahiers du CEHD No. 21: La participation militaire française à la guerre du golfe* (Paris: Ministère de la Défense, 2001), 95; Yves Debay, "La division Daguet," *Batailles & Blindés: Histoire de la Guerre Mécanisée et des Engins Militaires Hors Série 2* (April-May 2006): 87; Pierre Dufour, *La Légion dans la guerre du golfe* (Paris: Jacques Grancher, 1991), 328-29; James Cooke, *100 Miles from Baghdad: With the French in Desert Storm* (Westport, Connecticut: Praeger, 1993), 81; and Michel Roquejoffre, "La guerre du golfe plus de 3 ans après," unpublished speech to Rotary Club, Foix, France, 26 September 1994.

²⁰⁸ Armée de terre française, Division Daguet, *Ordre d'opérations No. 1: Modificatif No. 1 du 18 février 1991*.

²⁰⁹ The tanks were comparatively obsolete Soviet T-55s. Eight were dug-in on the right of the road to As Salman airbase and three on the left. One battalion of nine 152mm artillery pieces supported the Iraqi positions on the right, while another of nine 122mm guns supported the left. Cooke, 98-110.

²¹⁰ Cooke, 109.

²¹¹ Interview with General Michel Roquejoffre, 23 January 2005.

²¹² Cooke enumerated two 122mm canons and nearly a battalion of 152mm guns captured or destroyed beginning at 6:30 am. Cooke, 116.

²¹³ Accounts differ slightly on the size of the Iraqi column. The French tank battalion (4th Dragoons) commander claims eight to nine T-55s accompanied by an American-built (ex-Iranian) M-48, a BTR-50 armored personnel carrier and other unidentified vehicles--giving a total of 12 to 15 armored vehicles. The commander of the tank squadron that engaged the Iraqis claims that the Iraqi reserve consisted of eight vehicles, including T-55s, one M-48 and reconnaissance BRDMs. Cooke mentioned an encounter with eight T-55s and a BRDM, and a separate encounter, shortly thereafter with one T-55 and one BTR-50. See Bourret, 24; Cooke, 117; and Jacky Allavena, "Le 1er Escadron au combat," *Batailles & Blindés: Histoire de la Guerre Mécanisée et des Engins Militaires Hors Série 2* (April-May 2006): 45.

²¹⁴ The artillery bombardment of As Salman began at 14:30. At 16:20, the heavy 120mm mortars of the 2nd Foreign Legion Infantry Regiment joined in. Ten minutes later, four assault groupings charged forward. Each assault grouping was composed of an infantry company paired with an armored car (AMX-10RC) squadron. Comprised almost entirely of Foreign Legionnaires, who had trained since October in combining motorized infantry and light armor, the assault was flawless. According to the 2nd Foreign Legion Infantry Regiment's postwar report, "The couple--light armored squadron / motorized infantry company--proved its effectiveness and the synergy produced by combining two

different types of forces from the moment that commanders are prepared to work together. From this point of view, the conquest of As Salman was an exemplar. Extremely aggressive and mobile (practically effervescent [in original]), this couple (light armored squadron / motorized infantry company) is ideal for raids, flanking movements and the conquest of fixed defenses." In the conquest of As Salman, the attacking column fired: 705 artillery shells (155mm), 288 mortar rounds (120mm) and 60 armored car canon rounds (105mm). One tank and three self-propelled anti-aircraft guns were captured on the field. See 2ⁱème Régiment étranger d'infanterie, *Journal des marches et opérations: "Opération Daguet,"* n.d.; 2ⁱème Régiment étranger d'infanterie, *Rapport sur l'opération Daguet: du 20 septembre 1990 au 11 avril 1991*, annexe I, section I, n.d.; and Interview with Commandant Henri Billaudel, Paris, 3 March 2000.

²¹⁵ Dufour, 312-17.

²¹⁶ In terms of results, lists of Iraqi equipment captured or destroyed varies slightly between different sources. One lists: 20 tanks destroyed, 1 captures; 17 armored vehicles destroyed; 114 trucks destroyed, 7 captured; 26 canons destroyed, 40 captured; and 70 mortars destroyed. Another source indicate: 23 artillery pieces destroyed, 3 captured; two tanks captured; and 107 vehicles destroyed. Michel Roquejoffre, "La guerre du golfe plus de 3 ans après," unpublished speech to Rotary Club, Foix, France, 26 September 1994; de Lespinois, 682; and Dufour, 329.

²¹⁷ Schwarzkopf offered the French a seat on his planning staff. When it came to planning the land offensive, Schwarzkopf ordered his planners to only entrust critical missions to American, British and French forces. In other words, sparing American lives could only depend on French, American and British forces achieving their objectives. However, France's diffidence in committing to a particular action meant that Schwarzkopf's planners could not afford to assign the French a critical mission, which the French might reject.

Only the British ultimately participated along the American planning staff in developing the coalition's offensive plan. Only the French and the British enjoyed access and reserved seats in Schwarzkopf's war room. However, Roquejoffre was unable to occupy his seat before France unambiguously committed itself to action. Falcona, 70 and 96; Interview with General Michel Roquejoffre, 23 January 2005; and Michel Roquejoffre, "L'engagement des force françaises," *Cahiers du CEHD No. 21: La participation militaire française à la guerre du golfe* (Paris: Ministère de la Défense, 2001), 46-47.

²¹⁸ Etienne de Durand, "La perception Américaine de la participation française au conflit," *Cahiers du CEHD No. 21: La participation militaire française à la guerre du golfe* (Paris: Ministère de la Défense, 2001), 99.

²¹⁹ General Sultan specifically claimed that he suspected the French wanted to be able to withdraw without notice or choose not to fight should Iraq attack. Sultan, 269-78.

²²⁰ Matters decided in Paris included the reinforcement of Chad after the Bedo ambush, the suspension of hostilities to facilitate negotiations with the Toubou Derdé and the withdrawal of French troops in 1972.

²²¹ His early deployment of an aircraft carrier equipped with a helicopter regiment was viewed by domestic and international opinion as insignificant. Later, a brigade sufficed for the defensive stage of the coalition's military buildup. Eventually, military advisors convinced Mitterrand that France needed a division to credibly and autonomously participate in Kuwait's liberation. Mitterrand, nevertheless, arbitrarily limited the size of France's division.

²²² By deploying few troops and many of them initially Foreign Legionnaires, de Gaulle prevented France's intervention in Chad from becoming a political issue. By carefully rationing reinforcements, the government prevented many French voters from eventually realizing, at least until the Bedo ambush of October 1970, that their country was fighting an insurgency. Later, during the Mauritanian intervention, Giscard chose means calculated to limit human losses and media attention. Mitterrand's decision, during the 1990-1991 Gulf Crisis, to not deploy conscripts, even ones that volunteered, likewise reassured public opinion and lowered the domestic political capital he expended during the conflict.

²²³ During the Chad intervention, policymakers feared that France's intervention would stir forces of popular anti-colonialism, which were then at their peak throughout Africa. Concern about international opposition led de Gaulle to exclude the well-known General Bigeard in favor of comparatively unknown commanders of lesser rank. The situation was even more delicate in Mauritania, where the ruling regime based its legitimacy on opposing French neo-colonialism and developing close relations with the Arab world. Any overt assistance France might grant Mauritania would undermine President Ould Daddah's hold on power. Therefore, Giscard chose to mount a secretive air campaign, based out of Senegal, supported by a miniscule French presence in Mauritania.

Similar considerations underlay Mitterrand's decisions during the 1990 military buildup in Saudi Arabia. Because of the presence of Islam's holiest sites on Saudi territory and the Kingdom's declaration that its entire territory constituted a mosque, Mitterrand refused to deploy forces to Saudi Arabia until a majority of Arab states condemned Iraq's actions and the Saudi government officially invited the French to intervene. Dispatching a helicopter carrier to the Red Sea became France's means of reconciling its desire to avoid a precocious presence on Saudi soil while manifesting its resolve to participate in the defense of Saudi Arabia against a land invasion.

²²⁴ The French College Interarmées de Défense (CID) published, in 2003, the most comprehensive list published so far of French foreign operations. According to the CID, France conducted 172 military operations abroad between 1958 and 1989. However, only a portion of these operations can be characterized as military interventions. The CID list includes operations in Algeria, French Guyana and New Caledonia, which are not technically "foreign" because all were French territories,

departments or protectorates at the time of the operations. Djibouti and Tunisia (Bizerte) do not qualify as interventions either because they involved forces permanently based in the country in question. Some of the CID listed operations were unmilitary in nature, such as providing humanitarian relief to victims of the 1960 earthquake in Morocco. Operating from open sources, the compilers of the CID list also uncovered references to code-names for two operations, which otherwise remain unidentified. Even accounting for the catch-all nature of the CID list, it reveals France's exceptional interventionism.

The list presented in Table XI includes France's operations that involved both the deployment of forces and combat operations. Certain large operations are not included, such as France's participation in escorting shipping and clearing mines in the Persian Gulf from 1984 to 1987, during the Iran-Iraq War. At its peak, France deployed 11 naval vessels in the region, including an aircraft carrier and five destroyers or frigates. The table has attempted to remain as comprehensive as possible for interventions, between 1962 and 1991, with at least some land-based component. For reasons of space, many interventions were excluded, including: the 1977 Zaire intervention wherein France only supplied logistic support for a Moroccan intervention force; the 1980 Gafsa incident wherein French paratroops arrived in southern Tunisia after Tunisian forces had defeated the Libyan supported insurgents; and the 1990 Gabon intervention wherein six infantry companies intimidated the country's democratic opposition movement during riots. The Yugoslavia intervention has been included in the list because it was comparatively large and long.

In the table, only deaths attributable to enemy action are listed. In some interventions, deaths through accident exceeded those by enemy action. In the former Yugoslavia, 45 French soldiers perished from accidents as opposed to the 20 who died from enemy action. During the Chad intervention, 10 died of accidental causes, versus 18 from enemy causes. See *Liste des Opérations par Année, Collège Interarmées de défense*. www.cid.defense.fr (consulted March 14, 2004); Jean-Louis Dufour, *Les Crises internationales, de Pékin (1900) à Bagdad (2004)* (Paris: Complexe, 2004, first edition 1996), 151-54, 175-95, 203-06 and 246-49; Jérôme de Lespinois, *L'Armée de terre française: de la défense à la projection, vol. 1, 1974-1981* (Paris: L'Harmattan, 2001), 318-38; de Lespinois, *L'Armée de terre française: de la défense à la projection, vol. 2, 1981-1996*, 567-85, 769-810; Lieutenant Rappolt, *Les missions impossibles des forces françaises au Liban, mars 1978 - Aout 1986*, *Memoire, Année 1986-1987*; and *Les interventions militaires françaises au Tchad, vol. 2* (Vincennes: SHAT, 1989), 303.

²²⁵ France deterred Libyan efforts to dominate Chad in 1983 and 1986 to present. It re-installed Léon M'Ba as president of Gabon in 1964 and saved Omar Bongo's regime in the same country in 1990. It overthrew Jean-Bedel Bokassa as ruler of the Central African Empire in 1979 and Bob Denard, after the later seized control of the Comoros Islands in 1990. France's 1978 Zaire intervention aimed at both rescuing the 2,500 Europeans, who had fallen into the hands of Angolan-backed rebels, and defeating the rebels themselves and thereby saving Mobutu's regime. Both the Gabonese and Mauritanian interventions were motivated principally by economic interests, oil in the former case and iron in the latter. France's Lebanon interventions (1978-79 and 1984-86)

aimed at upholding Lebanon's sovereignty against Israeli, Syrian and Palestinian ambitions.

²²⁶ The only two cases where France's military ends included routing an enemy's military force were Zaire (1978) where the French hoped to defeat the Katangese rebels such that they would not attack anew, and the Persian Gulf (1991) where the liberation was only possible after Iraqi forces had been forcibly evicted. By way of contrast, the United States strived to militarily destroy opponent military forces as the means or a prerequisite for imposing a favorable peace in many of its interventions, including Vietnam (1965-73), Grenada (1983), Panama (1989) and the Persian Gulf (1991). Vietnam is a complicated case, where the United States lacked an overall strategy. The war in South Vietnam aimed to destroy the insurgency militarily through attrition, while the air war against North Vietnam fitfully aimed to coerce the North Vietnamese government to halt aid to the rebellion.

²²⁷ Today, there is generally a consensus, derived from the effectiveness of airpower in halting the Iraqi offensive against Al Khafji, that American airpower could have stopped an Iraqi offensive from mid-August onwards. However, neither French nor American planners thought so at the time. Schwarzkopf did not rest easily until the 24th Mechanized Division arrived in October, while the French still worried about their sector until early November.

²²⁸ However, three of France's interventions involved nominal collaboration. In Chad (1968-72), French forces worked alongside their Chadian counterparts, however the French dominated the relationship, providing 52 percent of the Chadian Army's budget and commanding many of its units. Moreover, the French Military Delegate presided over the Franco-Chadian General Staff, while Ambassador Wibaux co-chaired the Franco-Chadian security council. During the 1978 Zaire operation, the United States assisted with air transport and a Belgian paratroop force was sent after the French battalion. Nevertheless, the French fought entirely independently and the Belgians only arrived after the invading Katangese had been routed. During the 1983 Chadian intervention, Zaire had already deployed air forces to assist the Chadian government. Nonetheless, there appears to have been little interaction between the Zairian contingent and the French.

Chapter VIII:

British Military Interventions

I. Introduction

Soldiers and statesmen view the use of military force differently. Military professionals favor the use of maximum force, with minimal restrictions, to obtain clear military objectives, such as destroying an adversary's armed forces. Statesmen, on the other hand, deal with a wider context. Military force is a diplomatic commodity, to be sparingly employed to coerce, deter, posture or negotiate. In the French case, political leaders' ability to draw on multiple assessments of how to conduct a military intervention enabled them to ensure the primacy of the latter set of desiderata. In the previous chapter, tight political control led French military interventions to privilege the manipulation of force for diplomatic ends. In the United Kingdom, where political and military roles are more clearly delineated, and the armed forces possess operational autonomy, opposite values are emphasized.

Having never weathered political military crises akin to those in France, British leaders never felt the need supervise the chiefs of staffs' meetings or develop the parallel staff systems that underlay civilian power in France. Rather, British leaders permitted civil-military interactions to evolve along functional and hierarchic lines. In practice, this produced a sharp separation between politics and diplomacy on the one hand, and military operations on the other. British military doctrine, in fact, normatively recognizes the existence of four levels of command, each of which oversees a specific series of decisions.¹

At the top, political and foreign policy decisions are made by either the cabinet, the cabinet's Defense and Overseas Policy Committee (DOPC) or an ad-hoc "War Cabinet" assembled to deal with a particular crisis. Comprised of politicians and advised by the civil service, these bo-

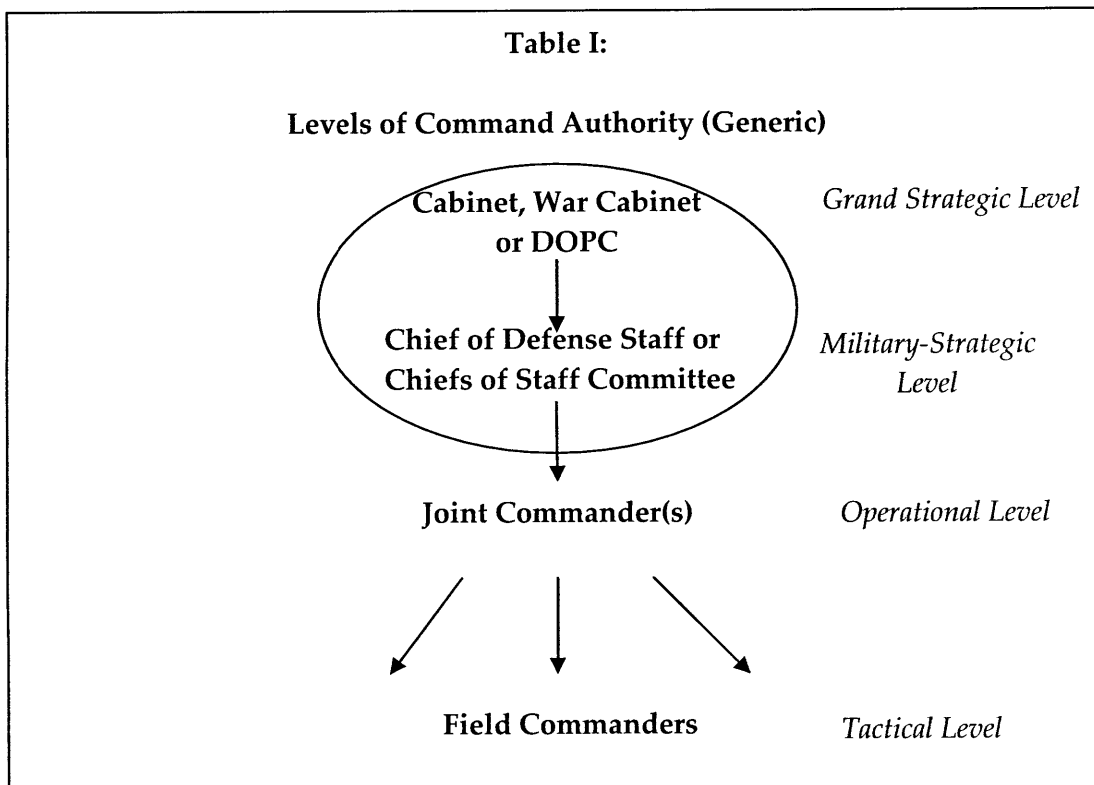
dies determine when, why and with what means the United Kingdom will use force. In terms of British military doctrine, this level of authority is termed "grand strategic."²

The only conduit between these top-level policymaking bodies and the armed forces are the chiefs of staff. All four chiefs formerly attended cabinet or DOPC sessions, however the Chief of Defense Staff alone has fulfilled this role since 1982.³ Because they participate in the cabinet's deliberations and formulate directives for the armed forces, the chiefs of staff play a critical function of furnishing political leaders with military advice and translating political desires into military orders. British military doctrine refers to this level of command as "military-strategic" and specifies that it is responsible for designating operational commanders, determining campaign objectives, coordinating with allies and allocating military resources.⁴

Below the chiefs of staff, the British armed forces respond to significant interventions by appointing a joint commander to manage operations from a headquarters in the United Kingdom. Smaller interventions are typically controlled by a joint commander deployed to the theater of operations. Exceptionally, two joint commanders may be appointed: one to manage the allocation of forces from the United Kingdom; and the other to shape military plans in the theater of operations. According to official doctrine, this level of authority is termed "operational" and tasked with designing, planning and conducting an inter-service campaign.⁵

A number of field commanders answer to these joint commanders. In general, each service's contingent has a field commander and separate commands may also exist for specific functions, such as orchestrating an amphibious landing or operating detached from other British forces. During the Falklands War four distinct field commands existed, while in the 1991 Gulf War three field commands existed. Termed "tactical," this level corresponds with the employment of forces in battle.

Thus, British military operations are governed by a strict hierarchy of levels of command. Information and advice percolates up this hierarchy, while orders and directives are transmitted downwards. With each level of command responsible for a distinct set of activities, political and strategic directives are reinterpreted by each echelon of authority. To better visualize British command structures, Table I below presents a schematic model.



In practice, the hierarchical distance isolating political leaders from tactical and operational commanders renders the latter comparatively autonomous and deprives the former of much of their ability to shape military operations.

Clearly separating political and military responsibilities, the British system approximates Samuel Huntington's model for how military operations ought to be conducted. According to Huntington, armed forces will fight more efficiently when the management of military operations is left to professional officers, with political leaders only setting political goals and allocating

military means.⁶ Today many accept Huntington's view that military strategy should be the autonomous province of military professionals and it has underscored developments such as the Goldwater-Nichols Department of Defense Reorganization Act of 1986 and the Weinberger-Powell doctrine of 1984.⁷

Despite the popular belief that wars are best prosecuted when left to "professional managers of violence," a number of scholars warn that military officers have biases and agendas that do not necessarily coincide with a states' interests. Military officers are frequently held to possess an "offensive bias," meaning that they prefer offensive strategies and exaggerate their utility vis-à-vis defensive or deterrent postures.⁸ During interventions, the military's offensive mindset creates pressures for escalation, as military commanders push to attack objectives that were off limits, destroy an adversary's deterrent forces or utilize means hitherto proscribed.⁹ In some cases, the offensive bias translates into a preference for preventative attacks to deal with opponents while they are weaker or less prepared than they might be at a future date.¹⁰

Besides an offensive bias, military professionals prefer employing "overwhelming" or "massive" force to deal with problems. Huntington diagnosed military officers as both congenitally "conservative" and "pessimistic."¹¹ Other scholars have concluded that military organizations frame problems in ways that enhance their future claims on resources.¹² Together, inherent pessimism and the desire to justify large force structures prompt military commanders to exaggerate threats and demand excessive forces to deal with them.

Finally, military organizations are not unitary bodies, but collections of distinct services, branches and platform communities. Each of these services and communities competes with one another for resources and prestige. The representatives of these communities lobby to impose strategies that advance their bureaucratic agendas. Thus, air force officers push for strategic bombing campaigns, marines for amphibious landings and special forces for commando raids. In

some cases, a service may attempt to "win the war on its own" in order to assure its budgetary future, even if doing so entails excessive casualties and risks.¹³ If political leaders lack the means of carefully examining military operations, plans may degenerate into the sum total of the bureaucratic agendas advanced by services and branches.

Combining Huntington's positive image of military professionals expertly using force with the cautionary notes sounded by other scholars, a mixed picture emerges of the strengths and weaknesses the United Kingdom's armed forces are likely to exhibit during military interventions. Table II, below, illustrates these predictions.

Table II:	
Predictions About British Military Operations	
<u>Strengths</u>	<u>Weaknesses</u>
Operational and tactical virtuosity	An offensive bias and escalatory pressures
	Excessive demands for resources
	Plans shaped by bureaucratic politics

Taken as an ensemble, one would expect British interventions to bear the mark of a very high degree of professional skill in framing plans and executing operations, however the biases and bureaucratic politics of military organizations will shape British strategy in ways inconsistent with the aims established by political leaders.

The remainder of this chapter will test these hypotheses on three British interventions: Oman (1965-75), the Falklands (1982) and the Persian Gulf Crisis (1990-91). These cases were selected because they represent distinct varieties of interventions, including a counter-insurgency, a conventional conflict and a coalition war. As much as possible, the forms of intervention studied parallel those explored in the preceding chapter on French interventions. These cases also

control for the varying leadership styles as they collectively spanned the governments of four prime ministers.

II. Oman, 1965-1975

Between 1962 and 1975, the United Kingdom fought its first post-colonial war and last "hot war" of the Cold War. The outcome of Britain's struggle against Soviet and Chinese supported insurgents remained long in doubt, prompting senior British officials to refer to Oman as a "micro-Vietnam," an "Arabian Vietnam," and "another Aden."¹⁴ In an exemplary counter-insurgency campaign, the British armed forces first prevented insurrection from spreading beyond Dhofar province and then crushed the rebellion in Dhofar itself. Key to the British victory was the fusion of political and military authority in military hands, which created paramilitary forces, drilled wells, and built schools and mosques. More controversially, British officers pulled a reluctant government into an unwanted war, masterminded a coup d'état against the Sultan, mobilized Islam against the insurgents, introduced Iranian forces into Oman, and ordered attacks on the People's Democratic Republic of Yemen (PDRY).

Between the 1940s and 1960s, the United Kingdom fought counter-insurgencies in Palestine, Malaya, Cyprus, Kenya, Yemen and Borneo.¹⁵ When it decided to abandon its Far and Middle Eastern military commitments in 1967, Britain's Labour government planned to end involvement in distant conflicts. However, the United Kingdom's remaining alliances drew it into Oman's war. Beginning in the 1950s, Oman's Masirah Island permitted the United Kingdom to project force globally, serving as a staging point for reinforcing Hong Kong, Australia and Singapore, and permitting the United Kingdom to uphold its commitments to the Central Treaty Organization (CENTO).¹⁶ According to a 1958 agreement, the United Kingdom could use Masirah

as long as it trained and officered the Omani armed forces and sustained Oman's Salalah base, in Dhofar Province.¹⁷

Soon, the United Kingdom's obligations towards Oman proved more costly than expected. Attempting to insulate Omani society from consumerism and foreign ideologies, Sultan Said bin Taimur opposed schools, medicine and modern agriculture.¹⁸ Because of these policies and the country's general poverty, armed dissidence became a feature of Omani life.¹⁹ The discontented subjects of Dhofar province began sniping at the Sultan's Armed Forces in 1962.²⁰ Ethnically distinct from other Omanis, the Dhofaris initially sought autonomy.²¹ However, government intransigence prompted the rebels to demand independence and name themselves the Dhofar Liberation Front (DLF).

Supported only by expatriate contributions, the DLF appeared destined for defeat.²² However, decisions in London, Beijing and Moscow transformed the Dhofar War in 1968, before the Sultan's Armed Forces could convert their new-found oil wealth into military victory.²³ In 1967, the United Kingdom withdrew from South Yemen permitting Yemenite communists to seize power and begin supporting Dhofar's rebels.²⁴

Because of their struggle for leadership of the global communist movement, both China and the Soviet Union fell into line with South Yemen's strategy. After the Chinese supplied the DLF with its first arms shipments, the Soviet Union offered more and better weaponry. Soon Chinese advisors led DLF rebels on raids, while the Soviet Union, China, Cuba and East Germany provided bases, training camps and weaponry.²⁵ New confidence swept Dhofar's rebels as they exchanged bolt action rifles for AK 47s and took possession of their first mortars, grenades and anti-tank rocket launchers.

Rebels seized the initiative by mortaring Salalah, containing Dhofar's administrative capital, only airfield and logistics base.²⁶ Encouraged by their benefactors, Dhofar's rebels adopted

"scientific socialism" as their ideology and renamed themselves the Popular Front for the Liberation of the Occupied Arab Gulf (PFLOAG).²⁷ Then, in 1969, the rebels captured Western Dhofar's largest town, Rakhyut, and executed the region's hapless governor (Wali) in public.²⁸ The rebel's newfound vigor stunned the Sultan's Armed Forces.²⁹ By 1970, the rebellion controlled the countryside and had grown to 2,000 full-time rebels and 4,000 part-time militiamen.³⁰ Heartened by the Sultan's difficulties, revolutionaries plotted to spread rebellion to the rest of Oman.³¹

British assessments highlighted the worsening strategic outlook, judging in February 1970 that, "Time is not on the side of the SAF [Sultan's Armed Forces]. Guerrilla pressure has been increasing and with it the pressure to RAF [Royal Air Force] Salalah."³² Three weeks later, the Chiefs of Staff of the United Kingdom's armed forces doubted that the Sultan would retain control of Dhofar for another year.³³ And the Joint Intelligence Committee independently concluded that, "If the Sultan were to lose control in Dhofar ... the trouble might spread, for example to Inner Oman."³⁴ Given the gloomy predictions, the British government hoped to avoid involvement in the war.³⁵ However, without political leaders ever deciding to intervene, seconded British personnel accompanied Omani units into combat and the British detachment at Salalah struggled to protect the base from rebel attacks.

Far from keeping their commitment limited to the clauses of their treaty with the Sultan, British officers increased the United Kingdom's involvement in Oman's internal troubles. Drawing on their experience in past insurgencies, British officers rapidly concluded that they needed to implement a "hearts and minds" campaign, combining political reforms and development efforts.³⁶ When Sultan Said refused to introduce local democracy or fund development programs through deficit spending, British officers began scheming to replace the Sultan with his tractable Sandhurst-educated son, Qaboos bin Said. They reasoned that only a new Omani government would approve the measures needed to win the Dhofar War.

Colonel Hugh Oldman, the contract officer serving as the Sultan's Defense Secretary, began plotting a coup d'état and the Commander of British Forces in the Persian Gulf, General Roly Gibbs, set the tone for the conspirators, arguing that, "The Sultan must go, because if he did not, Dhofar was liable to be lost to the rebels."³⁷ Oldman enlisted the help of the Commander of the Sultan's Armed Forces, Brigadier John Graham, and obtained approval from the British Chiefs of Staff Committee.³⁸ Thus, the British armed forces took it upon themselves to overthrow the ruler they were mandated to assist, replacing him with a relative who never asked to be given power in this manner. Two British officers and six Omani soldiers stormed the Sultan's palace at Salalah on 23 July 1970. After a gun battle, the British forced Sultan Said to abdicate in favor of his son. Having been installed by pistol-wielding Englishmen, Qaboos bin Said assumed his father's mantle as Sultan.³⁹ However, the British miscalculated and their coup d'état initially backfired.

Taking advantage of a new government's fragility, PFLOAG, South Yemen and sympathetic intelligence services conspired to spread the insurgency to Northern Oman. Insurgents first struck a military base in Northern Oman, before disappearing.⁴⁰ Then, in early November 1970, boats landed between 10 and 30 communist infiltrators on Oman's Musandam Peninsula in November 1970.⁴¹ Trained abroad and furnished with Soviet weaponry, the guerrillas were supposed to rally the local tribes and establish bases for future waves of infiltrators.⁴² Soon alarming news began filtering into British forces in the Persian Gulf, announcing that Musandam's tribes were joining the insurgents.⁴³

Disconcerted by this intelligence, the British Military Commander for the Persian Gulf, proposed to use overwhelming force to nip this new insurgency in the bud. With British, Omani and Emirate soldiers, working in conjunction with jet fighters, helicopters and warships, Gibbs planned to cordon and search the entire peninsula.⁴⁴ However, the Chiefs of Staff Committee disagreed because Gibb's proposal was costly and would enflame anti-British sentiment through-

out the Middle East, where colonialism was a recent memory.⁴⁵ Upon the Committee's recommendation, Gibbs revised his plan.⁴⁶

Employing preponderant (albeit less) force, Gibbs launched Operation INTRADON on 16 December, with the aim of trapping the insurgents between an amphibious force and an SAS patrol parachuted into their rear. Unfortunately, a cartographic error placed the amphibious force several kilometers from its objective, permitting the insurgents to flee before the British could spring the trap.⁴⁷ With the infiltrators gone, Musandam's tribes rallied to the Sultan's government.⁴⁸

With this rebel move checked, Graham and Oldman concentrated on Dhofar. They planned to use two battalions to seal off Dhofar's western approaches and prevent rebels from re-supplying themselves from South Yemen.⁴⁹ At London's insistence, Brigadier Fergie Semple, of the Special Air Service (SAS) elaborated a plan for special forces to root out insurgent networks in areas reoccupied by friendly forces.⁵⁰ To maximize the effectiveness of these operations, Semple emphasized the need for good intelligence and convinced the British government to dispatch an intelligence team to Salalah.⁵¹

Once deployed to Oman, the SAS commander developed his own ideas. Lieutenant-Colonel Johnny Watts wanted his troops to play a more proactive role in fighting the insurgency and suggested using the SAS to lead bands of Omani irregulars, recruited from friendly tribes and surrendered rebels.⁵² Influenced by Watts, Graham revised his plan. Rather than defeat the insurgency from the "outside-in," beginning with Dhofar's western border and working towards the rest of Oman, he now envisioned pacifying Oman from the "inside-out."⁵³ Regular forces would now begin in eastern Oman by seizing population centers from which irregular bands, called *firqats*, would pacify the countryside.⁵⁴

The British planned to launch their offensive after the 1971 monsoon. During the preceding nine months, they expanded Oman's armed forces by a third, from three to four battalions and recruited six irregular *firqats*.⁵⁵ British psychological warfare experts exploited Islam to drive a wedge between Dhofaris and the PFLOAG rebels, whose communist secularism alienated many.⁵⁶ The slogan of British propaganda campaign became "Islam is Our Way, Freedom is Our Aim," which rang-out from Radio Dhofar and adorned posters.⁵⁷ The British further stoked the fires of religious war by persuading Oman's Qadi to declare a jihad.⁵⁸ Conveying this message, British propaganda leaflets declared (*italics added*):⁵⁹

Now is your time to claim your freedom. Throw off the yoke of the communist oppressors.

We, who are your brothers in *freedom and in Islam*, we who are from the jebel, we understand your hardships, for the communists destroyed our flocks and murdered our families.

Now we have returned!

We return in strength to take our revenge. Our brothers from all the tribes upon the jebel, now is your chance for revenge. Join us in the *Holy fight against the ungodly communists*.

Come to us in friendship, carry your rifle openly in your hand, join us in the fight as a *fellow warrior of Islam to defeat communism*.

Justified for its military expediency, the British Army's exploitation of Islam posed long-term political risks.⁶⁰

By the time the annual monsoon abated, Brigadier Graham and Colonel Oldman were poised to launch an offensive with 250 Omani soldiers, 300 *firqatmen*, 100 SAS, a pioneer platoon and a platoon of irregular *askars*.⁶¹ Using this painstakingly assembled force, British commanders planned to crush the rebellion in eight months. Between October and December 1971, the *firqats* would pacify the east of Dhofar while regular forces interdicted rebel supplies. Then,

from December 1971 until May 1972, the Sultan's forces would pacify the center of Dhofar and launch attacks on PFLOAG bases along the border. Finally, between May and June 1972, the *firqats* and the regular army would pacify Dhofar's sparsely populated west.⁶²

Although British officers had intervened in Omani politics and religion in the interests of military expediency, their own plans for a quick victory foundered on misperceptions and wishful thinking. The first British disappointment occurred when factional strife tore one *firqat* apart, prompting forty of the unit's 68 warriors to desert.⁶³ Then, when the Anglo-Omani offensive--code-named Operation Jaguar--began on 2 October 1971, the *firqats* proved cantankerous, refusing to attack the town of Jibjat. After Jibjat, three *firqats* refused to obey orders to seize a rebel logistics base, citing the need to observe Ramadan. These pauses permitted the rebels to withdraw, taking weapons and supplies with them.⁶⁴

Having recaptured Eastern Dhofar but failed to damage the rebellion, Brigadier Graham launched the next phase of his offensive--Operation Leopard--on 2 November 1970. Pausing after capturing Jibjat and White City, Omani forces resumed their march in three columns. When they reached predetermined locations, each column built a fortified base. The high command's theory was that these three bases, surrounded by barbed wire and minefields, would prevent the rebels from infiltrating Eastern Dhofar.⁶⁵ However, PFLOAG adapted by sneaking camel caravans through the gaps between them. Unable to halt the flow of rebel supplies, the Leopard positions tied down Oman's scarce military resources.⁶⁶ By December, the "decisive" Anglo-Omani offensive had become a fiasco. Watts "returned to Britain an angry and disenchanted man"⁶⁷ and Graham forecast a long, difficult war.⁶⁸ In London, the Foreign Office referred to Oman as "a kind of micro-Vietnam in the Arabian peninsula."⁶⁹

The failure of the 1971 Anglo-Omani offensive prompted both sides to take greater risks. Shattered expectations of a rapid victory prompted Graham to undertake a perilous gamble, seiz-

ing and holding a remote position in Western Dhofar. Meanwhile, Operations Jaguar and Leopard convinced PFLOAG that it needed to regain the initiative by spreading the rebellion to northern Oman and capturing the strategic town of Mirbat.

Graham acted before the rebels. Studying Oman's geography attentively, Graham vested his hopes in the rocky outcropping of Sarfait, in the extreme west of Dhofar. Graham reasoned that strong air supplied government forces in Sarfait would strangle the rebellion's supply lines with "a major, permanent and, it is hoped, decisive blocking operation on all enemy supply routes in the West."⁷⁰ After meticulous planning, helicopters full of soldiers descended on Sarfait in April 1972 and built a fortified base centered on an airfield and ringed by barbed wire and mines. Although Sarfait's occupation went according to plan, Graham's understanding of geography proved erroneous. Perched over 1,000 meters above the sea, artillery sited in Sarfait could not reach the three successive plateaus, descending like stair-steps, to the sea. Realizing this, the rebels shifted their camel trains to the coastal ledges, where they were immune from attack.⁷¹

Worse, the British offensive escalated the war. Long-range Yemeni artillery riposted pounding Omani territory in May 1972, killing five Omanis.⁷² Graham responded by ordering Omani aircraft to bomb a South Yemeni military base.⁷³ Graham's ill-considered raid prompted Soviet and Cuban aircraft to fly patrols up to the Omani border. This spiral of events raised the specter of a full-scale war between Oman and South Yemen, with the United Kingdom and the Soviet Union supporting their local allies.⁷⁴

Bad as the situation might have been, it soon became worse. Painstakingly trained by foreign advisors, 250 guerrillas infiltrated Dhofar and made their way to the provincial town of Mirbat.⁷⁵ Rebel leaders calculated victory at Mirbat would crush government morale. After careful preparation, the guerrilla commandos assaulted Mirbat on 19 July 1972. Achieving complete surprise, the attackers overran the outer defenses. Then, Mirbat's heterogeneous garrison of 50

regular soldiers, firqatmen and SAS troopers reacted heroically, contesting every inch of territory and firing their cannon at point blank range. Desperate resistance slowed the rebels' momentum long enough for aircraft to pound the rebels. Finally, advancing to the sounds of guns, a nearby SAS detachment attacked the rebels from an unexpected direction, creating panic. The rebels left 29 dead and 12 wounded comrades behind, while Mirbat's defenders lost 15 killed in action.⁷⁶

While they planned and executed their attack on Mirbat, rebel leaders prepared a very different offensive. In February 1972, the Soviet-trained dissident Zahir Ali Zaher infiltrated northern Oman to foment revolution. Zahir's plan was to develop a clandestine network of activists and smuggle arms into Oman, before igniting a campaign of assassinations in January 1973.⁷⁷ However, British intelligence officers obtained knowledge of Zahir's plan and arrested 30 dissidents and seized 165 rifles, 363 grenades and four mortars.⁷⁸ With Zahir's defeat, the British thwarted PFLOAG's final effort to foment revolution in northern Oman.

Despite, their best efforts neither the rebels nor the Anglo- Omani forces accomplished much in 1972. With the end of the 1972 offensives, Brigadier Graham's mandate came to an end as commander of the Sultan's Armed Forces. With Oman no closer to victory than two-and-a-half years previously, British policymakers became increasingly pessimistic.⁷⁹ To impart fresh impetus to Britain's stalled war effort, the government appointed a new, higher ranking officer, Major-General Tim Creasy, to lead the Sultan's Armed Forces. Studying the failures of his predecessor, Creasy concluded that the Sultan's Armed Forces lacked the numeric preponderance for offensive operations and had to establish a hermetic barrier to prevent rebel movements between Dhofar and South Yemen. In essence, Creasy concluded that he needed more troops and weapons to pursue Graham's strategy.

Creasy prodded Qaboos to more than double Oman's armed forces. Whereas the Sultan's armed forces counted 2,500 soldiers when Qaboos took power and were thereafter expanded by

one-third, Creasy now pushed for an army of 11,700 men by 1974.⁸⁰ Creasy planned to use this army to simultaneously hold a fortified line stretching across the breadth of Dhofar, sealing the province off from the rebellion's Yemenite sanctuaries, and wage mobile offensive operations throughout Dhofar's interior. Creasy's military buildup obliged Oman to borrow money on a massive scale, risking bankruptcy in the long-term, and delaying decisive operations for a year.

While the British laid the basis for eventual victory, PFLOAG sought successes in 1973. With Omani military power concentrated at Sarfait and Salalah, PFLOAG sought to cut both garrisons off from their air-transported supplies. Rebels maneuvered recoilless rifles onto a position overlooking Sarfait's airfield, on 3 February 1973, annihilating a piston-engine aircraft unloading supplies. Thereafter, accurate mortar and recoilless rifle fire prevented fixed-wing aircraft from landing at Sarfait.⁸¹ Sarfait's position was desperate.⁸² However, the Omani government's credibility was on the line and the Sultan refused to retreat.⁸³

Only helicopters could save Sarfait, but neither the British nor the Omanis had any to spare. Creasy soon discovered that the only way he could quickly obtain helicopters was by contravening the Foreign Office's long-established policy of excluding Iranian influence from Arabia.⁸⁴ He, therefore, negotiated directly with the Iranians and obtained six helicopters.⁸⁵ Despite difficulties, the Iranians delivered precious supplies and saved Sarfait from an unenviable fate. PFLOAG nevertheless continued to besiege Sarfait, harassing the base with a weekly average of 70 mortar rounds and occasionally pounding it with artillery based in South Yemen.⁸⁶ Re-supplied, but besieged, Sarfait became a "frontier fort" where 500 soldiers lived in a growing complex of hand-built stone bunkers.⁸⁷

After failing to take Sarfait, PFLOAG renewed its efforts against the larger logistics base of Salalah in August. PFLOAG's prior mortar campaign on Salalah had been defeated between 1970 and 1972 by the British deployment of artillery and sophisticated mortar locating radars.⁸⁸

Now the rebels hoped to paralyze Salalah by introducing a new weapon--the "Katyusha" rocket. Developed by the Soviet Union for conventional warfare, the Viet Cong had used the Katyusha against American airbases in Vietnam. The Katyusha's long-range and erratic trajectory rendered it undetectable by the mortar locating radars defending Salalah.⁸⁹

The British obtained advanced intelligence about the rocket threat and deployed an acoustic-ranging detachment to Salalah a full month before the rebels used the rockets. However, the rebels adapted by shifting positions after each rocket was launched.⁹⁰ When the rocket offensive began in August 1973, one landed near the Royal Air Force mess, wounding nine, including one British pilot.⁹¹ Others destroyed parked aircraft. Soon civilian employees and contract officers at Salalah threatened to quite work unless their security could be guaranteed.⁹² As the only functioning airbase in Dhofar, Salalah's disruption would halt operations. To keep Salalah operating, Anglo-Omani forces built fortified rock enclosures overlooking the dried riverbeds where the rebels launched the rockets. The combination of observation posts and acoustic ranging prevented the rebels from closing Salalah, but did not hinder their launching rockets.

Frustrated by his inability to quickly win the war in Oman, Creasy lobbied to escalate the war, spreading it to South Yemen. The nomadic Mahra tribe, whose peregrinations embraced Oman and South Yemen, was increasingly disenchanted with South Yemenite rule and prepared to rebel. Creasy urged the United Kingdom to allow him to "raise the Mahra," which "would relieve the pressure on the SAF [Sultan's Armed Forces] and would embroil PDRY [South Yemen] / PFLOAG resources in counter-insurgency operations."⁹³ In other words, fighting an insurgency would prevent South Yemen from supporting one in Oman.

Creasy's offensive inclinations alarmed London. With Eastern Bloc support, South Yemen possessed conventional military superiority over Oman and would win an overt war. Nevertheless, the Defense and Overseas Policy Committee approved Creasy's plan with the proviso that

British personnel not accompany the Mahra in Yemen.⁹⁴ With ministerial approval, Creasy inaugurated the Mahra insurgency, in early 1973, reassigning one *firqat* from the counter-insurgency in Dhofar.⁹⁵

Meanwhile, Creasy began building an impenetrable barrier between Dhofar's population centers and the rebel sanctuaries in South Yemen. In late-1972, Creasy established eight platoon and company positions, collectively known as the "Hornbeam Line," from the sea to the desert, 60 kilometers away. At first this line was porous and undermanned, failing to stop rebel movements. Creasy, however, insisted on using a Royal Engineer squadron to continually enhance the Omani positions with barbed wire and minefields.⁹⁶ Little by little the Hornbeam Line impinged on PFLOAG's ability to sustain its guerrillas in central and eastern Dhofar. However, it would take more than a year-and-a-half to join together the Hornbeam Line's positions into the formidable barrier Creasy planned.⁹⁷ While the Hornbeam Line was established in late-1972 and largely built in 1973, its real impact came in 1974.⁹⁸

Harried by the Mahra insurgency and recognizing the dearth of Omani reserves, South Yemen escalated the conflict. In autumn of 1973, 150 South Yemeni regular soldiers joined PFLOAG in attacking the Hornbeam Line, adding formal training and expertise with heavy weaponry to the guerrilla skills of the insurgents. Soon accurate mortar fire, averaging 30 to 40 rounds per week, struck the Hornbeam Line.⁹⁹ In an even more escalatory act, South Yemeni bombers, piloted by Eastern Bloc pilots, bombed the Omani town of Makinat Shihan on 18 November. Thereafter, Yemeni artillery increased its shelling of Sarfait.¹⁰⁰ Ordered by South Yemen and condoned by the Soviet Union, these attacks raised the specter of the Dhofar War metamorphosing into a larger regional conflict.

With South Yemen increasingly belligerent and the Sultan's Armed Forces overstretched, the strategic situation appeared critical in late-1973. To reverse these trends, Creasy relied in-

creasingly on Iran, which now offered a combined arms battle group of 1,500 soldiers.¹⁰¹ Despite the Foreign Office's opposition to Iranian involvement, the desperate situation called for extraordinary measures. When they arrived, the sudden influx of well-armed and conventionally trained Iranian forces deterred South Yemen and its benefactors from enlarging their conventional operations and provided the numeric cushion needed to resume offensive operations.¹⁰²

The arrival of the Iranian battlegroup proved the final turning point in the Dhofar War. Until this point, neither PFLOAG nor the Anglo-Omani forces had a clear advantage. Henceforth, British, Omani and Iranian forces would conduct an uninterrupted series of offensive operations, destroying PFLOAG and leading to complete victory by the end of 1975. As Creasy had planned, the Omani military build-up bore fruit in early 1974.¹⁰³ With support units and the Iranian battlegroup, Creasy now had 12,000 regular military personnel in Dhofar.¹⁰⁴ Added to these regular forces, the *firqats* now numbered 1,200 irregular combatants.¹⁰⁵ Meanwhile, the rebellion faced increasing difficulties replacing casualties. Compared with the 2,000 full-time guerrillas and 4,000 militia active in 1970, PFLOAG could only mobilize 600 full-time and 1,200 occasional guerrillas.¹⁰⁶ The shift in the correlation of forces, illustrated in Table III, was dramatic.

Table III: The Changing Balance of Forces, 1970-1974		
	1970	1974
Oman	2,500 regulars 400 askars 500 British	10,500 regulars 1,200 firqutmen 850 British 1,500 Iranians
Total	3,400 pro-govt troops	14,050 pro-govt troops
Rebels	2,000 guerrillas 4,000 militia	600 guerrillas 1,200 militia
Total	6,000 rebels	1,800 rebels
Correlation	1 to 1.8	7.8 to 1

Using his growing numeric superiority, Creasy reinforced the Hornbeam Line. By August 1974, the line constituted a continuous barrier, impenetrable to all but clandestine interlopers.¹⁰⁷ Although groups regularly infiltrated across, the rebels were unable to move heavy weapons through the line, which cut the rebellion's Yemeni sanctuaries off from 85 percent of Dhofar's population.¹⁰⁸ If Mao Tse-tung was correct that guerrillas must operate as fish, swimming in the overall sea constituted by a region's population, Hornbeam isolated the guerrillas from the Dhofari population.

In December 1973, the Iranian battlegroup began clearing the road from Salalah to Saudi Arabia, which had been closed for years to all but heavily escorted convoys.¹⁰⁹ After clearing the road, Iran promised more forces, bringing the Iranian contingent up to brigade (2,400 men) size. Now, the British planned to use the Iranians to re-conquer Western Dhofar's largest town, Rakhyut, which had been in rebel hands since 1969. Then, the Iranians would build a new fortified line, equivalent to the Hornbeam Line, sealing off the newly conquered territories from further infiltration.¹¹⁰

Despite the overwhelming forces available, the Anglo-Iranian-Omani offensive encountered severe problems. The Iranians attacked on 2 December 1974, but the rebels defeated Iranian units in several minor battles and then withdrew before the Iranians could bring their firepower to bear. Failing to inflict losses on the rebels, the Iranians nonetheless conquered their geographic objectives within a month and set about building the new fortified line, known as the Damavand Line.

While the Iranians fortified their line, a British-led Omani regiment struck another offensive blow to weaken the enemy and divide his attention. On 4 January, 1,000 Omani troops, fir-qatmen and British advisors assaulted the Sherishitti Caves, a natural fortress serving as a rebel logistics base. Although only eight guerrillas defended the caves at the beginning of the offen-

sive, the *firqat*'s sluggishness permitted over thirty reinforcements to arrive. On 6 January, these rebels trapped Omani regular forces in a textbook ambush, killing 13 and wounding 22, for a loss of only four guerrillas. Renouncing capturing the caves themselves, the Anglo-Omani force then seized a ridge overlooking the caves. Unwilling to hazard further lives in the Sherishitti bastion, they contented themselves with harassing rebel efforts to use the caves.¹¹¹

While regular forces pressured the rebels, Brigadier John Akehurst, the commander of Anglo-Omani forces in Dhofar, planned to use the *firqats* to seize and pacify the highlands in central and eastern Dhofar. Although weakened by the Hornbeam Line, rebels still controlled much of the countryside. Akehurst planned to implant *firqats* in their tribal districts and provide them with substantial development assistance, enticing the inhabitants away from the rebels. The pattern for subsequent operations was:¹¹²

- 1) Get a *Firqat* leader to identify a defensible location in his area
- 2) Mount a battalion level attack to secure the area
- 3) Build an access track to the area and an airstrip if possible
- 4) Move a drill up the track
- 5) Drill a water hole deep down to the plentiful aquifers
- 6) Build water storage tanks and cattle troughs
- 7) Build the basis of a village, with mosque, shop, school and clinic
- 8) Leave the *Firqat* to defend themselves with the threat that if any enemy appeared in their area the water would be immediately cut off.

Akehurst's strategy harnessed Oman's burgeoning conventional military strength and its hitherto disappointing irregular *firqats* in a single campaign. After it began in October 1974, Akehurst's offensive bore fruit with *firqats* enticing civilians to their new villages, pacifying central and eastern Dhofar by June 1975.

Hammered by conventional offensives, cut-off by fortified lines and undermined by Akehurst's pacification effort, rebel morale collapsed in late 1974. During the second month of Akehurst's campaign a record 41 guerrillas deserted the rebellion and monthly surrender averages were, in late 1974, twice as high as during the preceding year.¹¹³

As the rebels weakened, Anglo-Omani forces concentrated greater force on harrying the rebellion's increasingly scarce combatants. In February 1975, seven Omani companies (over 1,000 men) assaulted the entrenchments of Ashoq, where a headquarters of 30 to 40 rebels had directed attacks since early 1973. Using massive firepower, the Anglo-Omani forces seized Ashoq, capturing large quantities of arms and ammunition for the first time in the war.¹¹⁴ Then, in May and June, the Omani garrison at Sarfait ventured from their fortifications and ambushed two rebel camel trains, belatedly fulfilling Sarfait's role of interdicting rebel supply lines.¹¹⁵

Reeling from previous reverses, PFLOAG could now be destroyed in one more thrust. When the 1975 monsoon ended, Anglo-Omani and Iranian forces launched four offensives within 12 days. On 14 October, the garrison of Sarfait captured the first of the three plateaus leading to the sea. Then, far to the northeast, the Iranians attacked from the Damavand Line towards a ridge overlooking rebel supply lines. When rebels concentrated against the Iranians, Akehurst ordered the Sarfait regiment to advance all the way to the sea, capturing all three plateaus and blocking the routes hitherto used by rebel caravans.

Ten days after the advance from Sarfait to the sea, another Omani battalion assaulted the Sherishitti Caves. Supported by armored cars, artillery and fighter-bombers, the Omanis methodically advanced, seizing large quantities of rebel materiel, including 750,000 rounds of ammunition.¹¹⁶ Assailed on all sides by Anglo-Omani and Iranian forces, South Yemen ordered its 250 combatants in Oman to withdraw closer to the South Yemeni border. Abandoned by their erstwhile comrades-in-arms, the guerrillas began a general withdrawal as well. Although the rebels had originally intended to regroup, their retreat soon degenerated into a rout and they abandoned their heavy weapons. With the rebellion rapidly collapsing, Akehurst ordered a helicopter-borne assault on Dhalqut, the last rebel village.

Unfortunately, escalation threatened to produce an inter-state war even as Oman's civil war drew to a close. General Kenneth Perkins ordered Omani fighters to bomb South Yemeni artillery to prevent it from interfering with Akehurst's offensives. Unfortunately, Perkins miscalculated. His air strike, on 16 October, destroyed only one Yemeni gun and, far from being intimidated, the Yemenis responded by moving more artillery to the border and engaging the British in gunnery duels.¹¹⁷ However, economic woes forced South Yemen's leadership to think twice before escalating further.

Dhalqut's fall on 1 December 1975 consecrated the Anglo-Omani victory over the Dhofar rebellion. Unusual for an unconventional war, Oman's victory was so complete that Sultan Qaboos could publicly announce the end of the war on 11 December. From near defeat in 1973, Anglo-Omani forces had rebounded to conquer Dhofar by late 1975. In two years of continuous offensives, interrupted only by the annual monsoon, Anglo-Omani forces had whittled the rebellion down from 1,800 combatants to 100 haggard guerrillas.¹¹⁸

The Anglo-Omani victory in Dhofar is one of the most complete won against a well-organized insurgency. One of the keys to this victory was the fusion of political and military authority under British military commanders. British field commanders, both in Dhofar and Oman as a whole, possessed broad powers to plan and conduct conventional military offensives, development projects and a "hearts and minds" campaign. With the authority accorded them, successive British commanders pursued objectives consonant with their institutional preferences.

From the outset, British field commanders demanded overwhelming force, securing an eight-to-one advantage before the decisive offensives in 1974 and 1975. Even before they obtained this numeric superiority, commanders favored offensive operations. When South Yemeni forces increased their assistance to the rebellion, British officers urged escalation: bombing posi-

tions in Yemen, fostering the Mahra insurgency, preemptively attacking South Yemeni artillery and, ultimately, bombing and shelling South Yemeni forces.

British commanders meddled in Oman's internal politics, demanded financially excessive levels of force and irresponsibly risked escalation. To secure the military buildup and development spending they felt necessary, British officers conspired to overthrow Sultan Said, who was the employer and supposed beneficiary of British assistance. Creasy's force goals meant that Oman's 1975 defense budget was nearly twice as large as its national budget had been in 1973. Without the 1973 Oil Crisis, Oman would have gone bankrupt.¹¹⁹

Besides risking Oman's financial health in their quest for overwhelming force, British commanders undermined the Foreign Office's policy of limiting Iranian influence in Arabia. After dangerously committing forces to Sarfait, Creasy needed Iranian assistance to prevent a humiliating retreat. Although a self-induced crisis justified the original Iranian deployment, British officers wanted as many Iranians as they could get. With their attacks on South Yemeni territory, British field commanders also brought Oman and South Yemen to the brink of war on several occasions. Table IV, below, illustrates when British field commanders sought London's permission and when they used their proper initiative.

Table IV: When Field Commanders Sought London's Permission	
<u>Sought Permission</u>	<u>Acted Alone</u>
- Overthrow Sultan Said (1970)	- Retaliatory Air Strike on South Yemeni Artillery (1972)
- Foster Mahra insurgency (1972)	- Preemptive Air Strike on South Yemeni Artillery (1975)

Although British officers occasionally referred matters to political superiors, they also made decisions with weighty political consequences.

III. The Falklands, 1982

No military intervention since the 1956 Suez intervention preoccupied British political leaders more than the Falklands War. Argentina's invasion of the Falkland Islands posed acute challenges for the United Kingdom's leadership. Because of an economic recession and labor strife, Prime Minister Margaret Thatcher's government was deeply unpopular. Disgrace would bring defeat in the United Kingdom's upcoming 1983 elections. Winning a military victory would be equally problematic given the distances and opposition. Diplomatically challenged as well, the United Kingdom strove for international legitimacy, resisted allies' efforts to negotiate a settlement.

Because of the stakes, the British government followed the eleven-week crisis intensely. The main crisis management committee, known as the "War Cabinet," met at least daily.¹²⁰ Comprising Prime Minister, Defense Minister, Foreign Minister, Chancellor of the Duchy of Lancaster and the Chief of Defense Staff, the War Cabinet took most political and diplomatic decisions. The Prime Minister also consulted the full cabinet twice a week and the armed forces chiefs of staff met daily.¹²¹ With the fate of Thatcher's Conservative government and Britain's international prestige riding in the balance, political leaders established the nation's objective, handled diplomatic initiatives and established broad limits on how force could be used. Military leaders enjoyed a free hand to formulate operational plans and fight battles.

The Argentine invasion on 2 April 1982 caught the United Kingdom's political and military leadership unawares. Few imagined that Argentina and the United Kingdom would fight a war over an obscure territorial dispute over economically valueless islands. However, domestic

unpopularity drove Argentina's ruling military junta to seek a foreign policy triumph in either the Falklands or a territorial dispute with Chile. The United Kingdom's poor management of a dispute with Argentine scrap metal workers on South Georgia Island convinced the junta to invade. Deciding to invade the Falklands on 26 March, an Argentine expeditionary force landed on 2 April.¹²² Although British intelligence predicted the invasion, it was too late to reinforce the islands.

With firm intelligence about the coming invasion, the Navy's chief of staff, First Sea Lord Admiral Henry Leach, rushed to the House of Commons. With the Chief of Defence Staff away in New Zealand and the other service chiefs indisposed, Leach had the opportunity to shape Prime Minister Thatcher's outlook.¹²³ Leach's organizational interests were clear.¹²⁴ The Royal Navy was the big loser of the 1981 Defense Review and a predominantly maritime campaign would showcase the aircraft carriers, amphibious landing craft and multipurpose frigates on the budgetary chopping block. In the Falklands, Leach saw an opportunity to reverse the planned reductions in Royal Navy strength.¹²⁵ After Leach explained that the Falklands' garrison was inadequate and could not be reinforced, Thatcher questioned whether the Islands could be recaptured. Emphatic, Leach told the Prime Minister, "Yes we *could* (retake the Falklands) and in my judgement we *should*."¹²⁶ Thatcher immediately authorized Leach to assemble an invasion force.

While Leach's sanguine advice prompted Thatcher to respond boldly to the Argentine invasion, he alone was optimistic about the United Kingdom's prospects. Army Chief of Staff Dwin Bramall doubted success would come easily and suspected Leach of pursuing bureaucratic interests.¹²⁷ More emphatically, the RAF's Chief of Staff thought it would be folly to attack the Falklands against opposition from the Argentine Air Force.¹²⁸ To everyone except Leach, the Argentines stood a good chance of holding the Falklands, 300 miles from the Argentine coast, against a British expeditionary force sailing from over 8,000 miles away.

With the chiefs of staff divided, their meetings were acrimonious. However, despite serious reservations, the chiefs papered over their internal differences to present political leaders with unanimous opinions and collective advice. In this first instance, of several that would occur during the war, the unwillingness of the chiefs of staff to convey disagreements to political leaders swayed important political decisions.¹²⁹

With the dispatch of an expeditionary force, the British established a political-military chain-of-command. The Chief of Defense Staff, Admiral Terence Lewin, became the main political-military interface. Attending the War Cabinet's daily meetings, Lewin remained attuned to the conflict's political dimensions. He was also the government's only military advisor, except on occasions when the War Cabinet convoked the chiefs of staff committee. Below Lewin, Admiral John Fieldhouse managed the war from his headquarters at Northwood, in western England. Fieldhouse crafted the United Kingdom's military strategy and never directly dealt with political leaders, who communicated via Lewin. Fieldhouse also retained personal control over Britain's nuclear submarines, including three dispatched to the South Atlantic.¹³⁰

Four operational commanders answered to Fieldhouse.¹³¹ Admiral Sandy Woodward, commanded most of the naval forces, including the aircraft carriers and surface combatants. Commander Michael Clapp led the amphibious landing force carrying soldiers and equipment. Aboard Clapp's ships, Brigadier Julian Thompson commanded the ground forces (3rd Commando Brigade) designated to retake the islands. When a second brigade was added, Major-General Jeremy Moore superseded Thompson. Finally, Captain Brian Young commanded a separate naval and amphibious force detailed to retake South Georgia Island.

Although outside the chain of command, the chiefs of staff committee discussed the conflict daily. Several ideas, such as using strategic bombers to attack the largest airfield on the Falklands, originated with the chiefs of staff. Lewin, as Chief of Defense Staff, normally pre-

mented the chiefs' advice to the War Cabinet, however the combined chiefs of staff sometimes met with the War Cabinet. Whether presenting its advice collectively or via the Chief of Defense Staff, the chiefs of staff concealed their disagreements from political leaders. Without viable alternatives, the War Cabinet approved virtually all of the military's requests.

After Thatcher ordered the expeditionary force south, the Chiefs of Staff committee recommended establishing an "exclusion zone" around the Falkland. An exclusion zone would provide British forces with the freedom they required to interdict Argentine efforts to reinforce the islands, while placating neutral states with the assurance that fighting would disrupt neither the high seas nor the South American mainland. Political leaders acquiesced and announced, on 8 April, a maritime exclusion zone with a radius of 200 knots.¹³²

With the Falklands 8,000 miles distant, British ships needed three weeks to travel to the South Atlantic. In the meantime, the United States and Latin America pressured the United Kingdom to agree to a compromise. The United Kingdom wanted to preserve an aura of international legitimacy and could not refuse mediation. After two rounds of shuttle diplomacy, by United States Secretary of State Alexander Haig, Britain was only spared the problem of rejecting an unwanted compromise because the Argentines did so first.

The War Cabinet wanted to preempt future attempts to pressure the United Kingdom into accepting anything short of victory. As a participant in the War Cabinet's deliberations, Admiral Lewin shared their impatience for military action. In Fieldhouse's view, South Georgia, an island 800 miles southeast of the Falklands, could be liberated before the expeditionary force neared the Falklands. Beyond the reach of Argentine land-based aircraft, South Georgia was occupied by a token garrison. In a move the Defense Secretary categorized as "pure politics" the United Kingdom hoped to derail efforts at international mediation by speedily re-taking South Georgia.¹³³ However, attacking South Georgia would divert forces from the Falklands.

On 20 April, a small naval squadron of four ships, carrying 220 Royal Marines and SAS commandos, sailed towards South Georgia. Unfortunately, the operation ran into trouble when a group of SAS commandos insisted on surprising the main Argentine garrison by climbing over the Fortuna Glacier. After landing in a forbidding environment, the weather stymied twelve SAS commandos, who struggled to survive in arctic conditions. One day and two troop-carrying helicopters were lost recovering the SAS from the glacier. Having abandoned its equipment and suffered from exposure, the SAS unit was momentarily incapacitated.¹³⁴ The delays caused by the Fortuna Glacier fiasco permitted the Argentine high command to send a submarine, the *Santa Fe*, to South Georgia. When the British detected the *Santa Fe's* approach on 24 May, their ships distanced themselves from the island. Possessing few anti-submarine assets themselves, the South Georgia invasion fleet was stymied.¹³⁵ The conquest of South Georgia, which had been conceived as an inexpensive means of influencing diplomatic events, was becoming a debacle.

Fortunately for the British, their luck soon changed. The next morning, a British helicopter spotted the *Santa Fe*. Thereafter, several helicopters attacked, inflicting grievous damage. Although not sunk, the *Santa Fe* beached itself. With the submarine incapacitated, Captain Young ordered his small fleet to attack. By early evening, British soldiers were ashore, prompting the Argentine commander to surrender both his garrison and the *Santa Fe*.¹³⁶ The recapture of South Georgia fulfilled the British requirement to show activity before the main fleet arrived, but it had nearly become a costly and embarrassing failure.

As the naval squadron retook South Georgia, the main expeditionary force neared the Falklands. On 1 May, the British fleet stood poised to begin operations. On 30 April, the British government declared that its maritime exclusion zone had become a total exclusion zone, meaning that British forces would henceforth attack Argentine aircraft. For British military commanders, a combined Argentine air and naval attack constituted the greatest threat. The Argentine air

force could oppose 110 combat aircraft against less than 45 British Harriers and Sea Harriers. Added to this the Argentine Navy could also inflict attrition on the British fleet.

Before landing, Woodward planned to attrite the Argentine Air Force and Navy by using air strikes to draw the Argentine air force and navy into ill-considered attacks. Informed about Woodward's plan, the Royal Air Force's (RAF) Chief of Staff protested at his service's absence from British war plans. Although the RAF fulfilled an important logistic role, this was hardly sufficient for the service's leadership. Faced with Woodward's plan, the RAF high command worked out a means of contributing to the air battle. By flying from Ascension Island, 3,300 nautical miles away, and using all of the United Kingdom's available re-fuelling aircraft, a single Vulcan bomber could reach the airfield at Stanley, in the Falklands. This exceptional mission would permit the RAF to participate dramatically in the re-conquest of the Falklands.

Few outside of the RAF proved enthusiastic about the Vulcan proposal. The other services considered ultra-long-range bombing missions to be an expensive publicity stunt. Airfields are difficult to disable and the runway at Stanley could be attacked at less cost by carrier aircraft or naval gunfire. Some also worried about the diplomatic ramifications of using a heavy bomber, in a hitherto limited conflict. Despite reservations, the other chiefs of staff agreed to present the RAF's proposal as an inter-service recommendation, which the War Cabinet accepted.¹³⁷

In the first blow in recovering the Falklands, a lone Vulcan dropped 21 bombs on Stanley's airfield after 18 in-flight re-fuellings. Although the Vulcan mission was organizationally a success, setting a record for history's longest bombing mission, the mission accomplished little militarily. Only one bomb impacted on Stanley's runway, leaving a crater that was quickly repaired.¹³⁸ Despite modest results, the RAF persisted with Vulcan raids. Altogether, seven Vulcan missions attacked targets near Stanley between 1 May and 12 June. Unfortunately, the six follow-up missions accomplished even less than the first, with bombs and missiles missing their

targets. On the second to last mission, technical difficulties forced the bomber to divert to Brazil, where it created a diplomatic incident, when Argentine authorities requested that Brazil impound the aircraft.¹³⁹

After the Vulcan raid on 1 May, ship based aircraft and naval gunfire pounded Stanley's runway. The Argentines fell for Woodward's ruse and launched 35 aircraft at the British expeditionary force. Poorly coordinated, the Argentine air raids accomplished nothing and permitted British aircraft to shoot down four Argentine jets. Intelligence soon picked up signs that the Argentine Navy was planning a decisive attack in the form of a giant pincher, with one fleet, including Argentina's aircraft carrier, attacking from the north and another centered on the cruiser *Belgrano* thrusting up from the south.¹⁴⁰

Understandably, Woodward preferred to preempt the Argentine naval offensive by sinking key units before they could attack.¹⁴¹ British submarines could torpedo Argentine ships before they entered the total exclusion zone, but sinking warships outside of the zone would have diplomatic consequences. When one submarine, the *Conqueror*, spotted the cruiser *Belgrano* before dawn on 2 May, Woodward ordered the submarine to attack. However, Britain's submarines answered directly to Admiral Fieldhouse, who countermanded Woodward's order and took the matter to the chiefs of staff.¹⁴² Shortly thereafter, Admiral Lewin asked the War Cabinet to approve sinking the *Belgrano*.

Although the War Cabinet approved the request in 20 minutes, the *Belgrano* reversed course before the message reached the *Conqueror*. Reasoning that the *Belgrano* would pose a threat later, Woodward demanded once again that *Conqueror* sink it. Late, on 2 May, *Conqueror* sunk the *Belgrano* with a spread of torpedoes, killing 321 of the cruiser's crew.

The military and diplomatic consequences of the *Belgrano's* sinking were weighty. Losing the *Belgrano* frightened the Argentine navy into keeping its ships within Argentine territorial

waters, where they posed no threat. Diplomatically, the British sneak attack enflamed anti-British opinion in Latin American and Europe. Brazil, Mexico, Venezuela, Bolivia, Spain and Ireland all condemned the United Kingdom's action and several proposed collectively breaking diplomatic relations with the United Kingdom.¹⁴³ Although the worse eventualities never came to pass, the British government felt obliged to devote more attention Peru's mediation attempts.

After the first two days of fighting had gone Britain's way, the Argentines scored a success on 4 May. Using a single Exocet anti-ship missile, an Argentine aircraft sunk a modern destroyer, the *Sheffield*. The *Sheffield*'s loss highlighted the threat posed by Argentine aircraft and Exocet missiles.¹⁴⁴ Worse, the Argentine air force began withholding its aircraft for use against the British landing force. Woodward's failure to provoke an air battle prompted the British high command to search for alternative ways to reduce the Argentine air power. Bomber raids on mainland Argentine air bases were rejected because the United Kingdom did not have enough tanker aircraft to fly the extra distance. After dismissing air strikes, British planners turned to special forces. On the night of 14 / 15 May, forty-five SAS commandos raided the Pebble Island airfield in the Falklands, destroying eleven aircraft. However, all of Argentina's 82 high performance jets were based further away, on the Argentine mainland.¹⁴⁵

After the Pebble Island raid, British commanders hoped that SAS commandos could destroy Argentina's Exocet missiles and Super Etendard jets. Unfortunately, military operations against the Argentine mainland would fall within the scope of the Rio Treaty for Pan-American defense and generate pressures for Latin American solidarity with Argentina.¹⁴⁶ Despite foreign policy risks, the Chiefs of Staff convinced the War Cabinet to approve raids against Argentina's Rio Grande airbase in Tierra del Fuego. After an initial intelligence party scouted the airfield, a raiding force of SAS would crash land two C-130 transport aircraft. The SAS would demolish aircraft on the runway and kill everyone in the Argentine officers' quarters, before escaping on

Chile on foot. If all went according to plan, the Exocet threat would be extirpated. However, the mission was risky politically and militarily.

The planned raid encountered problems from the moment the War Cabinet approved it. On 17 May, British ships launched a helicopter with the SAS reconnaissance team. However, an Argentine radar lock and two flares convinced the SAS that they had been detected. Poorly prepared for a fight, the SAS aborted their mission. With the preparatory reconnaissance mission cancelled, the SAS raid on Rio Grande became riskier. Undeterred, Director of the SAS, General Peter de la Billière, pushed to go ahead. Many in the SAS considered the raid a suicide mission. Crash landing on an enemy airbase, overcoming unknown defenses and escaping across tundra struck even SAS commandos as impossible. After one long-serving NCO resigned rather than participate, the squadron commander counseled de la Billière to abort the raid.¹⁴⁷ Hoping to persevere with an operation judged critical to the SAS' future, de la Billière sacked the squadron commander. However, his initiative backfired when NCOs and enlisted men threatened mass resignations, obliging de la Billière to postpone the raid indefinitely.¹⁴⁸

In retrospect, the SAS raid was a perilous gamble. Success was unlikely, but could have destroyed Argentina's most potent asset. However, in the event of failure, Argentine forces could strike a psychological blow, inflicting casualties on British forces, capturing prisoners to display and exposing the United Kingdom's extension of hostilities. Even if the SAS succeeded, the attack would enflame Latin American opinion and increase diplomatic pressures for a compromise solution.¹⁴⁹

Having failed to deplete Argentina's combat aircraft, the British landing was opposed by an intact air force. On 21 May, amphibious vessels landed 3rd Commando Brigade in Port San Carlos. Expecting the landing elsewhere, the Argentines reacted feebly at first. However, they soon riposted with an air campaign, transforming Port San Carlos into "bomb alley" between 21

and 25 May. By the time the air offensive petered out, they sank five British ships and damaged three, but lost 19 aircraft in the process.¹⁵⁰ These attacks depleted the British fleet, worrying Woodward lest defeat was imminent.¹⁵¹

With a beachhead, the British terminated the most perilous stage of the re-conquest. However, the landing created diplomatic pressures for a compromise peace. Few Western states wanted the United Kingdom to humiliate Argentina and Latin American states wanted to avoid Argentine bloodshed.¹⁵² A number of states, including the United States, Colombia and Peru, presented new peace proposals following the British landing, while Spain and Panama presented an anti-British resolution to the United Nations Security Council.¹⁵³ Although details differed, all envisioned a ceasefire, to be followed by the evacuation of the islands by Argentine *and* British military forces. Finally, a peacekeeping force would guard the islands, while negotiations decided their status.¹⁵⁴

Having mobilized public opinion in favor of the war, Prime Minister Thatcher was no longer willing to settle for anything short of victory. However, British policymakers doubted how long they could avoid a compromise peace. The apparent lull in land operations after 21 May was particularly worrisome and British leaders counted on military momentum easing pressures for a truce. While, British forces consolidated their beachhead and continued landing weaponry and equipment, the British commander, Brigadier Thompson, interpreted his mission as holding the beachhead until the second British brigade arrived. Meanwhile, the Argentines sank the ship carrying transport helicopters, delaying the British advance.¹⁵⁵

Participating in the War Cabinet's meetings, the Chief of Defense Staff appreciated the diplomatic pressures. He therefore prodded Admiral Fieldhouse to reinvigorate the British offensive. However, Brigadier Thompson insisted that an advance on Stanley was premature. For this reason, Admiral Fieldhouse recommended that a battalion take Goose Green, which was 20 miles

from the beachhead.¹⁵⁶ However, located along a narrow isthmus, these Argentine forces occupied a strong defensive position, but posed no threat to a British advance on Stanley. Thompson, therefore, resisted pressures to attack. His military calculations clashed with the politico-military reasoning of his superiors. Other field commanders sympathized with Thompson, while the high command in London agreed with Fieldhouse and Lewin.¹⁵⁷

Matters came to a head on 26 May, five days after the landing. During a satellite conversation, Thompson argued that he could not spare the helicopter transport to move artillery forward. Unsympathetic, Fieldhouse told him to attack without artillery because "the people at the backend were getting restless."¹⁵⁸ When Thompson protested this rationale, Fieldhouse threatened that, "if he did not launch the attack on Goose Green, he [Fieldhouse] would replace him with someone who would."¹⁵⁹ Lacking alternatives, Thompson attacked.

Given the emphasis on speed, Thompson did not reconnoiter Goose Green and his plan was based on erroneous information about the enemy position and the terrain. Lacking time to analyze soil samples, Thompson concluded that light tanks could not operate in the bogs around Goose Green. Thompson, therefore, held the tanks back, when they could have been used.¹⁶⁰ Meanwhile, British intelligence was imprecise, evaluating the Goose Green garrison at 300 personnel and then only later raising their assessment to 450, when 1,007 Argentines were present.¹⁶¹

Following London's advice, Thompson detached only a single infantry battalion, the 2nd Battalion of the Parachute Regiment, and three artillery pieces. After learning about the strength of the Argentine garrison, Thompson lamented, "I set the battalion an almost impossible task.... We did not appreciate how much firepower I should have deployed."¹⁶² Considering Goose Green a distraction, Thompson remained distant from the operation and delegated tactical plan-

ning to Colonel "H" Jones of the Parachute Regiment. With little time and imperfect intelligence, Jones developed an overcomplicated plan.

When the British attack began at 2:00 am on 28 May, the result was an unexpectedly bloody and difficult battle. British timetables became unhinged, attacks lost their synchronization and the movements became chaotic. Soon, the offensive was stymied on the Argentine defensive line, where soldiers suffered from Argentine artillery and air strikes. When Jones attempted to charge the enemy trenches himself, he was gunned down, perishing from his wounds.

Bogged down and leaderless, a timely counterattack could have routed the British.¹⁶³ However, Jones' second-in-command managed to get the offensive moving within an hour. Using all of the firepower at their disposition, the British broke up the Argentine defenses. After a battle that lasted until the first hours of 29 May, the British took Goose Green. Overall, the British suffered 16 killed, 36 heavily wounded and 30 lightly wounded in their assault. In exchange, they killed 45 Argentine soldiers, wounded 90 and took more than 900 prisoners.¹⁶⁴ The assault on Goose Green was a success, but nearly ended in disaster, and resulted in casualties disproportionate with the limited objective sought. Had the Argentines counterattacked when the British attack floundered, they could have achieved a local victory.¹⁶⁵

In a broader sense, Goose Green accomplished its political objective of paralyzing efforts at mediation. Thereafter, the land campaign proceeded, with the 3rd Commando Brigade advancing towards Stanley and the 5th Brigade arriving by sea.¹⁶⁶ By 11 June, both British brigades were poised to assault the main Argentine defensive positions on the ridges and hills surrounding Stanley. Carefully briefed on enemy positions and supported by all available artillery that could be mustered, the British attack began just after midnight on 12 June. On the first day, three battalions of 3rd Commando Brigade assaulted the Argentines' outer defensive line, anchored on the rocky heights of Mount Longdon, Mount Harriet and Two Sisters. Despite the natural strength of

the positions and stiff Argentine resistance, transforming the battle for Mount Longdon into the war's bloodiest engagement, professional British troops overcame outnumbered Argentine conscripts in each encounter.¹⁶⁷

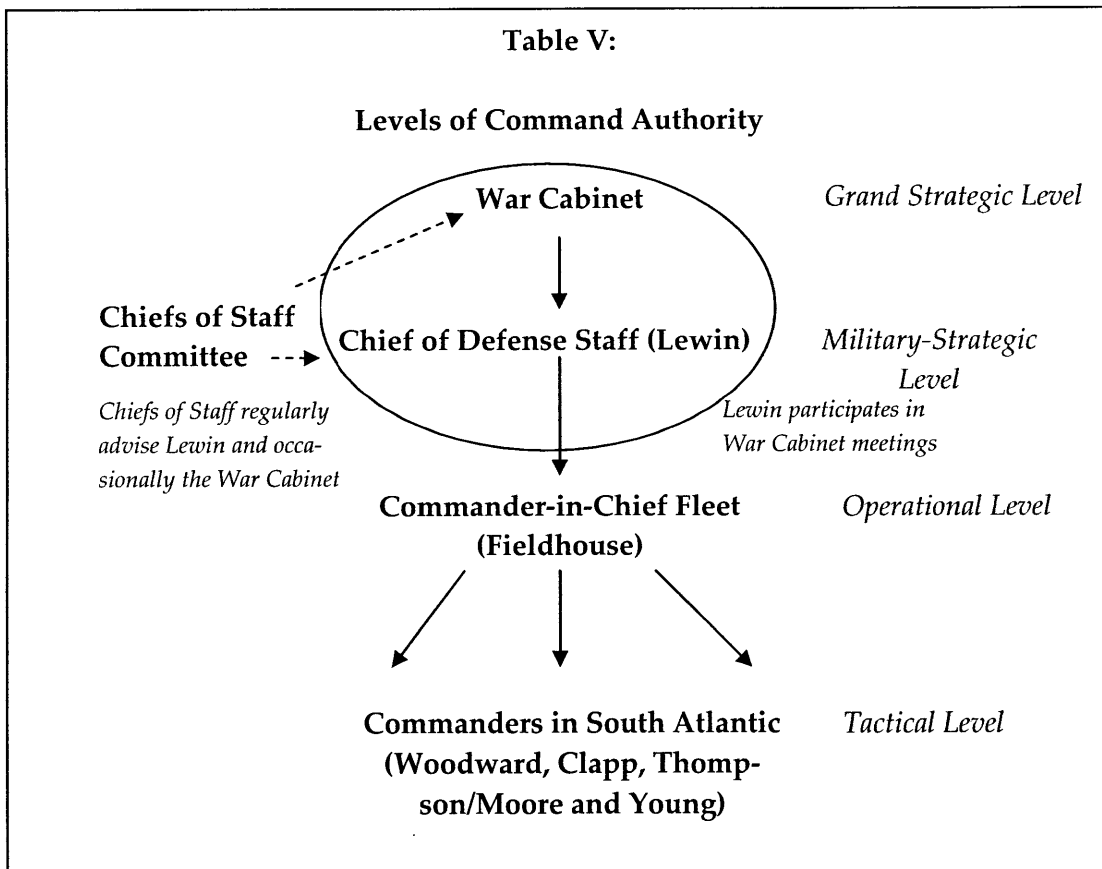
After cracking the first Argentine line, British forces paused and consolidated before assaulting the final line of defenses. On 14 June, three fresh battalions assaulted the high-ground at Tumbledown, Mount William and Wireless Ridge. Dispirited after the fighting on 12 June, the Argentines offered less resistance. In comparison to the 24 British dead and 63 wounded suffered on 12 June, the Argentines inflicted a mere 11 killed and 46 wounded on 14 June.¹⁶⁸

Having been forced from the commanding heights around Stanley, Argentine forces still had the wherewithal to resist the British. Since the landing on 1 May, British forces had only killed, wounded or captured 1,500 Argentine soldiers out of 11,000. The Argentine garrison included three entire regiments and an armored car detachment that had not yet fired a shot, magazines were brimming with ammunition, and combat aircraft and truck-mounted Exocet missiles stood ready.¹⁶⁹ Stanley's commander attempted to form a defensive position west of Stanley, but the Argentine governor of the Falklands wanted to retreat east of Stanley, to defend the zone around the airfield as long as possible. Finally, aggressive regimental officers planned to counterattack British forces on the high-ground or fight house-to-house, where civilian hostages would impede British operations.¹⁷⁰

Whatever possibilities might have existed, the British had shattered the Argentine Army's cohesion. Units became intermingled as they retreated and men began to shirk. British Marines overran the Argentine line west of Stanley before it could offer any serious resistance, while shelling by British artillery and the breakdown of order amongst Argentine units prevented any last ditch stand at the airfield. Realizing that further resistance was futile, Brigadier-General Menéndez surrendered Argentine forces on the Falklands to Major-General Moore on 15 June.¹⁷¹

Thus, after two-and-a-half months of political and military maneuvering, the United Kingdom reestablished British rule over the Falklands and decisive military defeat prompted a disgruntled Argentine electorate to replace the overthrow regime. The magnitude of the British success and unexpectedly positive nature of its political aftermath warrant the Falklands' status as a decisive military victory.

Many factors augured against a political-military triumph. Over a month-and-a-half was needed to assemble and transport an amphibious forces to the islands and a host of countries tried to impose a diplomatic compromise. Then, a well-timed Argentine air and naval offensive could have thwarted the British amphibious landing. That the United Kingdom managed to accomplish its objectives demonstrates the suitability of its decision-making processes, illustrated in Table V below.



Each echelon occupied itself with a different level of decision-making. Political leaders never enmeshed themselves in military detail, while British operational commanders rarely proffered political advice.

Despite ultimate success, the British decision making process manifested defects. The ability to present politicians with unified positions encouraged the services to logroll their differences to obtain desired institutional outcomes.¹⁷² On three distinct occasions, illustrated in Table VI below, the Chiefs of Staff committee presented political leaders with a seemingly unanimous opinion, which, only a single service chief really favored.

Action	Group Favoring Action	Result
Advising political leaders that Falklands could be retaken	Navy	Falklands retaken in hazardous campaign; Planned cuts in naval forces cancelled
Strategic bombing raids on Stanley	Air Force	Seven costly, but ineffective raids conducted; Air Force plays visible role in conflict
Sending Gurkha battalion	Army	Battalion sent, but negative publicity muted because it played little role in combat; Gurkha battalions preserved

Admiral Leach's advising political leaders that they could retake the Falklands, produced a successful, if dangerous campaign. Air Marshal Beetham's championing ultra-long-range bombing missions, generated costly and desultory results. Finally, the Army's deployment of Gurkhas failed to provoke the anticipated diplomatic storm despite their fearsome reputation and mercenary status.

While collective advice facilitated logrolling, the British also demonstrated military myopia. Throughout the conflict, the British high command proposed actions that only marginally enhanced the United Kingdom's prospects of success, but bore high political or economic costs. As table VII illustrates, below, the War Cabinet acceded to each of these demands, save one.

Action	Dates	Results
Permission to shoot down Boeing 707	4/22 - 4/23	War Cabinet refuses permission
Torpedoing the <i>Belgrano</i>	5/2	Argentine surface fleet neutralized
Strategic bombing raids on Stanley	5/1 - 6/12	Seven costly, but ineffective raids
Commando raid on Argentine mainland	5/14 - 5/18	Raid aborted because of compromised reconnaissance and near mutiny within the SAS

The War Cabinet refused only Admiral Lewin's request to shoot down Argentine Boeing 707 airliners tracking the British fleet, because of likelihood of accidentally shooting down a civilian aircraft.¹⁷³

The high command often exaggerated the military benefits to be gained from their chosen course of action. Thus, torpedoing the *Belgrano*, conducting long-range bombing missions and raiding mainland Argentine airfields were presented as critical to victory, when, in fact, the *Belgrano* was an antiquated cruiser, strategic bombing missions accomplished little and raiding the Rio Grande airfield was a suicide mission. Meanwhile, the diplomatic costs of all four operations, each constituting an escalation over previously accepted limits, were mooted in the British high command's presentations.

If the high command promoted technical military and organizational factors at the expense of diplomatic and economic concerns, diplomatic concerns occasionally encroached on military planning. At two critical junctures, listed in Table VIII, Admiral Fieldhouse ordered subordinates to launch attacks to achieve diplomatic ends.

Action	Dates	Results
Seizure of South Georgia	20/4 - 25/4	Early operations result in a debacle, Argentine resistance collapsed after the <i>Santa Fe</i> was incapacitated
Attack on Goose Green and Darwin	28/5 - 29/5	Poorly prepared British attack nearly repulsed, but ultimately succeeds

Although the motives behind these attacks were diplomatic, British leaders played no direct role in ordering them. Instead the Chief of Defense Staff conveyed the need for imminent action to the operational commander, Admiral Fieldhouse. Fieldhouse, in turn, chose the objectives to be attacked.¹⁷⁴

Overall, the Falklands War convincingly demonstrates the strengths, but also highlights certain weaknesses, of the United Kingdom's institutions. A clear politico-military chain-of-command and functional division of authority into levels of decision-making permitted the British armed forces to respond to an unanticipated military threat. Never once did political leaders interfere with military operations, and only once did they refuse a military request. Although military leaders abused their authority to push for escalatory and bureaucratically motivated policies, the Falklands War was an impressive demonstration of British military power, which saw

the United Kingdom vanquish a competent adversary more than 8,000 knots from the British Isles.

IV. The Gulf War, 1990-1991

Less than a decade after winning the Falklands War, the United Kingdom faced a different, but substantial challenge following Iraq's invasion of Kuwait. Iraq's military power obliged the United Kingdom to assemble its largest expeditionary force since 1956. Moreover, the crisis forced the British into a subordinate position for the first time since the Korean War. At first, the United Kingdom faced these challenges under the veteran guidance of Prime Minister Thatcher, but midway through the crisis domestic politics led to Thatcher's replacement by an inexperienced John Major. Despite the change of leadership, the United Kingdom's political-military decision-making proved remarkably stable. With a monolithic chain of command and field commanders isolated from the cabinet via three echelons of military hierarchy, domestic politics failed to influence military preparations.

Employing the same institutional arrangements as during the Falklands War, Britain's armed forces acquired disproportionate influence within the international coalition opposing Iraq. Alone amongst the United States' allies, British military personnel participated in planning every facet of the campaign, secured militarily significant roles and modified coalition strategy. The trade-off for military influence came in terms of reduced political control over the armed forces. British field commanders denied their political superiors access to intelligence and manipulated the Cabinet into sending more forces than they intended and approving measures consonant with the bureaucratic agendas of communities within the armed forces.

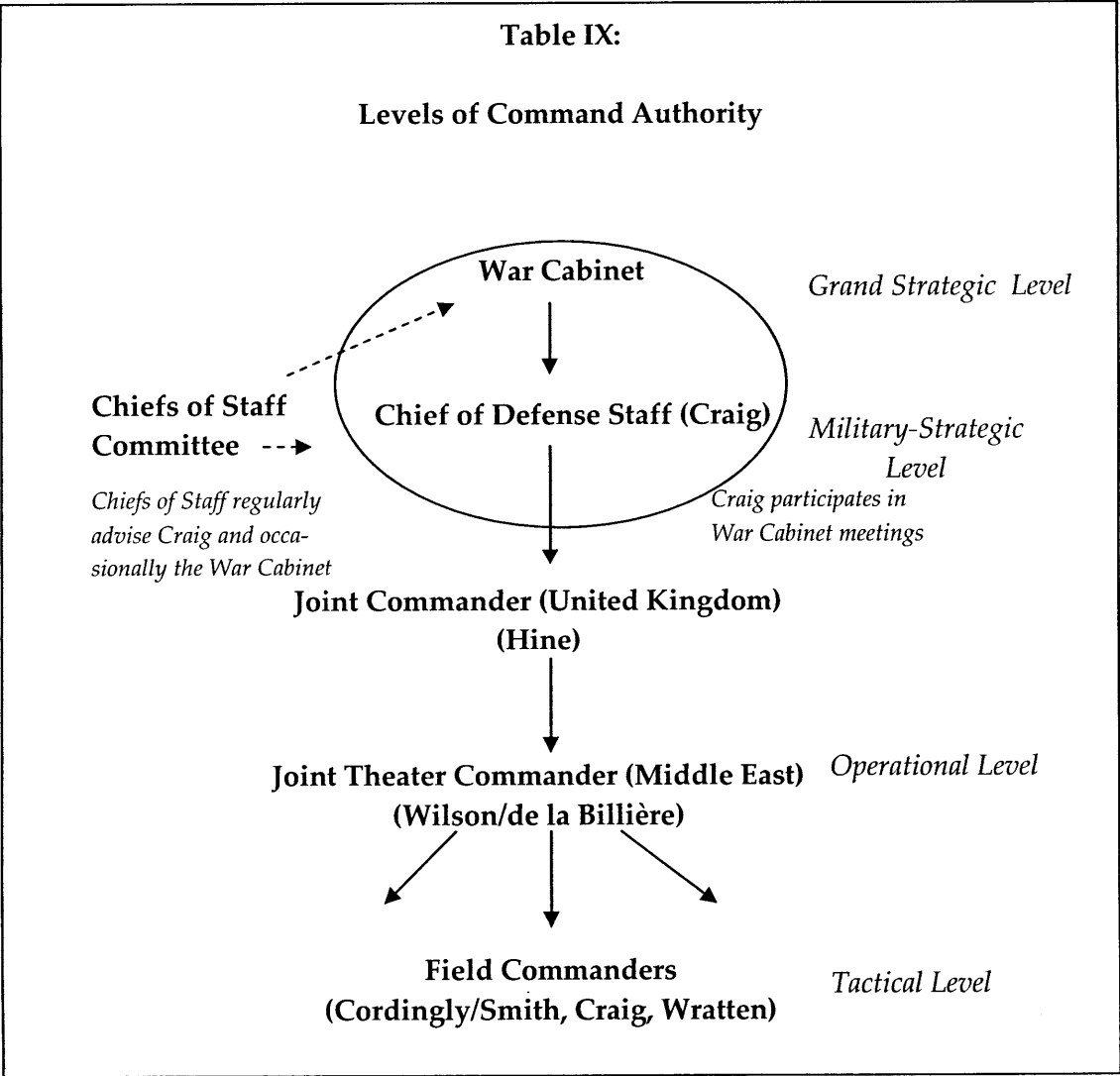
Iraq's invasion of Kuwait on 2 August 1990 surprised British political and military leaders. Although intelligence tracked Iraq's build-up of forces along the Kuwaiti border and diplo-

mats followed the tense negotiations between the two states, few considered invasion possible. Prime Minister Thatcher and American President George Bush were together in Colorado when the invasion occurred and the two leaders discussed the situation before meeting with their own cabinets.¹⁷⁵

Urging resolution, Thatcher followed the United States' lead by sending two squadrons of aircraft. The British high command insisted on stationing air defense Tornados alongside the Americans at Dhahran, which was strategically located for defending the port cities and oil fields of eastern Saudi Arabia.¹⁷⁶ To reassure themselves against an attack from another direction, the Saudi government proposed deploying British Tornados near its southern border. However, the British armed forces eventually prevailed and the British Tornado squadron landed at Dhahran on 11 August.¹⁷⁷ At the same time as dispatching aircraft, British authorities directed three warships to enforce the United Kingdom's sanctions on Iraq.¹⁷⁸

While these first decisions were undertaken, the British government began assembling the institutions that would manage the crisis for more than six months. At the apex of the political-military pyramid stood a restricted group of Cabinet members. Under Thatcher, the "War Cabinet" was an informal committee comprised of Prime Minister, Foreign Minister, Defense Minister, Attorney General, Energy Secretary and Chief of Defense Staff. After Thatcher's fall from power in November 1990, Prime Minister Major reorganized the War Cabinet as an official subcommittee of the Defense and Overseas Policy Committee. Civil servants were included in the new committee--officially termed the Overseas Policy (Gulf) Committee.¹⁷⁹ Although Thatcher's and Major's committees differed in terms of their statute (unofficial versus official) and the details of their membership, they were identical in terms of function and core membership, and are both referred to as the War Cabinet.¹⁸⁰

As during the Falklands, the War Cabinet's only contact with the United Kingdom's military establishment occurred via the Chief of Defense Staff, Air Marshal David Craig. Below Craig, Air Marshal Patrick Hine served as Joint Commander and oversaw preparations for military operations in the Middle East from his headquarters in England. In a departure from the Falklands War, the British high command appointed another Joint Commander, subordinate to Hine, to coordinate the field commanders in the Middle East. Field commanders, controlling the land, air, naval and special forces, answered to the Joint Commander in the Middle East and managed the tactical employment of their forces. Table IX below illustrates the British command structure during the Gulf War.



The significant difference between decision-making structures in the Falklands and the Gulf War was that the British high command introduced an additional echelon of command between political leaders and field commanders. When Defense Minister Tom King informed the Joint Theater Commander that he was "very much a hands on man," the Joint Theater Commander responded that "when it came to decision making, I should have to deal through the chain of command and not direct to him."¹⁸¹

The upshot of the British chain-of-command was a clear division of responsibility between different echelons of command. Political leaders dealt with broad questions of policy and diplomacy. Under them, commanders in the United Kingdom translated political desiderata into military policy. Within the theater itself, the Joint Commander and field commanders crafted operational plans and collaborated with their American and coalition counterparts.

Once deployed to Saudi Arabia, British air forces seamlessly integrated themselves into the American activities. British commanders quickly discovered that American forces were operating under looser rules of engagement (ROE). For Air Vice Marshal Wilson, American rules were inappropriate for an international mixture of aircraft and real risks existed of Americans mistakenly firing on allied craft. Wilson communicated his concerns to London, where the British Ministry of Defense pressured its American counterpart to agree to a compromise over ROE.¹⁸² Once the conflict over ROE was resolved, the United Kingdom dispatched a squadron of ground-attack Tornados, on 22 August, to join the two squadrons already in the Persian Gulf.¹⁸³

Because of the United Kingdom's early decision to place its forces under American authority, Air Vice Marshal Wilson secured a place at General Schwarzkopf's nightly evening briefing, alongside the American commander-in-chief and component commanders. As the only non-

American at the evening briefing, the senior British officer in the Middle East acquired unrivalled access to American planning and intelligence.¹⁸⁴

Diplomatic pressure and the coalition military forces were met by Iraqi a growing military presence in Kuwait. Faced with this reality, American leaders worried lest their armed forces continue to be the only international contributions deployed in harm's way. American wishes dovetailed with the British Army's own preferences, where Chief of the General Staff John Chapple had been lobbying to send ground forces.

At first, the War Cabinet hesitated to send ground troops because it hoped to minimize the United Kingdom's commitment, but gradually ceded to pressures from the Army and the Americans. Once the War Cabinet agreed to send landforces, Chapple argued that an armored brigade was the minimum viable tactical entity that could be sent.¹⁸⁵ Agreeing to deploy the 7th Armored Brigade on 13 September, the British government announced the decision on 14 September.¹⁸⁶ With nearly 5,000 personnel, 117 tanks and 52 infantry fighting vehicles, the brigade changed the nature of Britain's involvement.¹⁸⁷ From a primarily aerial presence, land forces now became the dominant element in the United Kingdom's deployment.

The War Cabinet's decision to deploy the armored brigade was a political decision, but authority for employing the brigade devolved onto the joint commander in Saudi Arabia. Direct negotiations with CENTCOM revealed that the United States wanted to integrate the British with the United States Marines. From a military perspective, the British brigade was richly endowed with modern tanks, but deficient in infantry, while the Marines possessed older tanks, but were strong in infantry.¹⁸⁸ Hine and Wilson accepted integrating their brigade with the Marines.

Wilson permitted the 7th Armored Brigade's commander, Brigadier Patrick Cordingly, to determine precisely how his unit would integrate into American command structure. From his conversations with the Marine commander, two options emerged. According to Cordingly,

We could operate as an independent brigade within the force reporting directly to the general, or we could be placed under command of the 1st Division and Brigadier General Myatt. The first option gave us more independence and politically it looked attractive -- we would seem to be less reliant on the US marines. The second option was militarily neater. General Boomer was amenable to both plans, although it was apparent he preferred the second, a view I shared.¹⁸⁹

Cordingly decided to subordinate the British 7th Armored Brigade to the 1st Marine Division.

With an armored brigade in Saudi Arabia, the relative influence of British services began to shift. Whereas reliance on airpower permitted RAF officers to monopolize the key command assignments, the deployment of the 7th Armored Brigade meant that the Army contributed most of the United Kingdom's manpower. The Army's COS argued that the Joint Commander in Saudi Arabia, should be replaced by a higher-ranking Army officer. Although the RAF attempted to protect Air Vice Marshal Wilson, Chapple commanded a majority in the Chiefs of Staff Committee.¹⁹⁰

The Army considered several candidates for the position of Joint Commander. General Peter de la Billière had a strong claim as Peacetime Permanent Commander (PPC) of the skeleton Joint Forces Operational Staff, and a veteran of Middle Eastern fighting in Aden and Oman.¹⁹¹ However, de la Billière's career in the SAS raised questions about his aptitude to direct armored and air forces.¹⁹² General Chapple supported de la Billière because he was *the* army's peacetime commander designated to manage an intervention and Prime Minister Thatcher knew de la Billière from the Iranian Embassy siege of 1980 and threatened to appoint him as her personal advisor if he was refused the joint command.¹⁹³

Although the War Cabinet deployed an armoured brigade, the government feared over-committing itself. In his first meetings with the high command, military leaders briefed General de la Billière that the War Cabinet was anxious about the costs it was accruing and the potential casualties it might incur. Thatcher urged the armed forces "not to get its arm caught in the man-

gle" and hoped to deploy no more than 6,000 personnel.¹⁹⁴ In response to this injunction, de la Billière formulated the concept of "proportional risk" whereby British forces should strive to make a militarily consequential contribution, while avoiding circumstances where they would suffer disproportionate casualties.¹⁹⁵

De la Billière was dissatisfied with the 7th Armored Brigade's integration with the American 1st Marine Division, whose reputation as shock-troops raised fears of heavy casualties, including up to 1,500 British dead.¹⁹⁶ De la Billière wanted to withdraw the 7th Armored Brigade from Marine authority, but losing face with the Americans. In the meantime, de la Billière labored to maximize British influence.¹⁹⁷ De la Billière built on his predecessor's presence at Schwarzkopf's evening briefings, by speaking twice a day with Schwarzkopf and weekly with the Saudi Joint Forces Commander.¹⁹⁸ De la Billière used his growing influence to place British officers in CENTCOM's operations room and central planning team.¹⁹⁹

De la Billière also negotiated an accord with Schwarzkopf whereby they exchanged information that could not be communicated to either's civilian superiors.²⁰⁰ In the coming weeks, de la Billière employed his influence vis-à-vis CENTCOM and London to obtain the transfer of British ground forces from the Marines to the American VII Corps, the reinforcement of British forces from brigade to division size, and a prominent role for British special forces.

When Schwarzkopf's staff began examining options to liberate Kuwait in early October, CENTCOM settled on a frontal attack northwards, into Iraq's densest defenses.²⁰¹ For de la Billière, frontally attacking an estimated 90 Iraqi brigades in Kuwait with the 25 coalition brigades available in Saudi Arabia was suicidal. Considering the plan unimaginative, de la Billière feared that it would entail heavy British casualties.²⁰²

Throughout October and early November, the British struggled to convince their American allies to modify their plans.²⁰³ Brigadier Cordingley denounced the American plan's short-

comings to the United States Under Secretary for Defense.²⁰⁴ When de la Billière informed the Joint Commander in the United Kingdom, Hine immediately set his own staff to the task of studying alternatives. Armed with their own assessments, Hine and de la Billière suggested an outflanking maneuver to Schwarzkopf in early November.²⁰⁵

Driven by criticism from his own superiors and promises of 250,000 reinforcements, Schwarzkopf adopted an outflanking strategy.²⁰⁶ As the coalition's war plan progressed, de la Billière found even more reasons for extracting the British 7th Armored Brigade from its attachment to the Marines. According to the new war plan, the Marines would launch a diversionary attack directly into Iraq's strongest defenses. Once Iraqi reserves had massed against the Marines, the American VII Corps would launch the principal offensive to the west.

Attacking heavy enemy concentrations, de la Billière feared that the Marines and British would suffer 17 percent casualties and receive scant attention for a diversionary action.²⁰⁷ After studying the problem, de la Billière developed a plan to extricate the 7th Armored Brigade from Marine authority. If British troops were reinforced, he could argue that the British should participate in the flank attack.

The War Cabinet had attempted to limit the United Kingdom's commitment to 6,000 Army personnel and only reluctantly accepted increases to 11,000. To obtain a further doubling of the British force, to division size, de la Billière used his autonomy to manipulate the British government.²⁰⁸ Rather than demand reinforcements, de la Billière persuaded CENTCOM and the Saudis to make the request for him. Hine added a provision for doubling the United Kingdom's air contingent.²⁰⁹ Manipulated by their generals, the War Cabinet increased British forces, from 17,000 to 45,000 personnel.²¹⁰ Table X below illustrates the reinforcements agreed by the War Cabinet in late November.

**Table X:
British Forces Present on Arabian Peninsula**

<u>Component</u>	<u>Forces deployed to 22 November</u>	<u>Forces Present in January 1991</u>	<u>% Increase</u>
Ground Component			
Combat Units	1 Brigade	1 Division	100%
Tanks	117	175	50%
Army Personnel	11,000	33,000	200%
Air Component			
Jaguar Units	1 Squadron	1 Squadron	0%
Tornado Units	2 Squadrons	4 Squadrons	100%
<hr/>			
Total Personnel	17,000	45,000	165%

With reinforcements en route, de la Billière transferred the 7th Armored Brigade to the American VII Corps. When the British 4th Mechanized Brigade arrived in Saudi Arabia, it and the 7th Armored Brigade were grouped together to form the British 1st Armored Division.

Being the first coalition partner, following the United States, to announce significant troop increases, the United Kingdom emerged as a leader of the effort to liberate Kuwait. However, sending such a large contingent to Saudi Arabia taxed the British. The gravest problem proved the unreliability of Challenger I tank engines, one of which broke down, on average, each time the division advanced 2.8 kilometers.²¹¹ The British Army drew on all of its resources to keep its tanks operational. All of the Army's engines, including those allotted to the three British armored divisions in Germany, were shipped to Saudi Arabia, as well as large numbers of maintenance

personnel.²¹² Eventually, last-minute modifications and plentiful spare-parts ensured that the British 1st Armored Division could conduct mobile warfare.²¹³ However, the remainder of the United Kingdom's armored forces were vitiated in the process.²¹⁴

Integrated with American headquarters and possessing powerful forces, British commanders ensured their forces would play significant roles in the coming fighting. The British 1st Armored Division became the only non-American force to participate in the coalition's main attack, outflanking Iraq's heaviest defenses and RAF Tornados and anti-runway munitions capabilities featured heavily in the coalition's air offensive.

The British proved particularly influential in shaping the use of special forces. Because of his Vietnam War experience, General Schwarzkopf opposed using special forces in Iraq. However, after directing the SAS, de la Billière lobbied for British special forces to play a substantial role and ordered his staff to formulate rescue plans when Iraq took foreign expatriates hostage.²¹⁵ However, the difficulties of mounting a hostage rescue mission proved overwhelming. British intelligence could not locate all 3,500 hostages and Iraqi forces were well trained and equipped.²¹⁶

De la Billière rotated the SAS' four "squadrons" through a desert training course in the United Arab Emirates and shifted the focus of SAS preparations to hit-and-run raids in western Iraq. Knowing where the coalition's main offensive would occur, de la Billière reasoned that small SAS teams could decoy large Iraqi forces from the main battle by raiding military targets in Iraq's vast western desert.²¹⁷ Without Schwarzkopf's approval, de la Billière deployed three-quarters of the SAS to Saudi Arabia.²¹⁸ Once the SAS was in the theatre of operations, de la Billière gradually won acceptance for special forces operations.²¹⁹ He promised that the SAS would take care of themselves and obtained Schwarzkopf's approval for SAS raids.²²⁰

At the same time as de la Billière determined the roles of British ground forces and special forces, his naval subordinate, Captain Christopher Craig, negotiated the employment of British naval forces with both the Americans and the Western European Union (WEU). During the initial weeks following Kuwait's invasion, the United Kingdom committed itself to assisting the United States' and the WEU's efforts to enforce the United Nations' embargo on Iraq. The War Cabinet pushed for Anglo-American patrols when the United Nations approved sanctions, but later agreed to coordinate sanctions enforcement efforts with other European states via the WEU.²²¹

Because the United States and WEU operated separately, British naval forces found themselves committed to two different sets of sanction enforcement patrols. From a British military perspective, integration with the United States' forces would yield greater operational results. However, the WEU's presence was politically significant because of its multi-national character and symbolic affirmation of Europe's collective military power.²²²

Craig favored integration with the powerful and unified Americans rather than the more disparate and politicized European ensemble.²²³ When it came to allocating ships, Craig only permanently devoted one vessel to WEU missions, withdrew warships without warning and committed the majority of his 26 ships to Anglo-American operations.²²⁴ Craig denounced the WEU's attempts to impose patrol zones and opposed centralized WEU planning.²²⁵

Meanwhile, Craig established direct liaisons with American task forces and discussed offensive options with them. Over time, Craig's influence grew until he had liaison officers in every American flagship.²²⁶ Craig vaunted the niche capabilities of Britain's fleet, including state-of-the-art minesweepers, experienced anti-air warfare crews and ships, and a unique capability to destroy small enemy warships with Lynx helicopters and Sea Skua anti-ship missiles.²²⁷ American admirals came to view the Royal Navy as an essential adjunct to their own forces. At

American request, two British anti-aircraft destroyers were integrated into the American naval forces' forward defenses.²²⁸ Meanwhile, the United States Navy placed even greater store in the United Kingdom's four minesweepers, which they needed in order for the battleship *Missouri* to bombard the Iraqi coast.²²⁹

In his enthusiasm to play a prominent role, Craig disregarded de la Billière guidelines about "proportionate risk."²³⁰ Craig's commitments to the Americans meant that he would send over half of his 26 ships into the northern waters of the Persian Gulf, where the risks of Iraqi mines and missile attacks were greatest. No other navy, including the United States, devoted such a high percentage of its fleet to high risk operations.²³¹

In sum, the British armed forces garnered unparalleled influence with the American high command and fulfilled prominent roles in the coalition war plan. As Table XI illustrates, each British service and branch had procured for itself a role of strategic importance and consonant with its bureaucratic interests.

<u>Component</u>	<u>Role</u>
Army	The 1 st Armored Division was the only non-American force integrated into VII Corps' main offensive against the Iraqi Army
Air Force	Ground attack Tornados to play key role against Iraqi airfields
Navy	British warships to play large role in feigning an amphibious assault in the northern Persian Gulf; British to lead coalition minesweeping and provide advanced anti-aircraft picket ships
Special Forces	British SAS are the only coalition special forces permitted to conduct raids in Iraq

The Anglo-American coordination was the product of powerful British field commanders negotiating how their individual contingents would be used.

The international coalition launched its air assault on Iraq on 16 January. On the first night of the war, groups of four to eight British Tornado fighter-bombers attacked 10 Iraqi air bases. For these attacks, each Tornado carried two JP233 munitions, which were designed to pepper enemy runways with 30 bomblets and 215 anti-personnel mines.²³² On the first night, British Tornados struck all ten runways and lost one aircraft. In the days that followed, Tornado crews repeated their runway attack missions, employing 100 JP233s by 22 January.²³³ They also branched out from anti-airfield missions to attacks with 1,000-pound bombs.

However, Tornado losses began to mount. Iraqi air defenses shot down six Tornados between 16 and 22 January 1991. Considering that coalition losses comprised only 17 aircraft, the British were losing a significant number of aircraft. Worse, evidence suggested damaged Iraqi runways remained useable despite the attacks.²³⁴ Although General de la Billière and the Americans wanted to halt low-level Tornado missions, neither challenged the RAF's judgement. For its part, the RAF had invested too much in the Tornado / JP233 and persisted with its use. Only Air Marshal Hine's intervention, on 23 January, brought low level raids to an end, after the United Kingdom lost nearly a fifth of its deployed Tornados.²³⁵

Iraqi countered the coalition's air offensive by launching a total of 88 Scud missiles at Israel and Saudi Arabia.²³⁶ Iraqi leader Saddam Hussein calculated that attacking and suffering retaliatory strikes from Israel, would transform the conflict over Kuwait into an Arab-Israeli war. American and British forces therefore sought ways of reassuring the Israelis and calming their

retaliatory instincts. The United States employed airpower against Iraq's mobile Scud missiles, but it proved impossible to locate the missile launchers in Iraq's vast western deserts.²³⁷

For de la Billière, the Scud threat provided a golden opportunity for the United Kingdom and his parent regiment, the SAS. De la Billière reasoned that special forces on the ground would prove better at locating and destroying Iraqi missiles than aircraft flying high overhead. Moreover, de la Billière hoped that the SAS' reputation would convince the Israelis that the coalition would soon neutralize the Scuds. Drawing on his influence with Schwarzkopf, de la Billière obtained permission for the SAS to "hunt" Scud missiles. Beginning on 20 January, SAS patrols began infiltrating western Iraq to search for elusive missile launchers in 29,000 square miles of desert.²³⁸

With approximately 120 personnel in Saudi Arabia, the SAS split into six units and began patrolling western Iraq.²³⁹ Although the Israelis were reassured by the SAS' commitment, the practical difficulties of interdicting Scud missile launchers became apparent. With comparatively few personnel to cover a vast territory, the SAS struggled to locate missile launchers. Moreover, Iraqi forces in western Iraq possessed heavier weaponry than the SAS, which relied on stealth and off-road vehicles.

Before dawn on its first day in Iraq, one eight-man SAS patrol accidentally approached within 300 meters of an Iraqi anti-aircraft battery and was discovered by Iraqi soldiers. Trucks filled with infantry pursued the fleeing British, who either succumbed to a harsh winter in the Iraqi desert or were captured by pursuing Iraqis. Three members of the patrol perished from hypothermia, four were captured and tortured, and only one escaped to Syria after walking 300 kilometers.²⁴⁰

Although the other SAS patrols fared better, several narrowly escaped disaster. One patrol, with 26 men and 11 vehicles, fell afoul of an Iraqi artillery regiment, whose vehicles chased

the SAS across the desert.²⁴¹ The Iraqis ambushed another patrol, destroying a vehicle and capturing the patrol's sergeant, and dispersed a third SAS patrol after destroying two vehicles and wounding one British soldier.²⁴² At one point, at least half of the SAS were either dispersed or fleeing Iraqi forces. Nevertheless, the SAS recovered and patrolled western Iraq until the end of the war. By most accounts, the SAS failed to destroy a single Scud, but successfully raided an Iraqi communications facility.²⁴³ Although the results of SAS operations appear meagre, they were politically significant, reassuring the Israelis that the coalition was doing everything in its power to halt Scud launches and reminding the United Kingdom's allies about the value of its contribution.²⁴⁴

Perhaps the greatest sign of the political value of the SAS came when American Secretary of Defense Richard Cheney insisted on American special forces imitating their example. Hitherto restricted by Schwarzkopf, American special forces joined the SAS from 7 February (17 days after the beginning of SAS operations).²⁴⁵ Not coincidentally, SAS adventures and misadventures in the Persian Gulf contributed to the unit's subsequent popularity in the United Kingdom. A series of memoirs by retired members of the SAS--at least seven to date--have given the unit's actions in Iraq extraordinary publicity and generated numerous of derivative products.²⁴⁶ Overall, the SAS lost four dead, five wounded and five prisoners of war. Given the SAS' small size, its casualties were disproportionately heavy (over 10 percent) and could have been heavier given a large number of close calls.²⁴⁷

While the SAS combated Iraq's Scud missiles, the Royal Navy participated in the coalition's naval effort. Two British destroyers constituted, along with a handful of American ships, the coalition's anti-aircraft picket in the northern waters of the Persian Gulf, where they were most exposed to Iraqi air attack.²⁴⁸ On 29 January, Iraq launched an attack towards the Saudi city of Khafji with the aim of disrupting the coalition's offensive preparations. Three Iraqi Army di-

visions advanced on Khafji by land, while an amphibious force of 17 small high speed ships sailed southwards to outflank the coalition's defenses. While American air power decimated the Iraqis on land, helicopters from Britain's two forward deployed destroyers devastated the Iraqi amphibious force. Carrying Sea Skua missiles, the Lynx helicopters attacked the defenceless Iraqi transports. Lynxes scored several hits and harassed the Iraqis until other British aircraft and American helicopters could join the fray. Helicopters and aircraft sunk or damaged 16 out of the convoy's 17 vessels, routing the Iraqis before they could land their soldiers.²⁴⁹

After British and American forces repulsed the Iraqi naval thrust, Iraqi missile boats and minesweepers emerged haphazardly from the waters around Bubiyan Island. Whether the Iraqi vessels sought to attack the coalition fleet more than 100 miles to the south or merely flee to Iran, the British Lynxes pounced on their vulnerable prey.²⁵⁰ In the 36 hours of the so-called "Battle of Bubiyan," British Lynxes fired 25 Sea Skuas, striking 18 targets, destroying seven Iraqi ships and incapacitating others.²⁵¹ As at Khafji, American helicopters and aircraft followed up, destroying further Iraqi ships.²⁵² By 2 February, Iraq's 13 missile-carrying ships had either been disabled or sunk.

The United Kingdom's disproportionate role in sinking the Iraqi Navy was soon followed by an even more significant role in bombarding the Kuwait's coast. The United States Navy planned to support the coalition's land assault by bombarding Kuwait's coast with the battleship *Missouri's* mammoth guns. However, the United States lacked the minesweepers to clear a channel through Iraqi naval minefields. This gave Craig, who commanded five modern minesweepers, enormous influence vis-à-vis his American counterparts, who only possessed three older minesweepers.

When the United States Navy unveiled a plan that Craig considered unworkable, he threatened to withhold British support if American plans were not changed. Because of Craig's

otherwise close relationship with the Americans, the United States Navy acceded to Craig's demands for revised planning and greater consultation.²⁵³ To better direct affairs, Craig now decided to take his flagship and other escorts north as well, where he could personally oversee the minesweeping effort.²⁵⁴

On 14 February, 34 Anglo-American warships sailed north, towards mine infested waters where allied warships would be within range of land-based anti-ship missiles. In what was acknowledged the most dangerous naval operation of the war, British ships comprised half the coalition fleet.²⁵⁵ Under a constant risk of Iraqi missile attacks, striking an undetected mine or colliding with drifting mines, the coalition's minesweepers gradually cleared a channel through the belt of over 1,000 Iraqi mines.²⁵⁶

Unfortunately, operations in the northern Gulf proved dangerous. Silkworm missiles obliged the minesweepers to retreat on 17 February. Then, after they returned, two large American ships--the amphibious assault ship *Tarawa* and guided-missile cruiser *Princeton*--struck mines, heavily damaging both and forcing the *Princeton* from the war.²⁵⁷ Had smaller British ships struck mines instead, they would have succumbed to the damage.

On 23 February, the day before the coalition land offensive, the battleship *Missouri* advanced through the mine-swept channel and bombarded Faylaka Island, before shifting fire to the Kuwaiti coast on 24 February. The Iraqis responded with Silkworm missiles. Shifting 6,000 lbs missiles into position, the Iraqis fired two Silkworm missiles at the *Missouri*, on 25 February, at a range of 20 miles. Although one missile crashed into the Persian Gulf, the other successfully tracked the *Missouri*. Now, only the alertness of the British destroyer *Gloucester* saved the *Missouri* from missile damage. The *Gloucester* detected the Silkworm and destroyed it with two anti-aircraft missiles.²⁵⁸

The destruction of the Iraqi Silkworm constituted the final dramatic moment of the coalition's naval campaign. Out of 230 American and coalition ships, only 34 operated in the northern Persian Gulf, where Iraqi mines, aircraft and missiles all posed a threat.²⁵⁹ Of these half of the exposed ships were British and half American. However, the United States' exposed ships constituted only ten percent of their total force, while the British exposed over half of their much smaller contingent.

After weeks of aerial bombardment, coalition land forces assaulted the Iraqi Army. Participating in VII Corps' main attack, the British 1st Armored Division entered the line on 25 February, after the Marines launched their diversionary attack and American forces breached Iraq's forward defenses. When the British overcame the first Iraqi defensive position without loss, Iraqi forces staged an armored counterattack. However, a single volley from 14 British tanks devastated the Iraqis, destroying five tanks and six armored vehicles.²⁶⁰ The Iraqis followed up this counterattack with a larger one before dawn on 26 February. Hoping to surprise the British by operating at night, the Iraqis badly miscalculated. Using their thermal sites British tank crews detected and engaged nearly fifty tanks and armored vehicles, destroying ten and routing the remainder.²⁶¹

After the collapse of this second Iraqi counterattack, Iraqi infantry began surrendering in large numbers. Although some Iraqi units fought tenaciously, others surrendered after token resistance.²⁶² On the morning of 27 February, British forces attained their ultimate objective eight days before the divisional commander thought possible.²⁶³ Since the beginning of the ground offensive, British forces advanced more than 350 kilometers, capturing 7,000 prisoners and destroying 300 tanks.²⁶⁴ Having accomplished their initial objectives, British forces stood by for American orders, which were changed or rescinded before they could be executed until, on 28 February, a ceasefire brought hostilities to an end.

Overall, the 1991 Gulf War highlighted British military capabilities and added to its credibility vis-à-vis both the United States and the Arab world. Whether conducting high-risk attacks on airfields, leading the hunt for Scud missiles, protecting the battleship *Missouri* from mines and missiles, or accompanying the American VII Corps on its thrust into Iraq, British forces played an ostentatious role. They also wielded disproportionate influence vis-à-vis their allies. British officers were the only non-Americans to help plan the coalition offensive and British commanders shaped coalition strategy towards the "Scud hunt" and inshore naval operations. Perhaps most tellingly, British forces were the only non-American contingent confided "critical objectives," in the coalition war plan.²⁶⁵

The exceptional degree of British influence over their allies resulted from the authority wielded by the theatre commander and field commanders. Insulated from political considerations and free to negotiate how their forces would be employed, British commanders established close working relationships with their American counterparts and inserted liaison officers and planners into American headquarters. Propinquity and the ability to consider purely military factors rendered the British valued advisors.

The downside of the British military leadership's autonomy during the Gulf War came in the armed forces' pursuit of bureaucratic objectives. Despite political leaders' intention to limit the United Kingdom's participation in the conflict and exposure to casualties, the British theatre commander and field commanders pushed for an ever greater commitment. From an early desire to limit their commitment to 6,000, the British government eventually acquiesced to 43,500 personnel.

Competition for media attention and post-war funding prompted elements within the British armed forces to seek out hazardous assignments. The RAF persisted with low-level attacks despite their losses, the SAS undertook perilous missions in western Iraq and the Royal Navy

deliberately exposed itself to missiles and mines in the northern Persian Gulf. As a consequence, British forces suffered disproportionate losses. Losing seven Tornados out of 50, the RAF's loss rate was much higher than any other allied contingent.²⁶⁶ The SAS likewise ran enormous risks in Iraq's western desert, where one patrol, out of six, was virtually annihilated and nearly 10 percent of the total SAS force was either killed, wounded or captured. Altogether, the United Kingdom suffered only 24 deaths in combat, this constituted a higher percentage of its contingent and a greater absolute number of losses than any state save the United States. Fortunately, the Iraqi armed forces proved much less capable than feared and the United Kingdom's casualties remained light, even if comparatively heavy.

V. Conclusion

Although undertaken in different regions and against a wide variety of opponents, the British three interventions display a number of common traits. Huntington would undoubtedly approve of the United Kingdom's radical division between politics and military strategy, whereby military commanders assume control of operations once political leaders choose to act.²⁶⁷ Although civilian leaders determined when to use force, military professionals elaborated war plans and shaped decisions about which military units to send. This tended to produce interventions that saw British forces employ maximum force, with few limits, to obtain limited and specific foreign policy aims. Because of the military's role in shaping the use of force, British interventions were competently managed according to practices held to be optimal by military professionals. However, the operational excellence exhibited by the British armed forces must be weighed against their tendency towards escalation, parochially motivated policies and resistance to political authority.

The high degree of autonomy possessed by military commanders remained constant regardless of who governed the United Kingdom and their interest in a given conflict. Political attention varied significantly from one intervention to another. At one extreme, the counterinsurgency in Oman rarely graced the agenda of the Defense and Overseas Policy Committee and never figured among the cabinet's priorities, while, contrarily, the Falklands War warranted the creation of an ad-hoc "war cabinet" and involved the government's principal ministers in at least daily deliberations. However, more attention from political leaders did not translate into greater political control of military decisions.

Politicians scrutinized the diplomatic environment, managed public opinion and communicated their concerns to the armed forces, but never contravened the chain-of-command to seek military advice from or issue orders to lower level commanders. As a consequence, political leaders remained beholden to the Chief of Defense Staff and Chiefs of Staff Committee for advice and the transmission of orders to lower echelons. Their monopoly on military expertise and role as essential intermediaries permitted the Chiefs of Staff to shape political leaders' understanding of the options available to them and interpret their directives in ways that maximized their operational autonomy. Although the existence of four distinct chiefs of staff might have been a source of alternative advice, the chiefs typically log-rolled their differences at regular meetings of the Chiefs of Staff Committee. From 1982, the designation of the Chief of Defense Staff as the government's primary military advisor reduced the scope for obtaining alternative advice still further.

There are many examples of the chiefs of staff manipulating or withholding information from the government. During the Oman War, the chiefs concealed and then distorted information about British officers' involvement in preparing the coup d'état against Sultan Said bin Taimur. Later, during the Falklands War, they downplayed the difficulty of retaking the islands, resisted

giving estimates of how many ships the United Kingdom could or would lose, and exaggerated the benefits of escalatory actions, such as using strategic bombers or torpedoing the *Belgrano*. Never insubordinate, the chiefs of staff nonetheless used their privileged position to shape how the British government viewed the options available to them. As a consequence, political leaders rarely possessed the information to challenge the chiefs' recommendations.

Because of the chiefs of staffs' position as a filter between the government and the military establishment, the commanders of military operations enjoyed considerable autonomy to plan and fight as they saw fit. Never once did political leaders select bombing targets or designate the axis for a tank thrust, as often occurred in France and occasionally in the United States. When operational commanders received political input, it came second-hand, via the chiefs of staff. Thus, without political leaders playing a direct role, the armed forces assaulted San Carlos and Goose Green to alleviate diplomatic pressures from a compromise peace.

Overall, Britain's autonomous military commanders performed excellently from a strictly military point of view. All three interventions produced military victories. Won at a time when communist insurgencies were considered almost unbeatable, specialists consider the British victory in Dhofar as a textbook example of how counterinsurgencies should be conducted. Because of the joint nature of operations and the fantastic distances involved, the British campaign in the Falklands has drawn even more attention. Some accounts view the Falklands as an "ideal type" for how resolute civilian leadership and autonomous armed forces can together produce decisive strategic results. Even when British forces were subsumed into a larger coalition, the quality of the United Kingdom's contribution respect from allies and attention from the international media.

However, the United Kingdom's recent unblemished record of military success conceals certain inherent flaws in Britain's defense policymaking structures. Because of their autonomy and the pessimism inherent to the "military mind," British commanders lobbied for overwhelm-

ing force as a hedge against unforeseen contingencies. The military challenges facing them justified political leaders sending all available conventional forces to the Falklands War, however the Royal Navy even connived to take nuclear depth charges "just in case" Soviet submarines interfered.²⁶⁸ During the Dhofar War, the urge for overwhelming force drove British officers to overthrow Oman's ruler and invited Iranian forces onto the Arabian Peninsula. Finally, through prodding and manipulation, British commanders gradually pushed political leaders from an early ceiling of 6,000 military personnel to an eventual total of 45,000. In each case, the British armed forces pushed for and achieved either quantitative or qualitative overkill vis-à-vis their opponents.

In addition to coveting greater forces than they probably needed, military leaders failed to appreciate the escalatory risks of their actions. Whether broadening the theater of operations, introducing new weaponry or attacking an involved, yet non-belligerent power certain actions have the potential of transforming hitherto limited conflicts into broader conflagrations. On each occasion that the British armed forces possessed a choice, they chose to undertake a potentially fruitful attack rather than respect the de facto rules prevailing during a conflict. During the Dhofar War, they initiated a guerrilla war in South Yemen and repeatedly bombed Yemeni territory, bringing Oman and South Yemen to the brink of war on several occasions and provoking retaliatory actions. In the Falklands, they successfully lobbied to torpedo warships outside the maritime exclusion zone, employ strategic bombers and raid the Argentine mainland. When military commanders felt obliged to seek permission for these acts, they exaggerated the benefits anticipated, which did not justify the risks.

Finally, the inability of British civilian leaders to penetrate the intricacies of military planning permitted armed services and branches to push for policies consonant with their organizational interests, but inimical to the objectives set by political leaders. Because of the continual

struggle between military bureaucracies for resources and prestige, fighting organizations have an incentive to "win the war on its own" or at least play a visible role in the collective effort.

If not controlled, the parochial interests of competing armed services can augment casualties, increase the financial costs of a war or add to the dangers of escalation. In the Falklands, bureaucratic politics drove the RAF to push for costly strategic bombing and impelled the SAS' leadership to argue for a potentially suicidal raid. During the 1991 Gulf War, inter-service rivalry was even more intense, prompting the RAF to persevere with murderous low-level missions, the SAS to volunteer for perilous assignments and the Royal Navy to excessively expose itself. Not surprising, these bureaucratically motivated operations contributed disproportionately to human and financial costs of British operations.²⁶⁹

Thus, although effectively conducted, the British armed forces frequently manage British interventions in a manner incompatible with political leaders' preferences. Because of their inability to control events once they make an initial decision to intervene, British leaders were more reluctant to employ military force than their French contemporaries. Table XII below details the United Kingdom post-colonial military interventions from 1960 to 1991.²⁷⁰

**Table XII:
British Post-Colonial Interventions, 1960-1991**

<u>Location</u>	<u>Forces Deployed</u>	<u>Nature of Mission</u>	<u>Result</u>
Kuwait, 1961	one brigade	Deterrence	success
East Africa, 1964 (Kenya, Tanzania, Uganda)	three battalions	Supporting Civil Authorities	success
Cyprus, 1964-74	one brigade	UN Peacekeeping	failure
Zambia, 1965-66	one battalion, one RAF squadron	Deterrence	success
Oman, 1965-75	850 personnel	Counterinsurgency	success
Anguilla, 1969	one battalion	Regime Change	success
Icelandic Sea, 1975-76	seven frigates	Fishing Dispute	failure
Belize, 1975-93 (British Honduras)	two battalions, six aircraft	Deterrence	success
South Atlantic, 1977	one submarine, two frigates	Deterrence	none apparent
Rhodesia, 1979-80	1,100 personnel	Peacekeeping	success
Falklands, 1982	two brigades, 35 ships	Conventional Warfare	success
Persian Gulf, 1980-88	2 to 9 ships	Shipping Protection	qualified success
Gulf War, 1990-91	one division, five RAF squadrons 34 warships	Conventional Warfare	success
Mean	3.4 battalions (for 9 cases) 17.6 warships (for 5 cases)		77% successes, 16% failures

Although the United Kingdom generally succeeded in accomplishing its objectives once it chose to intervene, the difficulties of controlling military forces prompted British leaders to avoid situations where their forces would operate under an unclear mandate or without a well-defined objective. British leaders eschewed the hazards of military operations by preventatively deploying large deterrent forces to potential trouble spots. As a consequence, deterrent deployments constitute the most common category of British intervention, while complex missions such as peacekeeping and regime change are comparatively rare.

By way of conclusion, the institutional processes governing British interventions privilege military efficiency over political control. While the British armed forces have an enviable record of operational excellence, they also have a tendency to subvert the wishes of their civilian masters, demanding more forces than necessary and pursuing escalatory operations. To their credit, British officers never abused their autonomy for political ends, however bureaucratic politics and military professionalism possess their own logic, which frequently runs counter to the overall needs of the state. Recognizing that they have a blunt instrument at their disposal, political leaders are less eager to employ military force than their French counterparts, who can modulate the activities of their own armed forces to a much finer degree.

Endnotes

¹ D/CGS/50/8 *Design for Military Operations -- The British Military Doctrine*, 1996, www.defence.gov.au/army/lwd1/pdfs/docs/british_military_doctrine.pdf (last consulted 7 May 2008).

² The British Military Doctrine specifies three tasks for the grand strategic level of command. These include: 1) To lay down the policy objectives for the activities to be instituted; 2) To stipulate the limitations to be imposed on these activities, including the circumstances in which military activity should cease; and 3) To make available the requisite resources, including, when necessary, direction of the national industrial base. *Ibid.*

³ Bill Jackson and Dwin Bramall, *The Chiefs: The Story of the United Kingdom Chiefs of Staff* (London: Brassey's, 1992), 399.

⁴ D/CGS/50/8 *Design for Military Operations -- The British Military Doctrine*.

⁵ *Ibid.*

⁶ In his explanation of the ideal situation, Huntington wrote, "The statesmen set the goal. It is them up to him [the military officer] to do the best he can. This is indeed the meaning of military strategy in relation to policy: 'the practical adaptation of the means placed at a general's disposal to the attainment of the object in view.'" Samuel Huntington, *The Soldier and the State: The Theory and Politics of Civil-Military Relations* (Cambridge, Massachusetts: Harvard, 1998), 70-78.

⁷ Elliot Cohen, *Supreme Command: Soldiers, Statesmen and Leadership in Wartime* (New York: The Free Press, 2002), 184-99.

⁸ Jack Snyder, *The Ideology of the Offensive: Military Decision Making and the Disasters of 1914* (Ithaca: Cornell University Press, 1984).

⁹ Barry Posen made a convincing theoretical argument about how the offensive bias of American armed services increased the likelihood of a conventional war in Europe escalating to the nuclear level. Much earlier, Admiral Raoul Castex attributed Germany's disastrous decision, in April 1917, to initiate unrestricted submarine warfare to the offensive mindset of the Imperial Navy, which overlooked the risk of provoking American intervention, concentrating on the immediate gains from a more effective submarine blockade on the United Kingdom. In Richard Betts' study of American soldiers and statesmen during Cold War crises, he found, "In escalation decisions, no military advisor was less aggressive than the major civilian officials." See Richard Betts, *Soldiers, Statesmen, and Cold War Crises* (New York: Columbia University Press, 1991), 5; Barry Posen, "Inadvertent Nuclear War?: Escalation and NATO's Northern Flank," *International Security* 7, no. 2 (Autumn 1982): 28-54; and Raoul Castex, "Les liens des diverses strategies (un cas concret)," *Revue des Questions de Défense Nationale* 1, no. 1 (May 1939): 45-73.

¹⁰ Barry Posen, *The Sources of Military Doctrine: France, Britain, and Germany between the World Wars* (Ithaca: Cornell University Press, 1984), 47-49; and Scott Sagan, "The Perils of

Proliferation: Organization Theory, Deterrence Theory, and the Spread of Nuclear Weapons," *International Security* 18, no. 4 (Spring 1994): 75-76.

¹¹ Huntington, 79.

¹² Snyder, 24.

¹³ Peter de la Billière specifically mentioned his fear that the American Marines would attempt to win the war on their own during the 1991 Gulf War. Peter de la Billière, *Storm Command: A Personal Account of the Gulf War* (London: HarperCollins, 1995), 93.

¹⁴ PRO FCO 46/609 Ministry of Defence: Chiefs of Staff Committee, March 17, 1970; FCO 8/1856 AD Parsons to Mr. Renwick, January 17, 1972; and PRO CAB 148/122/49, November 21, 1972.

¹⁵ British police actions in Palestine lasted from 1945 until 1948, the Malayan Insurgency lasted from 1948 to 1960, the Mau Mau War in Kenya lasted from 1952 to 1960, the Cyprus Counter-insurgency continued from 1955 to 1959, the Aden and Radfan insurgencies in Yemen lasted from 1955 until 1967, and, finally, the Borneo conflict (known as *Konfrontasi* by the Indonesians and the Indonesian Emergency by the British) lasted from 1962 until 1966.

¹⁶ Vulcan bombers operating from Masirah, Oman and Akrotiri, Cyprus were CENTO's only dedicated nuclear-capable assets. PRO DEFE 24/564 "CENTO – Defence Review Background Negotiating Brief," Fall 1974.

¹⁷ The formal agreement between the United Kingdom and Oman took the form of a solemn exchange of letters between the British Foreign Minister and Oman's Sultan. PRO DEFE 24/564 The Secretary of State for Foreign Affairs to the Sultan of Muscat and Oman, July 25, 1958.

¹⁸ John Akehurst, *We Won a War: The Campaign in Oman, 1965-1975* (Guildford, Surrey: Michael Russel, 1982), 12.

¹⁹ Historically, the Sultan exercised only nominal suzerainty over much of Oman's territory. The major subversive threat during the 1950s came from Inner Oman and its traditional ruler, the Imam of Oman. See "Research Memorandum From the Director of the Bureau of Intelligence and Research (Hughes) to Secretary of State Rusk," Washington, January 25, 1968, in U.S. Department of State. Historical Office. *The Foreign Relations of the United States: Diplomatic Papers (FRUS)*. Washington D.C.: U.S.G.P.O., 1866-. [Annual], vol. 21, (1964-1968), 262.

²⁰ The British assisted in crushing Inner Oman's rebellion.

²¹ "Memorandum of Conversation: US-UK Talks," Washington, January 30, 1964, in *FRUS*, vol. 21 (1964-1968), 124. (51).

²² Oman began exporting oil in 1967. The United Kingdom's Joint Intelligence Committee (JIC) concluded in 1968, "The strong Security Forces which he has built up can probably deal effectively with any internal trouble." PRO CAB 158/70 JIC (68) 35.

²³ Soon after the British Government announced its decision to withdraw from Aden in February 1966, Foreign Office officials recognized that, "the decision to give up the Aden base [1967] ... is bound to lead to increased attacks on our position in the Gulf and on the local regimes." However, early analyses underestimated the scale of the new challenge. The Foreign Office and the Joint Intelligence Committee confidently expected the Soviet Union to "pursue a policy of restraint." They also expected nationalists, rather than communists, to seize power in South Yemen. Echoing British thinking, United States Secretary of State Dean Rusk wrote that, "its [South Yemen's] government is expected to be radical Arab nationalist in character and will follow socialist policies internally and non-alignment internationally." PRO FO 953/2502 "Counter-Subversion in the Persian Gulf," 27 June 1966; PRO CAB 158/70 JIC (68) 35; and "Memorandum From Secretary of State Rusk to President Johnson," Washington, December 4, 1967, in (*FRUS*), vol. 21 (1964-1968), 249. (117).

²⁴ There were factors other than the Sino-Soviet dispute influencing the Soviet Union's support for South Yemen. As the "archives" of KGB defector Vasily Mitrokhin show, Section 1 (Intelligence Analysis) of the KGB regularly pushed for increased Soviet support for South Yemen's NLF, pleading its uniqueness as the only true Marxist-Leninist regime in the Middle East. South Yemen, it was argued, could be used to prove the viability of "scientific socialism" in an Arab state. As Soviet ambassador to South Yemen, O.G. Peresyphkin relates, "We wanted to prove that a small underdeveloped Arab country, a former British colony, would advance with seven-league strides towards the bright future provided it was armed with the slogans of scientific socialism." In all likelihood, the Soviet Navy also pushed for a more activist policy in South Arabia. Under the leadership of Admiral Gorchkov, the Soviet Navy's global role expanded. While Soviet vessels did not deploy to the Indian Ocean prior 1965, by 1970 the Soviet naval presence averaged four surface warships, two submarines and eight auxiliaries at any given time. Facilities in South Yemen and Oman were attractive prospects to a burgeoning military service in search of a world role. In Soviet hands, the oil refinery and port facilities in Aden, South Yemen's strategic position on the Bab el-Mandeb Strait, and Oman's position on the Straits of Hormuz would enable the Soviet Union to influence events in the Middle East and Indian Ocean. The division of the South Yemenite communist party into pro-Soviet and pro-Chinese factions, led by the leader of the NLF, 'Abd al-Fattah Isma'il, and the head of state, Salim Rubai' Ali, respectively gave greater urgency to helping the new regime, especially after the Chinese became the first to send economic advisors, who arrived in 1967. See Christopher Andrew and Vasili Mitrokhin, *The World Was Going Our Way: The KGB and the Battle for the Third World* (New York: Basic Books, 2005), 214-15; PRO CAB 130/495 "Interdepartmental Study on Defence in the Indian Ocean," December 11, 1970; and PRO DEFE 11/658 "Record of a Conversation between the Sultan of Oman and the Prime Minister at 12:30 PM on Friday 1 Nov at 10 Downing Street," November 1, 1974.

²⁵ In his account of the war, Major-General Tony Jeapes is also emphatic that the Chinese consulate in Aden supplied the insurgents with arms, money and training before the Soviets. One Chinese officer died in battle in Oman in January 1968. This was the only known Chinese casu-

alty during the Dhofar War and it is unknown for how long and with what frequency they operated in Dhofar.. See Tony Jeapes, *SAS Operation Oman* (London: HarperCollins, 1980), 26; and Akehurst, *We Won a War: The Campaign in Oman, 1965-1975*, 26.

²⁶ PRO DEFE 11/656 “GSM: Award of Clasp for Service in Dhofar.”

²⁷ Fred Halliday, *Arabia without Sultans* (Middlesex: Penguin, 1974), 320-21.

²⁸ Akehurst, *We Won a War: The Campaign in Oman, 1965-1975*, 15.

²⁹ PRO FCO 46/609 “The Employment of an SAS Squadron in Dhofar,” February, 26, 1970.

³⁰ Akehurst, *We Won a War: The Campaign in Oman, 1965-1975*, 30.

³¹ PRO DEFE 24/575, Report on Operation INTRADON, April 16, 1971.

³² Ibid.

³³ PRO FCO 46/609 “Ministry of Defence: Chiefs of Staff Committee, 8/70,” March 17, 1970.

³⁴ PRO CAB 158/70 JIC (68) 35.

³⁵ Although Oman’s stability was viewed as important, neither the United Kingdom nor the United States was prepared to commit significant resources to the region. For the United States, already mired in Vietnam, there was a conscious effort to disabuse the Gulf monarchies of the notion that it would fill the vacuum left by the British withdrawal from the Gulf. “Memorandum From the Assistant Secretary of Defense for International Security Affairs (Warnke) to Secretary of Defense McNamara,” Washington, June 12, 1968, in *FRUS*, , vol.21, (1964-1968), 297. (146).

³⁶ British officers and analysts felt that Sultan Said’s misrule fuelled the Dhofari insurgency. As early as June 1968, the British Joint Intelligence Committee concluded that, “Stability in Muscat and Oman depends largely upon the wisdom and perhaps the speed with which the Sultan apportions his oil revenues.” Another assessment, from February 1970 concluded that, “If peace is to be won, it will require winning over the hostile tribes of the jebel [highlands].... All this would require economic development and eventually a political accommodation with its inhabitants.” However, although Sultan Said accepted British military advice, the British concluded that, “it would be difficult to persuade him to take civil measures.” PRO CAB 158/70 JIC (68) 35 “Likely Developments in the Persian Gulf and their Probable Effects for British Interests,” June 7, 1968; PRO FCO 46/609 “The Employment of an SAS Squadron in Dhofar,” February 26, 1970; and PRO FCO 46/609 “Ministry of Defence: Chiefs of Staff Committee, Confidential Annex to COS 8th Meeting/70,” March 17, 1970.

³⁷ As far as can be ascertained, Gibbs played no direct role in organizing the coup, but approved of Oldman's activities. As a "contract officer," Oldman had a contract with Oman's government and theoretically had no official ties to the British government. However, the British government both permitted and encouraged Oman to hire British officers to serve directly in the Omani armed forces. Moreover, Oldman and other contract officers regularly reported their activities to the British government. Throughout the process of planning the coup d'état, Oldman consulted with Brigadier Graham, who was a loan officer (meaning that his contract was with the British government), who would have assisted the coup if it had encountered problems. PRO FCO 46/609 Major-General Gibbs, Ministry of Defence: Chiefs of Staff Committee, Confidential Annex to COS 21st Meeting/70, July 15, 1970.

³⁸ In a move that would have involved the United Kingdom even more visibly, it was planned that, in the event the coup failed, the RAF would fly Qaboos to Salalah, where the British officers seconded to the Sultan's Armed Forces would lead Oman's army against its government. According to reports, personal contact between the coup plotters and Qaboos was virtually impossible prior to the coup d'état because Sultan Said had placed Qaboos under house arrest. Lacking direct contact with Qaboos, Timothy Landon, an intelligence officer, queried Qaboos' Sandhurst roommate whether Qaboos would take over as head of state if the British removed his father. PRO FCO 46/609, To Bahrain Residency, n.d.; and PRO FCO 46/609 Ministry of Defence: Chiefs of Staff Committee, Confidential Annex to COS 21st Meeting/70, July 15, 1970; and David Hebditch and Ken Connor, *How to Stage a Military Coup: From Planning to Execution* (Greenhill: London, 2005), 160-64.

³⁹ The coup d'état produced four casualties (no fatalities), including the Sultan, British officer Ray Kane and two Omanis. Only one eminent Omani appears to have been involved in either the coup's preparation or execution--Sheikh Braik bin Hamud, who was the son of the Wali of Dhofar. Immediately after the coup he took over from his father. Ray Kane's story originally appeared in the *The Mail on Sunday* published on 7 July 2002. See Ian Gardiner, unpublished manuscript, 2006, 25-26; and Hebditch and Connor, 164.

⁴⁰ PRO DEFE 25/186 Visit of the Military Secretary to the Sultan of Muscat and Oman—Colonel H.R.D. Oldman, OBE, MC, October 14, 1970.

⁴¹ PRO DEFE 24/575, Report on Operation INTRADON, April 16, 1971.

⁴² The Musandam Peninsula is separated from Oman by the Emirate of Sharjah, which is now part of the United Arab Emirates. It can therefore only be reached from Oman by either crossing Emirate territory or by using sea or air transport. Because the dissidents deployed to Musandam, British Intelligence originally identified the infiltrators' mission as overthrowing Sharjah's ruler. Because the rebels fled, avoiding capture, the British never discovered their nationality. However, from the documents and supplies they left behind, the British concluded that there had originally been between 10 and 30. Initial intelligence reported 70 infiltrators from Oman, Iraq and Bahrain. This intelligence also claimed that the operation had been mounted with KGB assistance from Iraq. PRO DEFE 25/186 Chiefs of Staff Committee Meeting in Vice Chiefs Session, Musandam, DOP Note 718/70, November 25, 1970; and PRO DEFE 25/186

Chiefs of Staff Committee Meeting in Vice Chiefs Session, Musandam, DOP Note 718/70, November 25, 1970.

⁴³ PRO DEFE 25/186 Headquarters Land Forces Gulf, Appreciation of the Musandam Situation, November 11, 1970.

⁴⁴ Gibb's original proposal involved one British battalion (2nd Battalion, Royal Irish Rangers), 1,600 Trucial Oman Scouts from the Emirates, an unknown quantity of Omani forces and a small special forces (Special Air Service or SAS) contingent. Four amphibious landing ships and Wessex helicopters were to provide tactical transport. Hunter jet fighters would provide close air support if necessary. Altogether, Gibb's original plan may have involved 5,000 troops to hunt an anticipated 70 (actually 10 to 30) insurgents. Confusingly, the Trucial Oman Scouts were not part of the part of the Sultan of Oman's Armed Forces. Despite being recruited in Oman, the Trucial Oman Scouts served the leaders of the Trucial States (the present day United Arab Emirates). Like much of the Sultan's Armed Forces, the Trucial Oman Scouts were officered by seconded British officers. PRO DEFE 25/186 Headquarters Land Forces Gulf, Appreciation of the Musandam Situation, November 11, 1970.

⁴⁵ PRO DEFE 25/186 Chiefs of Staff Committee Meeting, Vice-Chiefs Session, Musandam, DOP Note 718/70, November 25, 1970; and PRO DEFE 25/186 Chief of Defence Staff to the Secretary of State for Defence, "Musandam Peninsula-Projected Operation INTRADON," November 27, 1970.

⁴⁶ Home's analysis of the political ramifications of Operation INTRADON highlighted that although action in the Security Council was possible, the British veto and American support would prevent hostile resolutions from being adopted. Further nationalizations in Aden were also feared. PRO DEFE 25/186 Acting Chief of Defence Staff to the Secretary of State for Defence, "Musandam Peninsula, Projected Operation INTRADON," December 2, 1970; and PRO DEFE 25/186 Secretary of State for the Foreign and Commonwealth Office to Prime Minister, 70/141, December 8, 1970.

⁴⁷ The SAS patrol similarly failed to make contact with the infiltrators but discovered the hastily buried butt plates of the infiltrators' mortars. PRO DEFE 25/186 Major-General R.C. Gibbs to Chief of Defence Staff, Operation Intradon, February 2, 1971; and Peter de la Billière, *Looking for Trouble: SAS to Gulf Command* (London: HarperCollins, 1995), 263.

⁴⁸ PRO DEFE 25/186 Major-General R.C. Gibbs to Chief of Defence Staff, Operation Intradon, February 2, 1971.

⁴⁹ PRO FCO 46/609 Chiefs of Staff Committee, Defence Operational Planning Staff, the Situation in Muscat and Oman, July 30, 1970.

⁵⁰ The absence of a hearts and minds campaign is ironic given the Oldman and Graham justified Sultan Said's overthrow by his unwillingness to enact one. *Ibid.*

⁵¹ Semple recommended that the intelligence team be comprised of an SAS troop, two interrogators, two intelligence corps non-commissioned officers and an officer specialized in psychological operations. Semple also suggested that the SAS could provide bodyguards for the Sultan and that an SAS squadron could be used to train the new Omani battalion being formed in Northern Oman. PRO DEFE 25/186 Department of Military Operations to Vice-Chairman of the General Staff, Assistance to SAF, August 13, 1970.

⁵² Watts' plan contained five-points, including civil reorganization, agricultural and economic development, intelligence, psychological warfare and military operations. However, its real innovation was the *firqat* proposal. De la Billière, 267.

⁵³ PRO DEFE 25/187.

⁵⁴ PRO DEFE 24/575 Annex "A" to Oman Periodic Report 12 01 (The Chief of Defence Staff), Mid-December 1971.

⁵⁵ British and Omani forces girded themselves for an offensive throughout the first nine months of 1971. While the Sultan's Armed Forces expanded from three to four battalions, the SAS began recruiting their first *firqats*. After forming an initial *firqat* (Firqat Salahadin) out of surrendered rebels from many tribes, the SAS recruited five "tribal" *firqats* drawn from the members of a individual tribes. First, Salim Mubarak, a Chinese-trained former rebel, volunteered to raise a multi-tribal *firqat*, named Firqat Salahadin after the twelfth century Muslim hero. Next, the desert dwelling Bait Kathir agreed to raise a tribal *firqat* (Firqat Al Nasr). Third, an entire PFLOAG unit drawn from the nomadic Mahra tribe deserted en masse and volunteered to form the Firqat A'asifat (Storm). By the monsoon ended in October 1971, the British succeeded in forming another three *firqats*: Firqat Khalid bin Waalid (Bait Ma'asheni tribe), Firqat Tariq bin Zeead (Western Mahra) and Firqat Al Umri (Bait Umr). Jeapes, 69-83.

⁵⁶ As SAS officer Tony Jeapes explained, "Even in the minds of the hardest hardcore Communist there must remain the seeds of Islam from his childhood. We would try to remove the soft-core [rebels] first and then drive a wedge into the hard core itself." Ibid., 39.

⁵⁷ Ibid., 60.

⁵⁸ Ibid., 135.

⁵⁹ PRO DEFE 25/186 unnamed leaflet.

⁶⁰ During the nineteenth and early twentieth centuries, Islamic leaders repeatedly declared jihads against the British Empire. In 1863, Muslim fundamentalists from India's Northwest Frontier mounted a holy war against the British. Only through the particularly bitter Umbeyla Campaign did the British suppress the rebels, known as the Sitana Fanatics or Hindustani Fanatics. In the Sudan, the militant religious reformer Muhammad Ahmed ibn el-Seyyid Abdullah declared himself to be El Mahdi (the Messiah) in 1881 and waged a war against Egyptian and British suzerainty, winning Sudan's independence until the British re-conquered it in 1898. In Somalia, the leader of a militant Sufi brotherhood organized resistance against the British from 1899 until

1920. During the first world war, the Ottoman Sultan, in his capacity as Imam of Sunni Islam, declared a jihad against the Entente. This declaration had modest effects, inciting tribes in Afghanistan, Darfur, Somalia and Libya to revolt. Overall, appeals to Islam have met varying success over time. However, the United Kingdom's own experiences should have served as a cautionary note.

⁶¹ The Omani Army had great difficulty assembling large forces. Prior to Qaboos' regime, the Army counted only three battalions. A fourth battalion was added by the beginning of the October offensive. However, two battalions were required for Northern Oman's security, leaving only two for Dhofar. Then, substantial forces were needed to garrison Salalah, which served as logistics base and regional capital. Askars were irregular soldiers, recruited in Baluchistan (Pakistan) and used exclusively as garrisons for fixed positions. Jeapes, 85, 101, 111, 133-35.

⁶² PRO DEFE 24/575 General Gibbs, Commander of British Forces in the Persian Gulf, November 16, 1971.

⁶³ Jeapes, 111-13.

⁶⁴ As one SAS officer observed, "With total success so near, it was a bitter pill to swallow.... They [the *firqats*] wasted most of the advantage that the first week's heavy fighting and casualties had won." Ibid., 135-44; and PRO FCO 8/1856 Commander of the Sultan's Armed Forces' Assessment, 1972.

⁶⁵ PRO DEFE 25/187 From Military Attaché, Muscat to the Chief of Defence Staff, November 7, 1971.

⁶⁶ PRO FCO 8/1856 Commander of the Sultan's Armed Forces' Assessment, 1972.

⁶⁷ Jeapes, 144.

⁶⁸ PRO FCO 8/1856 Defence Department (FCO) to Arab Department, December 21, 1971.

⁶⁹ PRO FCO 8/1856 From A.D. Parsons to Mr. Renwick, Private Secretary, January 17, 1972.

⁷⁰ PRO DEFE 24/575 Commander Sultan's Armed Forces Assessment, February 14, 1972.

⁷¹ As a Royal Marine officer observed, "Sarfait was at 3,000 feet. The adoo [rebel] supply routes were mostly at sea level and certainly under 1,000 feet. Any operation from Sarfait to interdict adoo camel trains would require a degree of force protection and resupply for which we did not have the resources." Gardiner, 54.

⁷² PRO CAB 148/121/10 May 17, 1972.

⁷³ PRO CAB 148/121/11 May 25, 1972.

⁷⁴ United Kingdom intelligence analysts believed that the PDRY deployments were defensive. The Sultan disagreed and pushed for British support to prevent an air attack on Salalah. PRO DEFE 24/575 BRITDEFAT MUSCAT, February 28, 1972.

⁷⁵ Jeapes, 160.

⁷⁶ The casualty figures reported are those given in internal British documents, most notably the official after action report. Jeapes gives larger figures for enemy losses, claiming that 38 enemy bodies were left behind, meaning that over 100 rebels may have perished. PRO DEFE 11/656 GSM: Award for Clasp for Service in Dhofar, July 19, 1972.

⁷⁷ PRO DEFE 11/759 Tim Creasy, Organization and Future Intentions of PFLOAG in Northern Oman, January 4, 1973.

⁷⁸ PRO DEFE 11/759 Chief of the General Staff to Minister of State, January 10, 1973; and PRO DEFE 11/759 Directive from Major R.D. Willingale R. Sigs for Operation Jason, January 17, 1973.

⁷⁹ PRO CAB 148/122/49, November 21, 1972; and PRO CAB 148/121/17, November 23, 1972.

⁸⁰ PRO DEFE 11/737 Untitled, January 1974.

⁸¹ The rebels repulsed three attempts to land fixed-wing aircraft at Sarfait. PRO DEFE 11/759 BRITDEFAT MUSCAT to MODUK: MUSSEC 10.

⁸² PRO DEFE 11/759 FM BRITDEFAT MUSCAT TO MODUK, February 3, 1973.

⁸³ PRO DEFE 11/759 FM BRITDEFAT MUSCAT TO MODUK, February 9, 1973.

⁸⁴ Iran's interest in Oman's security came naturally. Iran and Oman controlled opposite sides of the Straits of Hormuz, and a hostile regime in Oman would threaten Iranian interests. Iran first expressed concern for Oman's security in January 1972, when Iranian intelligence reported that a large number of insurgents had landed on the Musandam Peninsula. Iran responded to this alarming news by requesting permission to patrol the Arab side of the Persian Gulf. Iran's intelligence was false and the Foreign Office wanted to limit Iranian influence. Unlike other regions of the world, the United States and the United Kingdom had traditionally competed for influence in the Persian Gulf. Iran and Saudi Arabia were viewed as American allies, while the United Kingdom enjoyed privileged relations with the Trucial States (later the United Arab Emirates), Oman, Jordan and Iraq (prior to the 1958 coup d'état). PRO DEFE 24/575 From Tehran Embassy, January 13, 1972; and PRO DEFE 11/759 BRITDEFAT MUSCAT to MODUK, February 15, 1973.

⁸⁵ PRO DEFE 11/759 Brief for Meeting of Ministers, Gilmour/Balniel, Oman, February 15, 1973.

⁸⁶ PRO DEFE 25/312 Military Operations in Oman, June-Oct 1973, COS 46/73, October 1973.

⁸⁷ PRO DEFE 25/312 Notes on Visit to Oman by Col G.S., MO2, January 30, 1974.

⁸⁸ The first rebel campaign against Salalah began in 1968, with mortar attacks on the base. The British responded, in 1970, by deploying artillery and a Green Archer mortar-locating radar. This prohibited the rebels from mortaring for long periods from a single position, however less intense mortaring continued. In 1972, Operations Puma and Cougar established Anglo-Omani *sangars*--called the Diana positions--on high ground overlooking zones used for mortaring. Then, the new experimental ZS 298 mortar locating radar was deployed. Between the Dianas, the Green Archer and the ZS 298, the British had effectively neutralized the PFLOAG mortar threat by late 1972. PRO DEFE 25/186 Chief of Defence Staff to the Secretary of State for Defence, "Salalah," November 23, 1970; and PRO DEFE 24/575 Commander Sultan's Armed Forces Assessment, February 14, 1972.

⁸⁹ The 122mm Katyushas had a maximum range of 11 kilometres. Akehurst, *We Won a War: The Campaign in Oman, 1965-1975*, 27.

⁹⁰ PRO DEFE 11/658 Sound Ranging Detachment Salalah, December 19, 1974.

⁹¹ Akehurst, *We Won a War: The Campaign in Oman, 1965-1975*, 22.

⁹² Peter Ratcliffe, *Eye of the Storm: Twenty-five Years in Action with the SAS* (Miami Florida: Lewis International, 2000), 74-75.

⁹³ Qaboos, who was educated at Sandhurst and served as a lieutenant in the British Army of the Rhine, proposed raiding PDRY with commando detachments and striking Yemeni bases using air power. PRO DEFE 11/736 D.W. Napper, Commodore, Director of Defence Operational Plans to Chief of the General Staff, October 12, 1972; and PRO DEFE 11/761 Chairman of the General Staff to Chief of the Defence Staff, May 15, 1973.

⁹⁴ PRO DEFE 13/963 Chief of Defence Staff to Secretary of State for Defence, May 22, 1973.

⁹⁵ PRO DEFE 11/761 Chairman of the General Staff to Chief of the Defence Staff, May 15, 1973.

⁹⁶ At first the line was relatively porous. Some positions were more than 20 kilometers apart, while individual platoon and company positions were unconnected. In June 1973, a British loan officer remarked that, "By day we could see most movement, but at night, our line was pretty permeable." However British and Omani forces constantly strived to reinforce the Hornbeam Line. The same officer who recalls how porous his sector was, observed that, "During my

time there, we built a barbed wire and minefield obstacle the whole length of it [the sector].” In March 1973, a British Royal Engineer squadron arrived in Oman to lend its expertise to the construction effort. See Gardiner, 71; and PRO DEFE 11/656 GSM: Award for Clasp for Service in Dhofar.

⁹⁷ This occurred on 28 October 1974. PRO DEFE 11/658 Record of Commander of the Sultan’s Armed Forces’ Audience with His Majesty the Sultan, November 5, 1974.

⁹⁸ British military planners repeatedly claimed that Anglo-Omani forces were overstretched in 1973. PRO CAB 148/130/26 DOP Note, 2 April 1973; and PRO DEFE 25/312 Chiefs of Staff Committee Meeting: Confidential Annex, Future UK Defence Activity in Oman, November 23, 1973.

⁹⁹ PRO DEFE 25/312 Chiefs of Staff Committee Meeting: Confidential Annex, Future UK Defence Activity in Oman, November 23, 1973; and PRO DEFE 25/312 Military Operations in Oman, June-Oct 1973, COS 46/73, October 1973.

¹⁰⁰ PRO DEFE 25/312 Chiefs of Staff Committee Meeting: Confidential Annex, Future UK Defence Activities in Oman, 23 November 1973.

¹⁰¹ PRO DEFE 25/312 Military Operations in Oman, June-October 1973.

¹⁰² The Iranian offensive aimed to open the road linking Salalah with Saudi Arabia, traversing Dhofar's interior. The Iranians began offensive operations on 19 December and moved methodically. To Creasy's dismay, the Iranians employed vast quantities of artillery, rather than small-scale patrols and ambushes, to open the road. However, he admitted that offensive operations before the end of 1973 would have been impossible without the Iranians. PRO DEFE 11/656 Major-General Tim Creasy to Sultan Qaboos, 25 August 1974.

¹⁰³ Aggregate Omani military manpower had ballooned from 2,500 men in 1970 to 11,700 in 1974. As always, half of Oman's battalions were deployed to Dhofar at any given time, while the other half were retained in Northern Oman. Thus, the Sultan's Armed Forces comprised a total of eight battalions in 1974. Half of Oman's battalions were recruited amongst northern Omanis, while the other half were recruited in Baluchistan, Pakistan. PRO DEFE 11/737 Untitled, January 1974.

¹⁰⁴ Akehurst, *We Won a War: The Campaign in Oman, 1965-1975*, 33.

¹⁰⁵ PRO DEFE 25/315 HQ SAF D-OPS/5, Operational Review, April 11, 1974.

¹⁰⁶ The British had counted 1,394 rebel casualties since 1970. PRO DEFE 11/737 16 March 1974.

¹⁰⁷ Small-scale crossings were made using ropes suspended on tripods and by sappers who crawled under the wire and through the minefields. However, by crossing like this, the rebels were unable to carry heavy loads. After this date, a large rebel force only once, on 28 October 1974, breeched the Hornbeam Line, when 80 guerrillas carrying rockets and mines broke

through. See Akehurst, *We Won a War, The Campaign in Oman, 1965-1975*, 21; and PRO DEFE 11/658 Record of Commander of the Sultan's Armed Forces' Audience with His Majesty the Sultan, November 5, 1974.

¹⁰⁸ PRO DEFE 25/312 Chiefs of Staff Committee Meeting: Confidential Annex, Future UK Defence Activities in Oman, 23 November 1973.

¹⁰⁹ The Iranians left an ambiguous impression on the British. Creasy admitted that the Midway Road could not have been cleared without them until 1975. However, he also complained about the "inability of the Iranians to operate effectively, and in accordance with my orders. The enemy have been able to cross the Midway Road or to mine it at will as the Iranians will not patrol or dominate their area. Furthermore their habit of indiscriminate firing at anything that moves has alienated the *firqat* and the uncommitted civilian population." When Omani forces became available, Creasy planned to replace the Iranians guarding the Midway Road with Omanis, freeing the well-armed Iranians for an offensive against rebel bastions in Western Oman. The Shah of Iran pledged a brigade on 7 March 1974, for operations beginning on 23 October. The Brigade consisted of a brigade headquarters, two infantry battalions and an artillery battalion. In addition to the brigade, the Iranians deployed a squadron of 16 F-5 aircraft, anti-aircraft artillery and radars, to protect Oman from South Yemeni air attacks. PRO DEFE 11/656 Major-General Tim Creasy to Sultan Qaboos, 7 August 1974; PRO DEFE 11/656 Major-General Tim Creasy to London, 5 August 1975; and PRO DEFE 11/656 Major-General Tim Creasy to Sultan Qaboos, 25 August 1975.

¹¹⁰ According to Brigadier John Akehurst, commander of forces in Dhofar, the Iranians were "immensely fit and confident" but were "new to the country, untried in battle and trained for a very different sort of warfare." Akehurst also reflected that, the Iranians were "quite unable to adapt to the subtleties of guerrilla warfare and were arrogantly loth to take advice." Operating methodically, the Iranians enabled the rebels to avoid their thrusts and launch raids when against isolated bodies. On 4 December, the British situation report observed that the Iranians were "very pedestrian and stick rigidly to timings laid down rather than show own initiative in moving forward against little or no opposition." On 5 December, 12 to 15 guerrillas attacked an Iranian company of 190 men. With the advantage of surprise and superior tactical skills, the rebels killed 11 Iranians and wounded 1. Reacting ponderously, the Iranians inflicted no casualties on the rebels. Reflecting on this assault, one British officer acerbically wrote, "Amateurs who play in League Division One - away from home - tend to lose." The next day, the rebels attacked another Iranian position, but were beaten back without either side suffering casualties. After these traumatizing, but minor reverses, the Iranians halted, permitting the rebels to re-organize. They did not resume their offensive until 25 December, after which they continued to suffer losses, including one battalion commander. See PRO DEFE 11/658 Record of Commander of Sultan's Armed Forces' audience with HM the Sultan, 7 Dec 1974; PRO DEFE 11/658 SITREP No. 3, 4 December 1974; Akehurst, *We Won a War: The Campaign in Oman, 1965-1975*, 82-86; and John Akehurst, *Generally Speaking: 'Then Hurrah for the Life of a Soldier'* (Norich: Michael Russell, 1999), 154.

¹¹¹ At the onset of the attack, the light *firqats* were supposed to lead the advance. Eventually, Anglo-Omani forces seized one supply cave, containing 286 mortar rounds, 278 RPG 7

rockets, one light machine gun, several boxes of ammunition and food supplies. The Sherishitti offensive was ended on 20 January and the Omani regiment was withdrawn. Akehurst claims that the Omani regiment had, throughout the operation, inflicted more casualties than it had suffered. Akehurst, *We Won a War: The Campaign in Oman, 1965-1975*, 90-96.

¹¹² Akehurst, *Generally Speaking*: 'Then Hurrah for the Life of a Soldier, 157.

¹¹³ November 1974 was a record surrender month, with 41 rebels turning themselves in. This demonstrated a 65% increase in monthly surrenders over the 1973 record. See PRO DEFE 11/656 Chiefs of Staff Committee, Defence Operational Planning Staff, *The Progress of Operations in Oman*, December 30, 1974; and PRO DEFE 11/658 Major A. Ramsay, RHF, November 1974.

¹¹⁴ Akehurst, *We Won a War: The Campaign in Oman, 1965-1975*, 99-109.

¹¹⁵ *Ibid.*, 129-37.

¹¹⁶ Jeapes, 230.

¹¹⁷ Perkins' bombing damaged only one Yemeni gun, but marked a new stage in escalation. Within a week, South Yemen brought forward new and better artillery, including long-range Soviet 130mm guns. Thereafter, Oman and South Yemen exchanged large amounts of firepower over their common border, with Omani fighter-bombers counterbalancing superior Yemeni artillery. Despite the artillery hammering, Anglo-Omani forces retained and fortified their new blocking position. *Ibid.*, 138-71.

¹¹⁸ Akehurst, *We Won a War: The Campaign in Oman, 1965-1975*, 99-109; and PRO DEFE 11/737 16 March 1974.

¹¹⁹ As it was, Oman's 1973 national budget of 65.5 million Rials, skyrocketed to 240 million Rials in 1974, and 325 million Rials in 1975. When the Oil Crisis began, Sultan Qaboos recognized that exploding oil prices saved him from imminent bankruptcy, prompting him to declare, "We praise God for our prosperity after the period of oblivion through which our dear country has passed." PRO DEFE 25/315 From Qaboos bin Sa'id Sultan of Oman To Economic Advisor, July 22, 1974.

¹²⁰ War Cabinet is a colloquial designation. The official designation of the committee that managed the crisis was the special ministerial sub-committee on the South Atlantic of the Defence and Oversea Policy Committee, which was abbreviated in documents to (OD(SA)).

¹²¹ Lawrence Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy* (London: Routledge, 2005), 20-29.

¹²² Lawrence Freedman and Virginia Gamba-Stonehouse, *Signals of War: The Falklands Conflict of 1982* (London: Faber and Faber, 1990), 3-83.

¹²³ The Chief of Defense Staff (Chairman of the Chiefs of Staff Committee) Admiral Terence Lewin was on an official visit to New Zealand when the crisis broke and Army chief of staff Dwin Bramall was touring British garrisons in Northern Ireland. The Chief of Air Staff, Michael Beetham, was in England, but appears not to have realized the gravity of the situation. Thus, Leach was the only member of the British chiefs of staff capable of briefing Thatcher at the onset of the crisis. Dwin Bramall and Bill Jackson, *The Chiefs: The Story of the United Kingdom Chiefs of Staff* (London: Brassey's, 1992), 402-03.

¹²⁴ Interview with Henry Leach, July 16, 2005.

¹²⁵ In an interview, Leach admitted that the 1981 Defence Review shaped his response to the Falklands. According to Leach, the fact that many of the ships that would be needed for the Falklands were already destined for elimination rendered them expendable. Whether lost upholding British national honor in the South Atlantic or scrapped because of budgetary reasons, the Royal Navy would nonetheless lose many ships. Because Leach had always argued the United Kingdom's need for a balanced fleet, he felt personally vindicated by the Falklands crisis and believed that it presented an occasion for the Royal Navy to vindicate itself. In order to understand Leach's enthusiasm for retaking the Falklands, it is also worth remembering that his father, Captain Leach, perished as commander of the Second World War battleship *Prince of Wales*, which had been ordered (as part of Task Force Z) to undertake near-suicidal operations against the Japanese invasion fleet approaching Malaysia's coast. Interview with Henry Leach, July 16, 2005.

¹²⁶ Henry Leech, *Endure no Makeshifts: Some Naval Recollections* (London: Leo Cooper, 1993), 221.

¹²⁷ Michael Tillotson, *Dwin Bramall: The Authorised Biography of Field Marshal the Lord Bramall* (London: Sutton, 2005), 187-92.

¹²⁸ Admiral Sandy Woodward, who commanded the naval expeditionary force, believed (and still believes) that a better led Argentine Air Force and more risk-accepting navy could have inflicted heavy losses on the British and obliged them to renounce retaking the Falklands. Woodward also suspects that the blow of the 1981 Defense Review and Leach's personal humiliation at having been booed by naval officers for not having better defended the service's interests prompted him to seek retribution in the Falklands conflict. A good friend of Leach, Woodward discussed the war frequently with Leach in later years. In these conversations, Leach apparently told Woodward that his advice to Thatcher was slightly different from the version recorded in most histories (including both Leach's and Thatcher's memoirs). According to Woodward, Leach was optimistic, but told Thatcher "We can take the Falklands back, provided we can solve the air problem [meaning the problem posed by Argentine land-based aircraft]." According to Woodward's version of Leach's advice, this was enough for Thatcher because, "Like most politicians, she reasoned in terms of her own political survival. She reasoned, 'If I do nothing, I'm finished; if I try to retake the islands and fail, I'm finished; if I try to retake the islands and succeed, I'll survive.' Leach held out the small ray of hope Thatcher needed to convince her to try to retake the Falklands." In a separate interview, Leach denied Woodward's version of events, holding that he told Thatcher, "Yes we *could* (retake the Falklands) and in my

judgement we *should*." Interview with Admiral Sandy Woodward, July 6, 2005; Interview with Major-General Julian Thompson, London, May 6, 2005; and Interview with Commador Michael Clapp, June 9, 2005.

¹²⁹ Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy*, 24-25.

¹³⁰ In Woodward's analysis of the Falklands War, scrupulous respect of the chain-of-command was one of the major factors contributing to the United Kingdom's success. According to Woodward, communications technology would have permitted the Prime Minister to communicate directly and securely with operational commanders throughout the conflict, but never did so. According to Woodward, "It was not difficult [the high level direction of the conflict] because the line of management was clear and simple. The Prime Minister and Cabinet dealt with the CDS [Chief of Defense Staff], who was advised by the Chiefs of Staff, who issued directives to the Task Force commander, Admiral Fieldhouse, who gave me orders out at front. We had about five people in a straight line, natural, from top [political] direction to top local [theatre] direction." Imperial War Museum Oral History Archive, Recording 9071, Admiral John Woodward, 1983.

¹³¹ Significant misunderstandings emerged between field commanders, particularly between Woodward, Clapp and Thompson, because of conflicting mandates conveyed to them. Fieldhouse initially considered all four operational commanders to hold independent commands of separate forces. However, on occasions, he treated Woodward as though he was the superior to Thompson and Clapp. Three reasons explain Fieldhouse's favouritism to Woodward. Woodward was higher ranking than the other two commanders (two-stars versus one-star). Woodward also commanded the most important single component of the British force--the naval task force, including two aircraft carriers. Finally, Woodward and Fieldhouse were both submariners and had long known each other. Meanwhile, based on the same ship, Clapp and Thompson quickly developed a good rapport with one another. When they first collectively met with Woodward, to determine where and when to land on the Falklands, their discussion became acrimonious. Woodward treated Clapp and Thompson as subordinates, while Clapp and Thompson found Woodward's efforts to lead deliberations on an amphibious landing misguided, given that Clapp and Thompson possessed more professional expertise on the subject. After the meeting, Woodward, Clapp and Thompson verified their command relationship with Fieldhouse, who informed them that they were co-equal component commanders. Although this apparently solved the matter, Fieldhouse nonetheless told Woodward to "yell at Thompson until he moves" when Fieldhouse had become discouraged about Thompson's lack of activity towards Goose Green. On this occasion, Woodward reminded Fieldhouse that he was not Thompson's superior. Interview with Admiral Sandy Woodward, July 6, 2005; Interview with Commador Michael Clapp, June 9, 2005; and Interview with Major-General Julian Thompson, London, May 6, 2005.

¹³² The Maritime Exclusion Zone was rapidly declared because the War Cabinet felt that it was necessary to maintain a state of conflict until the British fleet would be available to retake the islands. It was feared that if the Argentine invasion were not militarily challenged from the beginning, Britain would appear to be the aggressor when it later attempted to expel Argentina from the Falklands. The term Maritime Exclusion Zone was chosen with care because of the

legal difficulties associated with blockades. See Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy*, 85-89; and Interview with Admiral Sandy Woodward, July 6, 2005.

¹³³ Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy*, 221.

¹³⁴ The SAS has been consistently criticized for its conduct on South Georgia. The local SAS officer, Major Cedric Delves, insisted on going over the Fortuna Glacier despite warnings from Captain Nick Barker, of the Antarctic survey ship *Endurance*, and Richard Law, director of the British Antarctic Survey. The SAS unit chosen, mountain troop, was experienced in mountaineering but entirely devoid of local topographical knowledge. Because of wide crevasses and harsh winds, the SAS managed to advance only 800 meters in five hours on the glacier, before being obliged to seek shelter against the elements. Nicholas van der Bijl, *Nine Battles to Stanley* (Barnsley, the United Kingdom: Leo Cooper, 1999), 68-72.

¹³⁵ Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy*, 241-43.

¹³⁶ *Ibid.*, 244-49.

¹³⁷ Interview with Henry Leach, July 16, 2005.

¹³⁸ Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy*, 274-83.

¹³⁹ Rowland White, *Vulcan 607* (London: Bantam, 2006); and Rowland White, "Rio Rendezvous," *Flypast* no. 299 (June 2006): 22-31.

¹⁴⁰ Argentina's second-largest ship, next to the aircraft carrier, the *Belgrano* was not considered particularly formidable. The *Belgrano* was a Second World War-era American cruiser. Armed with guns alone, it was comparatively obsolete. In his own analysis of the Argentine fleet, Woodward considered Argentina's four submarines, aircraft carrier *25 Mayo* and modern British-built Type 42 destroyers to pose the greatest threat to the British fleet. The *Belgrano* ranked a distant fourth in Woodward's analysis of the Argentine Navy. Interview with Admiral Sandy Woodward, July 6, 2005.

¹⁴¹ Leach and Woodward disagreed about the relative threat posed by the Argentine Navy. Leach reasoned that because the Argentine Navy would doubtless lose virtually all its surface ships if it engaged in battle, the fleet's high command would avoid fighting, knowing that there would be no political will or financial resources to rebuild the fleet, even if Argentina won the war. Given Leach's recent trauma of trying to protect the British fleet from defense cuts, he may have been projecting his own reasoning onto his Argentine opponents based on his recent experience during naval maneuvers with the Americans in the Indian Ocean. Using aggressive tactics, decoys and the ruse of announcing the destroyer *Glamorgan* to be a commercial Indian vessel, Woodward succeeded in closing to within 20 miles of the aircraft carrier *Coral Sea*. At this distance, the *Glamorgan's* Exocet missiles could have disabled the carrier. Given that Woodward

accomplished this feat with only four warships, he was understandably worried what the Argentines might accomplish if they fought daringly. Woodward's reading of naval history impressed upon him what could be accomplished both by guile and desperate courage, such as shown by the auxiliary cruiser *Jervis Bay* when it fought a suicidal but vital holding action against a German pocket battleship in 1940. Interview with Admiral Sandy Woodward, July 6, 2005; Interview with Henry Leach, July 16, 2005; and Sandy Woodward, *One Hundred Days: The Memoirs of the Falklands Battle Group Commander, Revised Edition* (London: HarperCollins, 2003), 83-90.

¹⁴² Interview with Admiral Sandy Woodward, July 6, 2005.

¹⁴³ Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy*, 315-75.

¹⁴⁴ After the fact, there is still a lack of consensus about how dangerous Exocet missiles were to the British fleet. Overall, six Exocets (five air-launched and one truck mounted) were fired at British ships. Of these, four struck British targets, sinking the *Sheffield* and *Atlantic Conveyor*, and damaging the *Glamorgan*. On the face of it, four hits out of six launches is a remarkable success rate. The list of Exocet victims includes not one properly defended recent-generation warship. Although modern, the *Sheffield* was lost because of gross incompetence (the Operations Officer [on duty] was off the bridge when the Exocet alert was detected, rather than initiate defensive measures on his own, the Anti-Air Warfare Officer left the bridge to look for the Operations Officer). The *Atlantic Conveyor* was a defense-less merchant ship. Finally, the *Glamorgan* was a comparatively old destroyer, but was hit despite taking proper evasive action. Interview with Admiral Sandy Woodward, July 6, 2005.

¹⁴⁵ Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy*, 430-31;

¹⁴⁶ At odds with their populations, most Latin American governments blamed Argentina for the war and considered it a local affair, outside of the scope of the Rio Treaty. Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy*, 504-05.

¹⁴⁷ Interview with General Peter de la Billière, London, July 13, 2005.

¹⁴⁸ Nigel West, *The Secret War for the Falklands: The SAS, M16, and the War Whitehall Nearly Lost* (London: Warner Books, 1997), 135-48; and Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy*, 432-35.

¹⁴⁹ Throughout the conflict, British decision-makers worried about Peruvian military assistance to Argentina. During the conflict, Peru requested that France hasten the delivery of Exocet missiles that Peru had already ordered, presumably for re-export to Argentina. Possessing one of South America's most modern air forces, direct Peruvian involvement was also feared. Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy*, 508-09.

¹⁵⁰ *Ibid.* 484-85.

¹⁵¹ According to Julian Thompson, "If the Argentines had been prepared to take heavy casualties from the beginning, losing perhaps half of their air force, they could have caused such casualties that we would have said 'it isn't worth the candle' [to retake the Falklands]." Woodward worried that the loss of escorts was depleting his ability to protect the United Kingdom's two aircraft carriers, which constituted the core of the fleet. Gaps were likely to appear and it would soon be possible for the Argentine air force to sink a British carrier. If the British lost a carrier, Woodward feared that the British would be forced to renounce retaking the Falklands if either carrier was lost. Imperial War Museum Oral History Archive, Recording 17144, Major-General Julian Howard Thompson, 1995/1996; Interview with Admiral Sandy Woodward, July 6, 2005; and Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy*, 483-85.

¹⁵² Because of the United States' critical role in supporting the British military intervention, American fears lest a defeated Argentina either turn to the Soviet Union or indefinitely continue its vendetta against the United Kingdom weighed heavily on British decision-makers. The United States feared two scenarios. One was that the Argentina's military junta would collapse, to be replaced by an ultra-nationalist Peronist regime, which would continue military operations after suffering a conventional defeat. In many respects, American decision-makers seem to have anticipated the Argentines responding to defeat in the same way that the Arab powers had after Israel's remarkable victory in 1967, i.e. by continuing military operations at a lower and variable scale of intensity. The other fear of American policymakers was that a defeated Argentina would embrace the Soviet Union and Cuba, either pragmatically because the United States had opted to support the United Kingdom, or ideologically following an emergence of a left-wing Argentine government. See Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy*, 510-16.

¹⁵³ The resolution was only voted on 4 June, after the Battle of Goose Green. The essence of the resolution was: 1) calling for an immediate cease fire, 2) authorizing the United Nations Secretary General to use any means to impose one, and 3) asking the Secretary General to inform the Council within 72 hours of the implementation of the ceasefire. The resolution received nine votes in favour, versus four abstentions and two votes against. However, the votes against came from the United States and United Kingdom, which both possess veto powers. To the United Kingdom's consternation, the United States government had decided to abstain, but the instructions reached their delegate too late. Thus, the British government began finding itself increasingly isolated. *Ibid.*, 521-25.

¹⁵⁴ *Ibid.*

¹⁵⁵ *Ibid.*, 548-51.

¹⁵⁶ The Goose Green proposal originated with Admiral Fieldhouse's advisor on land operations, Lieutenant-General Richard Trant. The Commander-in-Chief of United Kingdom Land Forces, General John Stanier, deliberated with Trant about what objective Thompson should be ordered to attack. An element of inter-service prejudice may have influenced deliberations, with Fieldhouse's land advisers in London coming from the British Army, while Thompson was a

Royal Marine officer. Army officers seem to have felt that "Marines were incapable of seeing beyond beachheads." See Tillotsen, 196-97.

¹⁵⁷ There appears to have been a real disconnect between field commanders, who were more attune to the operational situation in the South Atlantic, and the high command, which was more aware of political pressures. Fieldhouse had originally told Admiral Woodward to fly to San Carlos and shout at Thompson until he moved. However, Woodward refused because he was not clearly Thompson's superior and felt unable to pressure him on matters outside of his competence (which applied to Fieldhouse and Lewin as well). Clapp was entirely in sympathy with Thompson and felt that Admirals in London should not meddle operationally in the land campaign. However, senior Army officers in the United Kingdom sided with Fieldhouse. Drawing on historic analogies to Gallipoli and Anzio, Army commanders, including the Chief of the General Staff, Dwin Bramall and General Trant, that British forces would lose the initiative if they did not immediately advance from their beachhead. Thompson himself best encapsulates the divide between field commanders and the high command. According to Thompson, "The fact that the feeling in Northwood was that I did not need artillery to support the operation said to me that they really did not understand what was going on. And the reason for that was quite simple and that was that they were 8,000 miles away and there was no commander on the spot with overall responsibility for the conduct of the campaign.... I think that the lack of understanding was a factor of the distance between the two places and unless you were actually there and could see what the terrain was like, it was very difficult to see what the problems were like for the people on the ground." See Tillotsen, 195; Interview with Admiral Sandy Woodward, July 6, 2005; Imperial War Museum Oral History Archive, Recording 17144, Major-General Julian Howard Thompson, 1995/1996.

¹⁵⁸ Imperial War Museum Oral History Archive, Recording 17144, Major-General Julian Howard Thompson, 1995/1996; and Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy*, 556.

¹⁵⁹ Interview with General Peter de la Billière, London, July 13, 2005.

¹⁶⁰ Interview with Major-General Julian Thompson, London, May 6, 2005.

¹⁶¹ Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy*, 559-60.

¹⁶² Imperial War Museum Oral History Archive, Recording 17144, Major-General Julian Howard Thompson, 1995/1996.

¹⁶³ See van der Bijl, 133-34.

¹⁶⁴ Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy*, 575.

¹⁶⁵ Interview with Major-General Julian Thompson, London, May 6, 2005.

¹⁶⁶ By the time the second British brigade, the 5th Brigade, arrived off the Falklands in early June, the political calculus had already changed. Rather than rush the brigade, in a small number of vessels, as near to Stanley as possible, Admiral Fieldhouse now preferred to avoid situations that could produce significant casualties, even if doing so slowed the pace of British operations. As Freedman notes, "The balance of political risks was now changing. Before he [Fieldhouse] had been worried that the international calls for a cease-fire, and uncertainty in the Government, would bring his campaign to a stuttering halt. Now he was more confident: 'PM has held out resolutely for victory not ceasefire.'"... What might undermine public opinion would be a 'catastrophe at sea with large loss of life.'" Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy*, 597.

¹⁶⁷ The 3rd Battalion of the Parachute Regiment assaulted Mount Longdon, the Royal Marines 42 Commando attacked Mount Harriet and the 45th Commando attacked Two Sisters. At Mount Longdon, one British battalion faced 220 Argentine defenders. The assault lasted 10 hours and resulted in 18 British dead and 40 wounded, against 50 Argentine dead and a similar number taken prisoner. According to a British NCO, the Argentine positions were poorly sited and constructed, and their minefields badly laid. However, the natural strength of the position and fighting spirit of the Argentine defenders rendered the British assault difficult. At Two Sisters, the Argentine conscripts showed less determination, permitting the Royal Marines to dislodge the two Argentine companies defending the position at a cost of only four dead and 10 wounded. Finally, at Mount Harriet, the 45th Commando approached the Argentine position from an unexpected direction, provoking a precipitate Argentine flight, whereupon Argentine officers and NCOs fired on their own troops in an effort to prevent their fleeing. Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy*, 611-28.

¹⁶⁸ Two of the battalions employed on 14 June belonged to the 5th Brigade. The remaining battalion, the 2nd Battalion of the Parachute Regiment, belonged to the 3rd Commando Brigade and had already fought at Goose Green. The defending forces during the battles of 12 June numbered between 170 and 220 for each Argentine position, as compared to the single British battalion (approximately 600 men) assigned to attack each. On 14 June, the defenses of Tumble-down and Wireless Ridge counted, respectively 700 and 500 defenders each. Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy*, 634-44; and van der Bijl, 189-211.

¹⁶⁹ Martin Middlebrook, *The Argentine Fight for the Falklands* (Barnsley, Yorkshire: Pen and Sword, 2003, originally published in 1989), 273; and Interview with General Jeremy Moore, Wells, June 10, 2005.

¹⁷⁰ The head of the Argentine junta, General Leopoldo Galtieri, was dumb-founded about how Argentine defenses could have collapsed so quickly. He lectured Menéndez that the Argentine code of military justice required him to have suffered at least 4,000 casualties before surrendering. van der Bijl, 212-13; and Middlebrook, 272-73.

¹⁷¹ Interview with General Jeremy Moore, Wells, June 10, 2005.

¹⁷² The head of the Royal Navy dodged giving political leaders estimates of how many ships he expected to lose and the Chief of Defense Staff refused to give Cabinet members written

copies of military plans. Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy*, 447; and Interview with Admiral Henry Leach, 16 July 2005.

¹⁷³ Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy*, 215-20.

¹⁷⁴ Over 800 miles distant and possessing no airfields, South Georgia was incapable of exerting any influence on the fight for the Falklands, while the Argentine garrison on Goose Green was easier to contain than attack.

¹⁷⁵ Margaret Thatcher, *The Downing Street Years* (New York: HarperCollins, 1993), 816-22.

¹⁷⁶ Alan Munro, *Arab Storm: Politics and Diplomacy Behind the Gulf War* (London: I.B. Tauris, 2006), 75-76.

¹⁷⁷ *Ibid.*, 77-79.

¹⁷⁸ The United Kingdom had sustained a permanent naval presence of three surface combatants (destroyers or frigates) in the Persian Gulf and Indian Ocean since 1980. When Iraq invaded Kuwait, one ship was located in the Persian Gulf, one in Mombassa, Kenya and the third in Penang, Malaysia. Chris Craig, *Call for Fire: Sea Combat in the Falklands and the Gulf War* (London: John Murray, 1995), 160.

¹⁷⁹ Peter Hennessy, *The Prime Minister: The Office and its Holders Since 1945* (London: Penguin, 2000), 441-43.

¹⁸⁰ Major himself appears unaware that there was a difference between his own committee and Thatcher's. In his memoirs, he wrote, "Margaret [Thatcher] had already established the Overseas Defence (Gulf) -- OD(G) -- Cabinet committee to oversee the crisis." *John Major, The Autobiography* (London: HarperCollins, 1999), 221.

¹⁸¹ Peter de la Billière, *Storm Command: A Personal Account of the Gulf War* (London: HarperCollins, 1992), 20-21.

¹⁸² Munro, 82-84.

¹⁸³ *Ibid.*, 86.

¹⁸⁴ de la Billière, 39.

¹⁸⁵ Michael Carver, *Britain's Army in the 20th Century* (London: Macmillan, 1998), 460.

¹⁸⁶ The Army jumped the gun, anticipating the War Cabinet's approval. As early as 11 September, the Army's high command contacted Brigadier Cordingly to inform him that his brigade would probably be deployed to the Persian Gulf. The War Cabinet actually decided to send the brigade on 13 September and was forced to delay announcing its decision until Saudi permis-

sion had been obtain for the deployment. Patrick Cordingly, *In the Eye of the Storm: Commanding the Desert Rats in the Gulf War* (London: Hodder and Sloughton, 1996), 6; and Munro, 93-95.

¹⁸⁷ Cordingly, 4-7.

¹⁸⁸ The British brigade possessed 117 Challenger 1 tanks. Entering service during the 1980s, the Challengers were heavily armored with hi tech composite (Chobham) substances and armed with a powerful 120 mm cannon. The 1st Marine Division possessed approximately 120 M60A3 tanks. The M60's basic design dated back to the 1960s. Possessing only traditional steel armor and a 105mm gun, the tank lacked either the firepower or protection of the Challenger 1. Compared to Iraqi tanks, the M60A3 outclassed the T-55s, T-62s, Type-59s and Type-69s comprising the bulk of Iraqi armored forces. However, the T-72s equipping Iraq's elite Republican Guard possessed numerous advantages over the M60. Cordingly, 23-25.

¹⁸⁹ *Ibid.*, 26-27.

¹⁹⁰ de la Billière, 16.

¹⁹¹ *Ibid.*, 12-13.

¹⁹² Interview with General Peter de la Billière, London, July 13, 2005.

¹⁹³ Thatcher, 825-26.

¹⁹⁴ About personnel numbers, de la Billière claims, "At first Whitehall wanted to keep numbers down to about six thousand, the Army bid for ten thousand, but was prepared to settle for seven thousand five hundred. And yet the total requirement identified after an in-theatre reconnaissance soon reached eleven thousand five hundred, a fact which had yet [on 25 September] to be communicated to the Prime Minister." de la Billière, 17; and Imperial War Museum Oral History Archive 13470, General Peter de la Billière, February 1993.

¹⁹⁵ Interview with General Peter de la Billière, London, July 13, 2005; and Craig, 187.

¹⁹⁶ In de la Billière's own terms, "I was concerned by the idea of our forces going into battle with the US Marines, for not only had they been placed in the sector opposite the most heavily fortified Iraqi positions, they also had the reputation of being exceptionally gung-ho and the official prognosis put the amount of casualties they might suffer in an attack as high as seventeen percent. Further, we knew that the Marine Corps were nervous about their own future... and that they imagined that the best way of avoiding cuts would be to win the war against Saddam on their own." de la Billière, 48, 93; and Interview with General Peter de la Billière, London, July 13, 2005.

¹⁹⁷ According to de la Billière, "It was my job to make sure that I got along with Norman Schwarzkopf and Khaled. And I put a great deal of effort into this because if I fell out with them it was going to ripple down the system as far as the troops were concerned and was going to rip-

ple down the system so far as Whitehall was concerned." Imperial War Museum Oral History Archive 13470, General Peter de la Billière, February 1993.

¹⁹⁸ Imperial War Museum Oral History Archive 13470, General Peter de la Billière, February 1993; and de la Billière, 39.

¹⁹⁹ According to de la Billière, "To infiltrate him (Lieutenant Colonel Tim Sullivan) into Schwarzkopf's innermost sanctum was no easy task. For one thing the American planners were pathologically secretive about their plans: they habitually classified documents 'Noforn' (not to be shown to foreigners), and at least once tore down maps from the walls when a British officer entered the room unexpectedly." de la Billière, 90-91; and Interview with General Calvin Waller, Deputy Commander of Central Command, *Frontline: The Gulf War* www.pbs.org/wgbh/pages/frontline/gulf/oral/waller (last consulted April 6, 2008).

²⁰⁰ De la Billière therefore became privileged to information classified 'Noforn,' for no release to non-American personnel, which his political and military superiors were not. Interview with General Peter de la Billière, London, July 13, 2005; and de la Billière, 39-40.

²⁰¹ The extent to which the American plan from early October was motivated by military calculations or desiderata is open to question. Falcona, who participated in the briefing, claims that insufficient forces rendered a frontal attack necessary. Schwarzkopf himself wanted reinforcements and admits that, "I had tried every way I could to make it very clear to everyone in Washington that were we required to go on the offence, it would require more forces." Many in Washington felt that Schwarzkopf's preliminary plan was deliberately intended to pressure Washington into sending him reinforcements. See Rick Francona, *Ally to Adversary: An Eyewitness Account of Iraq's Fall from Grace* (Annapolis: Naval Institute Press, 1999), 70; and Interview with General Norman Schwarzkopf, Commander of Central Command, *Frontline: The Gulf War* www.pbs.org/wgbh/pages/frontline/gulf/oral/schwarzkopf (last consulted April 7, 2008).

²⁰² Casualty estimates for the initial American plan ran as high as 20,000. de la Billière, 84-85; and Francona, 74.

²⁰³ Secretary of Defense Richard Cheney requested options for liberating Kuwait in early October. The American planning group, which included the United Kingdom's Lieutenant-Colonel Sullivan, concluded that the only feasible attack with the forces available was directly into Kuwait, where Iraqi defenses were the strongest. Generals Schwarzkopf and Powell both hoped that the gloomy provisions of this plan would prompt the American government to send massive reinforcements. See Francona, 69-77.

²⁰⁴ Wolfowitz was visiting the 1st Marine Division, to which Cordingly's 7th Armored Brigade was attached. Cordingly told Wolfowitz, "The odds are appalling. There are something of the order of thirty Iraqi divisions in Kuwait now. The Marine Corps has what? -- one large division. There's the US Army's 24th Mechanical Division and a few others. Say five, maybe six divisions in all.... as soon as we hit the obstacle belt and start to bunch up behind it, he'll hit us with everything he's got, artillery and chemical." Cordingly, 50.

²⁰⁵ de la Billière, 84-85; and Interview with General Peter de la Billière, London, July 13, 2005.

²⁰⁶ Both Secretary of Defense Cheney and National Security Advisor Brent Scowcroft had pushed for a flanking movement to the west and were incensed by CENTCOM's original plan.

²⁰⁷ de la Billière, 93; and Interview with General Peter de la Billière, London, July 13, 2005.

²⁰⁸ Munro, 176-77.

²⁰⁹ de la Billière,

²¹⁰ Carver, 461.

²¹¹ Even Thatcher recalled the problems posed by the Challenger's unreliability in her memoirs. Thatcher, 825; and de la Billière, 264.

²¹² According to Thatcher, she had personally convoked the leadership of Vickers to ensure that they provided exemplary support for Challengers deployed in Saudi Arabia. Interview with General Peter de la Billière, London, July 13, 2005; and Thatcher, 825.

²¹³ Through modifications and constant filter cleaning, British mechanics and engineers improved the Challenger's reliability from one tank incapacitated every 2.8 kilometers, to one incapacitated every 6.8 kilometers. While the Challenger engine reliability was still poor, this 142 percent increase in reliability, coupled with plentiful spare engines, enabled the British to fulfil their role in the offensive. de la Billière, 265.

²¹⁴ According to de la Billière, "I think everybody was really surprised. I think a lot of people had been saying that we were under-resourced in Germany and that the equipment wasn't properly maintained. But I don't think that anybody really thought that it was going to boil down to the fact that all we could really put in the field with effective armor that was going to be capable of fighting and sustaining the logistic demands--that it would come down to one division [out of the four in Germany].... They had to cannibalize all the armor from the other divisions. A lot of the personnel from other divisions. A lot of the other military equipment you know, gunners and so on, from other divisions from within the corps and effectively Germany would have been unable to hold the line if the Russians had attacked." Interview with General Sir Peter de la Billière, Senior British Commander, *Frontline: The Gulf War* www.pbs.org/wgbh/pages/frontline/gulf/oral/billiere (last consulted April 8, 2008).

²¹⁵ Interview with General Peter de la Billière, London, July 13, 2005.

²¹⁶ Although planning continued between October and December 1990, the SAS greeted the hostages' release on 6 December with relief because of their failure to produce a viable rescue plan. Most well-known hostage rescues have succeeded because of the incompetence of the forces holding the hostages. The Belgian hostage rescue in Stanleyville in 1964 and the French at Kolwezi in 1978 both occurred against poorly trained opponents. The possible fate of a SAS

attempt in Iraq may best be seen by examining the many vicissitudes they faced while "Scud hunting" in Western Iraq. According to de la Billière, "I thought that we had to do something about the release of the hostages, particularly if we were going to embark on bombing operations. Special forces in the initial stages were tasked with the role of collected adequate intelligence and trying to devise a means of releasing as many hostages as we could. It was an impossible task and we didn't get the information we needed because it just wasn't available, and as soon as we got information, it was dated because Saddam Hussein was moving the hostages around." Imperial War Museum Oral History Archive 13470, General Peter de la Billière, February 1993; and Peter Ratcliffe, *Eye of the Storm: Twenty-five Years in Action with the SAS* (Miami Florida: Lewis International, 2000), 180-81.

²¹⁷ Ratcliffe, 181.

²¹⁸ The SAS is divided into four squadrons. Three squadrons deployed to Saudi Arabia, while one remained behind in the United Kingdom to deal with a possible terrorist threat. At the time, there were significant fears of Iraqi sponsored terrorists. *Ibid.*, 185-86.

²¹⁹ According to de la Billière, "Initially Norman Schwarzkopf was understandably skeptical about special forces and he did not want to see a lot of special forces deploying deep into Iraq, way out on the Western flank, outside the area where he was going to be fighting, where he would be forced to rescue them." Imperial War Museum Oral History Archive 13470, General Peter de la Billière, February 1993.

²²⁰ Interview with General Peter de la Billière, London, July 13, 2005; and Interview with General Sir Peter de la Billière, Senior British Commander, *Frontline: The Gulf War* www.pbs.org/wgbh/pages/frontline/gulf/oral/billiere (last consulted April 8, 2008).

²²¹ André Dumoulin and Eric Remacle, *L'Union de l'Europe occidentale: Phénix de la défense européenne* (Brussels: Bruylant, 1998), 231.

²²² Ultimately, the WEU force achieved the respectable size of 32 ships (21 warships, 2 minesweepers and 9 support ships) provided by nine states (France, Italy, the United Kingdom, Spain, the Netherlands, Belgium, Greece, Turkey and Denmark). Although France, Italy and the United Kingdom would have deployed forces anyways, most of the other states would not have participated in sanctions enforcement had the WEU not provided an international varnish to such activities. Belgium even went so far as to prohibit its ships from transiting the Suez Canal before the WEU had agreed to collective action. René van Beveren, "Belgium and the Gulf Crisis, August 1990-March 1991," in *Western Europe and the Gulf* (Paris: The Institute of Security Studies, Western European Union, 1992), 9-12; Carlos Zaldivar and Andrés Ortega, "The Gulf Crisis and European Cooperation on Security Issues: Spanish Reaction and the European Framework," in *Western Europe and the Gulf*, 129-36; Pierre Bonnot, "La marine dans la guerre du golfe," in *La participation militaire française à la guerre du golfe* (Paris: CEHD, 2001), 69-71; Interview with Admiral Pierre Bonnot, Saumur, December 4, 2004; and Interview with Admiral Jacques Lanxade, Paris, March 24, 2005.

²²³ According to his own recollections, Craig preferred bilateral coordination with "frank, plain-talking, friendly and uncomplicated" Americans to "complex multilateral" coordination with "bickering Europeans." Craig, 199.

²²⁴ Interview with Admiral Pierre Bonnot, Saumur, December 4, 2004.

²²⁵ Craig, 168, 189-90, and 243; and Interview with Admiral Pierre Bonnot, Saumur, December 4, 2004; and Craig, 194.

²²⁶ Craig mentions the *Blue Ridge*, *Midway* and *Lasalle* by name. See Craig, 199.

²²⁷ *Ibid.*, 214.

²²⁸ The destroyers involved, *Gloucester* and *Cardiff*, both belonged to the same Type 42-class as the *Sheffield*, which had been sunk by Exocet attack during the Falklands War (see previous case study). *Ibid.*, 198, 220.

²²⁹ *Ibid.*, 236-38.

²³⁰ De la Billière had discussed the concept of "proportionate risk" with Craig earlier in the campaign. However, Craig's bid to play a significant role led him to commit himself to commit more British ships to hazardous situations than he ideally should have. Craig freely admits this in his memoirs, "I committed my forces... making just the disproportionate contribution that the General and I had agreed to minimize." *Ibid.*, 187-88, 246.

²³¹ *Ibid.*, 246.

²³² The United States Air Force had specifically requested that the RAF dispatch Tornados and their anti-runway munitions to the Persian Gulf. Once in theatre, Tornado / JP233 was considered one of the coalition's premiere air defense suppression assets, along with the F-117 Stealth Fighter, Tomahawk cruise-missiles and air-defense suppression F-4 Wild Weasels. At a cost of over £1 million per JP233 (compared to \$1.2 million for the American Tomahawk cruise missile), the weapon was also one of the most expensive conventional munitions ever developed. House of Commons, Hansard Debates, Henry Cohen (Leyton), May 2, 1991; and House of Commons, Hansard Debates, Tom King (Minister of Defense), Column 106, January 21, 1991.

²³³ House of Commons, Commons Written Answers, Archie Hamilton, Column 166, March 20, 1991.

²³⁴ Between four and six hours was a figure for Iraqi airbase repair cited in Centner's article. The overall commander of British force in the Persian Gulf, General Peter de la Billière, cited 48 hours. Historically, damaged runways have been repaired comparatively rapidly. For example, during the 1973 Arab-Israeli War, Arab repair teams restored damaged runways after an average of nine to twelve hours. Christopher Centner, "Ignorance is Risk: The Big Lesson from Desert Storm Air Base Attacks," *Airpower Journal*, 6, no. 4 (Winter 1992): 25-35; also located in: www.airpower.maxwell.af.mil/airchronicles (last consulted August 1, 2007); and de la Billière, 208-30.

²³⁵ Hine's decision temporarily relegated the RAF to unglamorously dropping traditional gravity bombs from medium altitude. To help the RAF return to the cutting-edge of the air offensive, Hine ordered aging Buccaneer bombers to deploy to the Persian Gulf, because only these soon-to-be retired aircraft carried laser-designating pods. After a rushed deployment and rapid training, Buccaneers and Tornados began conducting precision bombing missions on 2 February and struck valuable Iraqi targets until the end of the 43-day air war. The RAF deployed a total of six Buccaneers to the Persian Gulf. The Blackburn Buccaneer had originally entered service with the Royal Navy in 1961 as a carrier-borne strike aircraft optimized to deliver nuclear bombs against Soviet ships. By 1991, the aircraft was serving with the RAF and was slated for retirement. However, the Buccaneer was the only British aircraft equipped to deliver laser-guided munitions. Because of the scope of the American air effort, the United Kingdom did not need to send additional aircraft. However, the RAF feared the budgetary consequences of appearing to have been forced to withdraw from the main air effort. Thus, as an airman, Hine pushed for the deployment of Buccaneers, which alone could permit the United Kingdom to attack precision targets. Initially, Buccaneers guided bombs dropped by accompanying Tornados. Between 2 and 13 February, Buccaneers guided 169 laser-guided bombs to destroy 24 bridges. From 14 February, the British shifted from bombing bridges to ammunition bunkers and equipment storage areas. Finally, from 21 February, the Buccaneers began carrying their own bombs, which they guided as well. Tim Laming, *Buccaneer: The story of the last all-British strike aircraft* (Sparkford, Somerset: Patrick Stephens Limited, 1998), 131-34; and Interview with General Peter de la Billière, London, July 13, 2005.

²³⁶ William Rosenau, *Special Operations Forces and Elusive Enemy Ground Targets: Lessons from Vietnam and the Persian Gulf War* (Santa Monica: Rand Corporation, 2001), 42.

²³⁷ Coalition aircrew claimed to have destroyed approximately 80 Scud launchers by the end of the war. However, post-war investigations by United Nations arms inspectors revealed that none were actually hit. What allied aircrews reported to be Scud launchers were probably trucks and Scud decoys, which were difficult to distinguish from genuine Scud launchers. Eliot Cohen et al. *Gulf War Airpower Survey*, vol. 2 (Washington D.C.: United States Government Printing Office, 1993), 180-91.

²³⁸ Ratcliffe, 193.

²³⁹ The British (regular) SAS consists of four operational squadrons, with a theoretical establishment of 64 men apiece. Two-and-a-half squadrons participated in the Gulf War, while one squadron remained available for anti-terrorism duty in the United Kingdom. For their incursions into Iraq, two squadrons deployed into four mobile patrols, comprised of 26 men and 13 vehicles (six Land Rovers, six motorcycles and one Unimog truck) apiece. Because of a lack of suitable vehicles, the B squadron's half squadron in the Saudi Arabia deployed by helicopter, in eight man patrols, to locations where they established concealed observation posts. Cameron Spence, *Sabre Squadron* (London: Penguin, 1997), 39.

²⁴⁰ Andy McNab, *Bravo Two Zero* (London: Bantam, 1993).

²⁴¹ Spence, 136-57.

²⁴² Ibid., 310-27.

²⁴³ Some controversy exists about the whether special forces succeeded in destroying Scud missiles or, at least, hindering their operations. According to General Charles (Chuck) Horner, the commander of the coalition air campaign, the SAS located at least one Scud convoy and guided American aircraft to destroy it. Although not giving any details, de la Billière wrote, "By continuously refining their own tactics, they [the SAS] turned their campaign into one of outstanding success. Not only did they take out take out launchers with ruthless precision, but also the suddenness of their own attacks and the uncanny speed with which enemy aircraft arrived overhead so inhibited the remaining launch teams.... The result was that attacks on Israel were effectively suppressed. American special forces, which operated in western Iraq for a shorter time, claimed to have destroyed 12 Scud launchers after the war. However, the United Nations Special Commission, whose task was to oversee the disarmament of Iraq's prohibited weapons, concluded that no mobile launchers had, in fact, been destroyed. The Pentagon itself similarly began to raise doubts about the figures advanced by American special forces. Finally, despite a spate of publications by former SAS personnel, not one mentions the destruction of a Scud launcher or missile. Special forces personnel, both American and British, have also argued that while they may not have destroyed Scuds, at least they hindered the ability of Iraqi forces to launch their missiles. However, analysts have challenged this claim as lacking an evidential basis. See Chuck Horner and Tom Clancy, *Every Man a Tiger* (New York: G.P. Putnam's Sons, 1999), 383; Rosenau, 39-43; de la Billière, 226; Ratcliffe; Spence; and McNab.

²⁴⁴ Interview with General Peter de la Billière, London, July 13, 2005.

²⁴⁵ Rosenau, 35.

²⁴⁶ The memoirs include: de la Billière (1992), McNab (1993), Spence (1997), Ratcliffe (2000); Peter Crossland, *Victor Two: Inside Iraq - The Successful SAS Mission* (London: Bloomsbury Publishing, 1996); Chris Ryan, *The One that Got Away* (London: Century, 1995); and Mike Coburn, *Soldier Five: The Real Story of the Bravo Two Zero Mission* (London: Mainstream, 2004). Derivative products include two made-for-television movies starring (*Bravo-Two-Zero* starring Sean Bean, and *The One that Got Away* starring Paul McGann), a History Channel documentary (*SAS - Behind Iraqi Lines*), and several books written by non-participants.

²⁴⁷ Ratcliffe, 308.

²⁴⁸ Although the Iraqi Air Force refrained, except for one effort on 24 January, from attacking the coalition fleets, British vessels exposed themselves to such a danger throughout the war. Iraq had been the largest user of French-built Exocet anti-ship missiles and still possessed large stocks in 1991. In Argentine hands, identical Exocets had sunk three British ships during the Falklands War, including one (the *Sheffield*) identical to the two British ships (*Cardiff* and *Gloucester*) comprising the British radar picket. The only Iraqi Air Force attempt at an anti-ship raid occurred on 24 January, when four Iraqi aircraft (two MiG-23s and two Mirage F1s) attempted to reach the fleet, but were shot down by a Saudi F-15 fighter. See Craig, 227-32.

²⁴⁹ Four Iraqi ships were sunk and 14 damaged. See Craig, 239.

²⁵⁰ The Iraqi movements began in daylight, which convinced Craig that they could not have been attempting to attack the coalition fleet, which lay more than 100 miles away. Later, prisoners claimed that their superiors had ordered them to seek refuge in the Iranian port of Bandar Khomeini. See Iain Ballantyne, *Strike From the Sea: The Royal Navy and US Navy at War in the Middle East, 1949-2003* (Annapolis: Naval Institute Press, 2004), 111; and Craig, 240.

²⁵¹ Craig, 240.

²⁵² Kiowa Warrior helicopters reportedly sunk six further Iraqi vessels, while US Navy attack aircraft finished off several already damaged. Ballantyne, 109.

²⁵³ Craig, 244-45.

²⁵⁴ *Ibid.*, 246.

²⁵⁵ *Ibid.*, 256.

²⁵⁶ Final Report to Congress: Conduct of the Persian Gulf War, (Washington D.C.: April 1992), 200.

²⁵⁷ Coalition intelligence indicated that no mines had been laid where the *Princeton* and *Tripoli* struck mines. Thus, no efforts had been made to sweep the area. Craig, 259-62.

²⁵⁸ *Ibid.*, 275.

²⁵⁹ Final Report to Congress: Conduct of the Persian Gulf War, 183-85.

²⁶⁰ Cordingly, 218.

²⁶¹ de la Billière, 287-88.

²⁶² In one incident, Iraqi tanks attacked British reconnaissance vehicles, which withdrew after suffering two deaths, but destroying several tanks.²⁶² Soon, "friendly fire" claimed more British dead, when American A-10 anti-tank aircraft mistakenly attacked two British infantry fighting vehicles, killing nine soldiers and wounding 11. de la Billière, 292-95.

²⁶³ Obtaining the objective took two days. The commander of 7th Armored Brigade had estimated that it would take four, while the commander of the 1st Armored Division guessed ten. *Ibid.*, 297.

²⁶⁴ *Ibid.*, 300.

²⁶⁵ As noted already noted in the chapter on French operations, the United States was prepared to entrust critical objectives to the French, but hesitated to do so because of the politicization of how they decided when and where to commit themselves. Francona, 70.

²⁶⁶ A total of nine Tornados were lost (seven British and two Saudi) during the war, and a total of 2,482 sorties were flown. This meant that 3.6 Tornados were lost for 1,000 sorties, which compares extremely unfavourably to the figures for F-16s (0.2), F-18s (0.02) and F-15Es (0.9). Moreover, British Tornados suffered a loss rate of 4 percent during until 23 January, when they abandoned low-level missions. Up till this date, they lost six Tornados for 148 sorties. *Gulf War Air Power Survey*, vol. 5, (Washington D.C.: U.S. Government Printing Office, 1993), 651; and "The Gulf War Campaign Diary," Royal Air Force, www.raf.mod.uk/gulf (last consulted August 1, 2007).

²⁶⁷ Huntington approvingly quotes a 1936 United States Command and General Staff College publication stating, "Politics and strategy are radically and fundamentally things apart. Strategy begins where politics ends. All that soldiers ask is that once the policy is settled, strategy and command shall be regarded as being in a sphere apart from politics." Huntington, 308.

²⁶⁸ Royal Navy ships regularly carried nuclear depth during their peacetime deployments. When political leaders realized this, they wanted to disembark the weapons before British ships sailed for the South Atlantic. However, the Royal Navy delayed opposing technical arguments (no transport ships could be spared to bring the weapons back to the United Kingdom, no storage could be found at Ascension Island, and removing the weapons would cause operational delays). Thus, the weapons went with the fleet to the South Atlantic, but were centralized in the two aircraft carriers, where they were presumably better protected. Although the British never considered using the weapons against the Argentines, Lewin thought they provided insurance in case Soviet submarines intervened on behalf of the Argentines. See Freedman, *The Official History of the Falklands Campaign*, vol. II, *War and Diplomacy*, 57-62.

²⁶⁹ For example, during the 1991 Gulf War, British forces suffered 24 combat deaths. Of these, four were SAS personnel (out of 120) and eight were Tornado flight crew (out of approximately 200 personnel). Thus, a pool of only 320 personnel produced half of the United Kingdom's fatalities. Meanwhile, conventional British ground forces, numbering 33,000 personnel, accounted for only 12 deaths.

²⁷⁰ This list includes only deployments of force that can be qualified as "post-colonial" and "interventions." These parameters explain why some of the United Kingdom's largest uses of force to figure on this list. The long counter-insurgencies in Borneo (1962 to 1967) and South Arabia (1955 to 1967) were part of the process whereby the United Kingdom attempted to maintain order and hold-off would be predators as it divested itself of its overseas colonies. The Irish Troubles are also omitted because the British armed forces sought to maintain authority over part of the United Kingdom's core territories. For information on the other interventions, see West, 218-23; Carver, 407-45; Ballantyne, 60-62; Eric Grove, *Vanguard to Trident: British Naval Policy Since World War Two* (Annapolis: Naval Institute Press, 1987), 330-32; and "Britain's Small Wars, 1945 - 2005," www.britains-smallwars.com (last consulted May 7, 2008).

Chapter IX:

Conclusion

I. Introduction

This dissertation explores how civil-military relations and institutional structures of defense policymaking shape how states develop military power. In this concluding chapter, after summarizing the main argument, I briefly consider what civil-military legacy theory has to say about efforts to create a European Defense and Security Identity and reform NATO. I then suggest avenues for future study that build on the findings presented here.

II. Civil-Military Crises and their Legacies

Civil-military legacy theory is a valuable analytic framework for combining civil-military and institutional outlooks on defense policymaking into a powerful tool capable of predicting the types of military power that different states will produce. As explained in Chapter 2, European defense policymaking institutions evolved considerably between the industrial and political revolutions of the late 18th century and the middle of the Cold War-era. Although many developments were the functional product of the evolution of technology and warfare, variations in civil-military relations exercised a profound impact on who came to control defense policymaking in different states. In states that experienced significant civil-military strife, such as France, civilians developed control mechanisms for managing the armed forces and limiting their influence over politics. In states where modernization occurred against a backdrop of military obedience to political authorities, such as the United Kingdom, the result was institutions that guaranteed an autonomous sphere of military competence.

Compared to Samuel Huntington's classic analysis of civil-military relations, civil-military legacy theory reverses the causal relationship between forms of civilian control over the armed forces and the degree to which a state suffers from civil-military conflict. In France, invasive civilian control of the armed forces was not the cause of problematic civil-military relations, but an understandable response to civil-military crises. The fundamental cause of poor French civil-military relations is to be sought in the nation's chaotic political evolution, which saw 12 changes in the form of regime between 1789 and 1958, of which five were the result of revolutions, four of military defeat and three of coups d'état. Battling for power, opportunistic civilian factions learned to instrumentalize portions of the army to win power. However, once soldiers developed a taste for political intrigue and advanced policy preferences of their own, it became necessary to develop institutional structures to control them.

If French invasive control mechanisms were the product of civil-military strife beginning with the revolution of 1789, the comparative autonomy enjoyed by the British armed forces was the result, rather than the cause, of the United Kingdom's tranquil political evolution. Rather than suffering from revolutionary tumult, British political institutions progressively adapted to the pressures of modernity, accommodating in a single constitutional framework the gradual weakening of the monarchy and the House of Lords, increases in popular suffrage and the creation of social welfare provisions. In this context, the armed forces had few opportunities or motivations to intervene in politics, and political leaders had even less cause to develop invasive control mechanisms to prevent them from doing so.

Although defeat in warfare and developments in military technology also effected the evolution of defense policymaking institutions, the frequency of civil-military strife was the principal cause for the existence of institutional mechanisms permitting civilian leaders to invasively control the armed forces. The institutional causes of defeat in inter-state warfare are frequently

ambiguous and can lead to either the strengthening or weakening of military autonomy. Arguably, the German Army was never as politically influential as in the years of the Weimar Republic and the immediate result of France's defeat in 1940 was a military dictatorship that put many of the country's elected leaders on trial. Likewise, technologically driven developments, such as the creation of general staff structures to manage railway mobilization or procurement organizations able to oversee high technology military innovation, can be accommodated by institutions that accord a greater or lesser degree of authority to the military high command.

The causes of civil-military tension diminish as a state industrializes economically and consolidates democratically, such that the risk of a military coup d'état is virtually non-existent in today's advanced industrialized democracy. For this reason, the civil-military control mechanisms of advanced industrial states are essentially fixed. In those states where invasive control mechanisms have not been developed for lack of civil-military problems, they are unlikely to be created once a state reaches advanced industrial status. Conversely, states that have developed invasive civil-military control mechanisms are likely to conserve them even once political and economic developments have eliminated the root causes for their creation. As theories of path dependency indicate, institutions persist long after the circumstances underlying their creation have changed because of organizational inertia and the fact that institutions frequently underscore positive externalities unanticipated at the time of their creation.

Changes in defense policymaking institutions do occur in advanced industrial states as a result of evolving military foreign policy realities. However, these changes are generally of the second order and obey a path dependent logic. Thus, the strengthening of the British Chief of Defense Staff's position in the early 1980s reinforced the already substantial authority of the British high command by foreclosing the ability of civilian policymakers to instrumentalize inter-

service rivalry. Likewise, measures strengthening the General Delegation for Armaments (DGA) in the late 1970s further diminished the French armed services' input into procurement decisions.

In short, the key steps in a state's development of civil-military policymaking institutions occur during the long process of political and economic modernization culminating in the establishment of modern advanced industrial democracies. States that have suffered from severe civil-military strife will possess invasive control mechanisms permitting civilian leaders to closely manage the creation of military doctrine, the conduct of military operations and the elaboration of procurement programs. Contrarily, armed forces possess greater autonomy in states where civil-military relationships were historically unproblematic. Thus, the dead hand of tumultuous years of economic and democratic development continues to influence defense policymaking in states that are now virtually immune to civil-military crises.

III. Institutions and Policies

The fundamental role of civil-military policymaking institutions is to apportion authority between civilian and military actors. This dissertation has focused on institutional strategies for maximizing civilian control over armed forces, including divesting armed forces of all non-military functions, monitoring their activities with electronic means and oversight agencies, counterbalancing their advice with civilian think-tanks, dividing them with inter-service rivalries and commanding them via parallel, yet redundant, joint staffs. When these control mechanisms were present, civilian leaders exercised maximal civilian control over the armed forces. This meant that their preferences prevailed when it came to elaborating doctrine, developing procurement policies and managing military interventions. Absent the above-mentioned control mechanisms, the military high command will dispose of a greater measure of autonomy to shape these policy areas as they see fit.

As suggested by theories of bureaucratic politics and affirmed by the case studies presented in chapters 3 through 8, political leaders and military professionals have different outlooks on how military forces should be produced and wielded. These differences in perspective are a product of individuals' professional educations and their belonging to bureaucratic organizations. Because of the transversal nature of the three policy domains considered in this dissertation--doctrine, procurement and military operations--differences in perspective between military professionals and civilian policymakers are particularly stark.

In the realm of doctrine, the key criteria for military professionals is maximizing the military performance should war come. This entails tailoring military doctrine to comply with the technical characteristics of armaments and the quantity of military manpower available. Military commanders are also conditioned to prefer the offensive and have bureaucratic incentives for doing so. Thus, when a military high command controls the elaboration of doctrine, it favors solutions that are considered technically sound and, if possible, contain an offensive component.

By way of contrast, the primary desire of political leaders is to not lose control of the state's strategic affairs and, if possible, to achieve their foreign policy goals without the hazardous trial of war. For these reasons, they are more apt to favor deterrent or defensive doctrines. They also are prone to tailor military doctrines to complement diplomatic efforts, reassuring allies of support and convincing adversaries of one's willingness to fight.

In terms of procurement policy, military professionals seek to maximize the value of weaponry they can obtain for a given quantity of money. Armed services are also dominated by platform communities, which seek to regularly replaced existing platforms such as fighter aircraft, with newer and more technologically sophisticated follow-on systems. Contrarily, political leaders have a more holistic view of the economy and attempt to counterbalance the costs of military

procurement by developing arms that can be exported abroad and by spinning technology off into the civilian economy.

Finally, when it comes to operations, military officers draw clear distinctions between war and peace (or "operations other than war" in American parlance). When called upon to intervene, they prefer to do so with a clear mission, overwhelming force and uninhibited by restrictive rules of engagement. Partial to offensive operations, military commanders favor ending a military intervention by decisively destroying an enemy's ability to wage war. For this reason, military professionals abhor being called to use force to bluff, posture or convey diplomatic messages.

For political leaders, military force is only one tool among many for achieving a state's foreign policy objectives. As such, military force is best used in tandem with other policy instruments. Force should rarely be called upon to generate decisive political results on its own. Even if a state is unwilling to bear the costs of sending an adequate military force to a trouble spot, it can send a smaller contingent to bluff or deter an opponent. Likewise, used in limited quantities, military force can be employed to send diplomatic signals.

Because political leaders and military professionals have such different outlooks, it is critical to know the relative influence of the two groups over the policymaking process. As demonstrated in chapters 3 through 8, the preferences of political leaders prevailed in France because they were empowered by the intrusive civil-military control mechanisms originally developed as a response to military interventions in politics. Contrarily, doctrine, procurement and operations were mostly the prerogative of the military high command in the United Kingdom, where these activities fell within the so-called "independent sphere of military competence." Military authority in these domains is a result of the United Kingdom's never having developed invasive civil-military control mechanisms, that would have enhanced political authority to these domains.

Abstracting from the French and British cases, it is reasonable to expect that policy in other advanced industrial states will also be conditioned by the presence or absence of invasive civil-military control institutions. Political leaders will be better able to ensure that their preferences prevail whenever a record of contentious civil-military relations leads states to develop invasive civil-military control institutions. Contrarily, the absence of civil-military conflict translates into more autonomous armed forces, which will be able to pursue their favored policies. At present, nine of the world's advanced industrial democracies have suffered from problematic civil-military relations.¹ In these states, one would predict political leaders' preferences to prevail over military imperatives. The world's 16 other advanced industrial democracies that did not suffer from civil-military crises should see the preferences of military professionals feature more prominently.²

IV. Comparative Institutional Advantage

As demonstrated in chapter 3 through 8, defense policymaking institutions underscore comparative advantages in how states generate military power. Neither the British nor the French system can be demonstrated to be superior to its counterpart. However, each produces a different sort of military output, which may be more or less appropriate to a given situation. As shown in the body of this dissertation, comparative institutional advantage can be discerned in each of the three policy areas--doctrine, procurement and operations--examined.

In terms of doctrine, the presence of invasive civil-military control mechanisms in France translated into military doctrines that were finely calibrated to the state's foreign policies. As such, military doctrine sought to deter the would-be aggressor, affirm France's political independence and convince allies that they would be supported in the event of an attack. Reconciling these oftentimes contradictory imperatives and adapting to the exigencies of the moment (such as

the greater [late-1970s] or lesser [late-1960s] perception of the Soviet threat) required tight civilian control over the formulation of doctrine and that civilian leaders be able to tap into sufficient technical expertise that the resulting doctrines were militarily viable. The parallel staff systems, think-tanks and other advisory bodies beholden to French political leaders fulfilled this role.

The result of France's high degree of civil-military integration was a series of military doctrines that reflected and complemented the state's foreign policy and leaders' perception of the international environment. Political leaders had little difficulty modifying these doctrines to keep them relevant to change political circumstances. When de Gaulle perceived détente as possible and the Atlantic Alliance as solid, his military doctrine of "two battles" permitted him to affirm his autonomy vis-à-vis the United States and position France as a privileged intermediary between the two blocs. Later, when the Soviet Union was perceived as increasingly threatening and NATO as dangerously fragile, Giscard and Mitterrand elaborated doctrines that demonstrated a greater commitment to supporting France's allies. The diplomatic value of politically-attuned military doctrines can be seen in a range of foreign policy successes, from de Gaulle's 1966 voyage to Moscow, the revival of Franco-West German political collaboration in the late-1970s and France's key role in brokering NATO's policy towards the Euromissile Crisis.

The downside of politically-inspired military doctrines is that they may be sub-optimal from a purely military point-of-view. Many of France's military doctrines demonstrated serious technical flaws. The "two battles" doctrine engaged France's ground forces piecemeal; the concept of a single tactical nuclear "warning" salvo was technically complicated given the reconnaissance and command-and-control technologies available; and the Rapid Action Force (Force d'Action Rapide or FAR) remained controversial amongst military professionals. In the case of French doctrine, sub-optimality does not mean that French doctrines were amateurish or unwork-

able, only that they did not yield the maximum military results for a given quantity of combat power.

In the United Kingdom, the absence of invasive civil-military control mechanisms led to doctrines very different from their French counterparts. Formulated by an autonomous military command using the means put at their disposition by political leaders, British military doctrines focused single-mindedly on achieving the maximum military results possible given scarce resources. As such, British military doctrines reflected the lessons that the high command drew from recent conflicts, exercises and what considered to be military "best-practices." Multi-centric and frequently bottom-up (from the brigade level), this process of British innovation permitted the armed forces to incorporate tactical nuclear weapons and anti-tank guided missiles into their doctrines in a timely fashion.

The comparative disadvantage of permitting the armed forces to exercise a substantial influence over the creation of doctrine can be found in poor political-military integration and an emphasis on offensive actions. In the British case, the military doctrines the British Army of the Rhine (BAOR) evolved entirely independently of the state's foreign policy. Whenever considered remotely feasible, which should have been rare given the asymmetry of forces in Central Europe, the British armed forces adopted offensive doctrines. Britain's aerial nuclear interdiction doctrine of 1958 and its maneuver warfare doctrine of the mid-1980s stand out for their offensiveness and the enormous risks of escalation that they entailed. By responding to an outbreak of hostilities with either a tactical nuclear interdiction campaign throughout Eastern Europe or a preemptive conventional attack towards Magdeburg, British doctrines could have transformed an limited or accidental conflict in a global conflagration.

In terms of military procurement, the comparative advantage of intrusive political-military control mechanisms can be found in the promotion of broad economic goals through procurement

policies. By developing weaponry that corresponded to the requirements and budgets of export customers, the French managed to prolong weapons production runs and amortize development costs through extensive arms sales. Meanwhile, by focusing research and development efforts on dual-use technologies, with both commercial and military applications, French weapons producers were comparatively successful at spinning technologies off from military applications to the civilian economy. While Dassault's conquest of the business jet market is emblematic of this process, France's success in commercial jet engines, nuclear power, satellite launches and consumer electronics are all symptomatic of an aptitude to develop dual-use technologies and spin them off into the civilian economy.

The downside of a procurement process controlled by political and economic actors is that it frequently neglected specifically military requirements. For example, the French Air Force received one exportable lightweight fighter after another when it thought it needed heavier interceptors, long-range strike aircraft and combat aircraft capable of taking off from short or improvised runways. Likewise, the French Army received certain weapons for which it had no need, such as the ERC-90 Sagaie armored car, because the vehicle was supposedly marketable to a large number of African and Middle Eastern states. Meanwhile, weapons that had poor export potential and featured few dual-use technologies featured infrequently in the French defense budget. During the Cold War, tanks were a particular victim of this phenomenon. Thus, while invasive political control of procurement diminishes the costs of increases the positive externalities associated with sustaining an independent defense industrial base, armed forces are likely to suffer from weapons that do not meet their operational needs.

The comparative advantage of armed forces playing a more active role in the procurement process lies in the acquisition of weapons tailored to a state's military commitments. In the United Kingdom, this translated into an embrace of high technology solutions needed to counter So-

viet military capabilities to counter Soviet military capabilities. Aircraft were acquired with the VTOL and variable geometry capabilities to survive Soviet attacks on airfields and penetrate enemy air defenses; tanks were developed with the large caliber guns and heavy armor to counter superior Soviet numbers; and warships were produced with the high altitude air defense capabilities to thwart saturation attacks by enemy bombers. At times, remaining militarily formidable entailed purchasing foreign weaponry, such as the F-4 Phantom fighter, M-109 self-propelled artillery piece, Milan anti-tank guided missile and Exocet anti-ship missile.

The disadvantage of this approach resides in the fact that military professionals lack a broader economic perspective. Unconscious of the costs of developing certain military capabilities, commanders frequently demanded technologies exceeding the state's budgetary capabilities. In the United Kingdom, the Royal Air Force's demands for a bi-sonic lower-altitude long-range strike aircraft (TSR-2) and supersonic VTOL fighter (P.1154) are prominent examples of this phenomenon. Even when brought to fruition, specialized weapons designed to counter the world's most sophisticated adversary are rarely desirable or affordable from the point-of-view of small and medium states. Meanwhile, the industrial effort needed to produce these weapons divert a state's scientific and engineering skills away from promising dual use technologies and into commercially limited avenues. In the British context, technical exploits in low altitude navigation systems, VTOL and variable geometry wings was accompanied by a continual contraction in the state's commercial aircraft sector.

In terms of military operations, the comparative advantage of tight political control is that it permits a state to tailor its use of force to the political goals it hopes to obtain. In France, this meant that military actions were closely tied to diplomatic initiatives. Bombing schedules were decided in function of diplomatic meetings and offensives were launched or concluded based on the progress of negotiations. In general, the object of these interventions was not the military

defeat of an enemy, but obtaining some change in an adversary's behavior. Because they did not fear losing control of the situation or being obliged to pay the political or economic prices for deploying overwhelming force, political leaders felt comparatively uninhibited in using force. As a consequence, France conducted (and still conducts) an extraordinary number of foreign military interventions --more than any state besides the United States in the second half of the Cold War.

The drawbacks of political micromanagement of military operations are that purely military factors can be underestimated, operations suffer from a lack of direction when political leaders are inattentive and states may engage in commitments without possessing a military strategy for accomplishing their goals. Military factors were clearly underestimated during the 1969-72 Chadian intervention, where insufficient forces were initially deployed and the 1971 Bison Offensive was aborted for dubious diplomatic reasons. Later, France engaged forces in Lebanon (1978 and 1982 to 1984) and Chad (1978) without having a real plan for how military power would help achieve political goals. Thus, while political control eases the use of the force and favors the achievement of political goals for a minimal expenditure of military resources, intensive political control privileges military miscalculations.

The comparative advantage of greater military control over military operations is that it generally results in overwhelming force being efficiently used to destroy an enemy's military capabilities. Used in this manner, British military forces emerged victorious from each of its military engagements after the dolorous process of decolonization. In many respects, the high degree of autonomy accorded field commanders contributed to hard-won victories in Oman and the Falklands, and underscored the United Kingdom's exceptional influence during the 1991 Gulf War.

The disadvantage of high levels of military influence over foreign interventions lies in the influence over foreign interventions lies in the tendency of military leaders to engage in escalato-

ry policies and their penchant to reduce political problems to military challenges. Because they abhor spatial or qualitative limits on the use of force, military professionals are prone to escalate limited conflicts by using hitherto unavailable means or attacking previously prescribed targets. In Oman, this translated into various efforts to extend the war to South Yemen, while during the Falklands War, the armed forces insisted on using heavy bombers and attacking targets on the Argentine mainland. As a result of their armed forces' escalatory behavior and demands for overwhelming forces, British political leaders were less willing to use force than their French counterparts. Thus, while autonomous military establishments are well-suited to effectively using military force, political leaders frequently lose control of the process and must be prepared to pay the high costs of providing overwhelming force.

Thus, states possess distinctive comparative advantages in how they develop and employ military force. These comparative advantages are rooted in the institutional processes by which civilian leaders control the armed forces. Because civil-military control institutions change little once a state has industrialized and democratized, these comparative institutional advantages are practically immutable. Understanding the applicability of the concept of comparative institutional advantage to defense policymaking provides a powerful intellectual tool for students of security studies. Once a state's civil-military past is understood, it becomes possible to predict the type of defense policies it will enact. Also, knowing the comparative advantages and disadvantages of a state's defense policymaking structures permits one to better its actions. Whereas, doctrinal nuances and tactical events are likely to reflect deliberate foreign policy choices in countries marked by maximal political control of the armed forces. Contrarily, escalatory behavior and offensive doctrines are frequently the inadvertent products of an autonomous military establishment when military political control prevails.

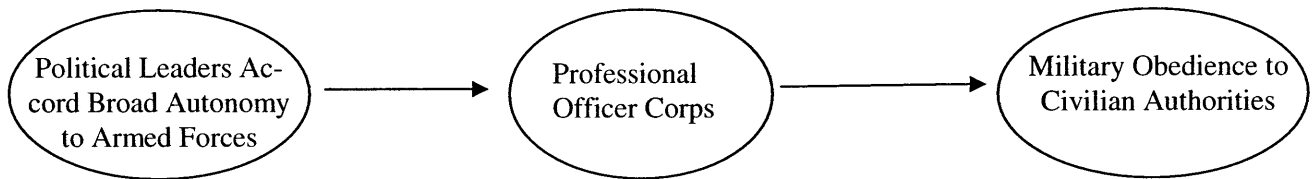
V. *The Soldier and the State* Reconsidered

No work on civil-military relations would be complete without reexamining Samuel Huntington's *The Soldier and the State*. Within this context, civil-military legacy theory trumps Huntington's classic theory of civil-military relations in four crucial respects. Firstly, civil-military legacy theory postulates that modes of civilian control over the armed forces are the product, rather than cause, of distinct patterns of civil-military relations. Secondly, civil-military legacy theory refutes Huntington's claim that civilian control of the armed forces is maximized by recognizing an autonomous sphere of military competence (objective control). Thirdly, Huntington's typology of civilian control of the armed forces presents a false dichotomy because it does not account for the possibility of professional yet closely controlled armed forces. Fourth and finally, legacy theory challenges Huntington's assertion that "objective control" represents the optimal formula whereby political leaders can control the armed forces.

In *The Soldier and the State*, Huntington argues that civil-military relations are a reflection of how political leaders exercise control over the armed forces. On the one hand, when statesmen accord a large measure of autonomy to the armed forces, the armed forces will be animated by a professional ethic and dutifully fulfill the missions assigned to them. On the other hand, persistent political interference in military matters will politicize the armed forces and provoke civil-military crises. Table I, below, illustrates the causal relationship between forms of political control over the armed forces and civil-military relations as presented in *The Soldier and the State*.

**Table I:
Relationships Between Political Control and Civil Military Relations
According to Huntington**

"Objective Control"



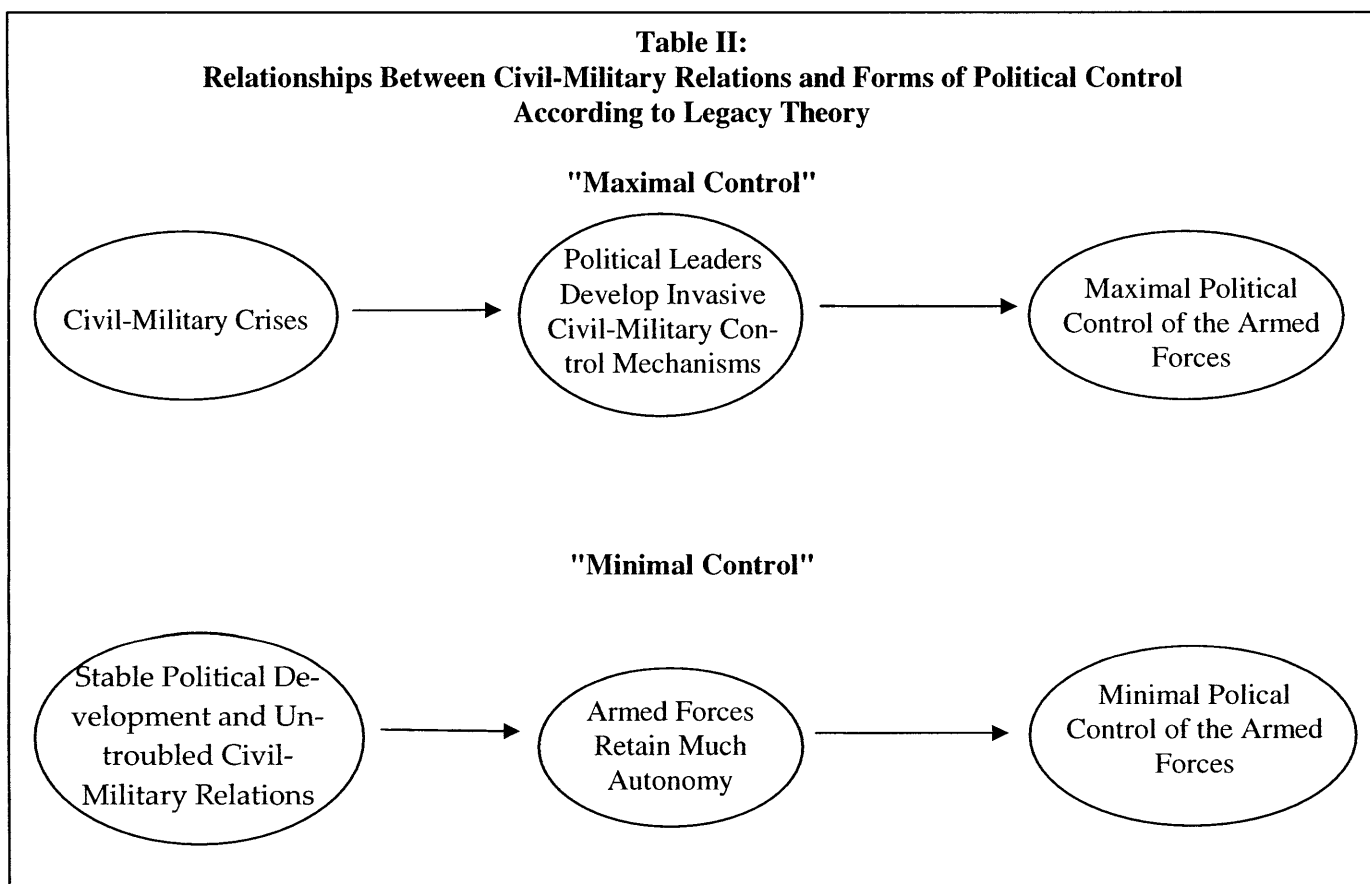
"Subjective Control"



Thus, Huntington's argument is based on the promise that misguided civilian attempts to assert control of the armed forces are the primary cause of civil-military crises, while according armed forces a healthy degree of autonomy provides a sure guarantee of their loyalty and professionalism.

In sharp contrast to Huntington's argument, legacy theory contends that forms of civilian control over the armed forces are the product, rather than cause, of historic patterns of civil-military relations. As demonstrated in Chapter 2, French political leaders developed increasingly invasive methods of controlling the armed forces in response to repeated military interventions in politics, while Britain's history of untroubled civil-military relations permitted the state's armed forces to retain a high degree of autonomy as the state matured politically. In this context, maximal political control is the product, rather than cause, of poor civil-military relations. The origin

of civil-military tensions lies, as *Finer* argued in *The Man on Horseback*, in the overall political evolution of the state.³ States afflicted by revolution, political cabals, radicalism and civil strife are likely to experience civil-military conflicts as well, while states whose political evolution is more stable will enjoy peaceful civil-military relations. Table II, below, illustrates the relationship between civil-military legacies and forms of civilian control of the armed forces according to legacy theory.



In short, legacy theory differs fundamentally with Huntington's argument on the interrelationship between forms of political control of the armed forces and the nature of civil-military relations.

While theoretically important, the opposed causal assertions of Huntington's framework and legacy theory bear weighty normative consequences. Whereas Huntington asks his readers to look to a state's mode of political control of the armed forces for the root causes of civil-

military tensions, legacy theory enjoins policymakers to view civil-military control mechanisms as a symptom and response to civil-military crises. In practical terms, Huntington pleads with states that have suffered from civil-military strife to accord greater autonomy to their armed forces as a means of preventing further troubles. By way of contrast, legacy theory postulates that states that suffered from civil-military crises will have developed control mechanisms to prevent their repetition. In this context, it would be imprudent for governments to accord greater autonomy to military establishments which have already demonstrated their willingness to intervene in politics. Only when a state has developed economically and democratically to the point where a civil-military crisis is unlikely can it afford to dispense with the control mechanisms elaborated during times of duress.

Alongside their divergent analyses of the relationship between forms of civilian control and civil-military tensions, legacy theory differs with Huntington as to how to maximize political control over the armed forces. Huntington argued that political leaders can maximize political control by according military professionals an autonomous sphere of competence within which political leaders will not interfere. According to Huntington, any effort to impose a greater degree of control will backfire by politicizing the armed forces and prompting military interventions in politics.

In opposition to Huntington, legacy theory proposes that political leaders can impose a greater degree of control over the armed forces than entailed in Huntington's "objective" civilian control. Through intrusive control institutions, including parallel command structures, think-tanks and monitoring mechanisms, political leaders can shape military operations, doctrine and procurement. This maximal form of political control over the armed forces is more complete than Huntington's objective control, which limits the purview of civilian authority to a narrow set

of issues, such as designating foreign political objectives and allocating the budgetary means to accomplish them.

The fact that Huntington's favored model of "objective control" features weaker civilian control of the armed forces vis-à-vis "maximal control" highlights two shortcomings in Huntington's analysis. Firstly, Huntington underestimated the capability of institutional structures to permit political leaders to exert power over the armed forces without undermining their professionalism. Thus, Huntington's theoretical framework is based on a false dichotomy wherein the only alternative to granting the armed forces a large margin of autonomy is by politicizing the officer corps through "subjective control." The second flaw in Huntington's analysis is his faith in the ability of a well-developed professional ethic to render military officers disinterested servants of the state. As Morris Janowitz argued in *The Professional Soldier: A Social and Political Portrait* the development of a professional ethic imbues military officers with policy preferences designed to enhance their prestige and influence as a group.⁴ Consequently, when given a wide measure of autonomy, as Huntington recommends, military leaders pursue their own policy agendas rather than those of the governments they serve. In the British case, the preferences of the British officer corps as a professional group were manifested in offensive doctrines and escalatory behavior during foreign interventions.

Overall, the picture of civil-military relations provided by legacy theory is more complex and nuanced than that Huntington articulated over 50 years ago. Contrary to Huntington's assertion, there is no formula for simultaneously optimizing civilian control and military effectiveness. Based on a dense network of institutions, "maximal" civilian control of the armed forces offers the highest degree of political authority over defense policymaking attainable in a democracy. From a strategic point-of-view, the advantage of such a system is that it guarantees that military actions and preparations will be tailored to the state's overall policy. Huntington's "objective con-

control," equated in this dissertation with "minimal control," offers comparatively less political control of military activities. The countervailing advantage of minimal control is that it maximizes the tactical and operational effectiveness of a military force. Ultimately, it is far from apparent whether either of these two models is clearly superior to the other.

By comparison with both "maximal control" and "minimal/objective control," efforts to control a military organization by politicizing its officer corps--Huntington's "subjective control"--are likely to be detrimental to both political control and military efficiency in the long term. However, the tendency of states to develop institutions to regulate civil-military tensions and the easing of civil-military problems as a state develops make it unlikely that pure forms of "subjective control" persist in advanced industrial states. Rather, "subjective control" is most likely to be found in transitional or unstable democracies, where civil-military tensions are still prevalent and political leaders have not yet had the time to develop appropriate institutional responses.

VI. Domestic Institutions and International Alliances

At peace amongst one another, many advanced industrial democracies collaborate with one another in multilateral structures and bilateral alliances. This trend is particularly advanced in Europe, where most states are involved in multiple overlapping security structures, including NATO and the European Union's emerging European Security and Defense Policy. A bewildering variety of more specialized bi- and multi-lateral structures have also emerged, including a Franco-German security council, an Anglo-Dutch amphibious force, a Belgian-Dutch minesweeping flotilla, the multinational (France, Germany, Spain and Belgium) Eurocorps and a German-Polish armored corps. Armaments are increasingly being developed in collaboration by consortiums of states and military interventions are more frequently undertaken by coalitions. Because of the growing role of cooperation, military doctrines may soon become international as

well. Within this context, it is worthwhile to examine the impact of distinct national defense policymaking institutions on inter-state security cooperation.

Conceptually, there are reasons to suppose that differences in national defense policymaking institutions can impede international cooperation. Most international collaboration in the security field is structured around meetings between individuals occupying similar functions in separate national bureaucracies. For example, a collaborative aircraft program usually begins formally with a meeting of political leaders from the partner countries. Then, representatives of the armed forces from each state establish a set of common requirements for the weapons system. Once requirements are finalized, procurement officials from the relevant states negotiate how the research and development, and production activities will be divided amongst partner states. Finally, a consortium composed of the defense industries of the partner states builds an aircraft according to the requirements agreed upon.

Classic alliances, such as NATO operate according to the same principle. Representatives of the heads of state of the member states decide the orientation of policy at meetings of the North Atlantic Council. Then, directives involving the use of force are transmitted to multinational planning committees composed of military personnel from the member states. When it comes to actually employing force, responsibility passes to a multinational military headquarters. Although the European Union's institutional procedures for managing the use of force are less developed than NATO's, it will probably evolve along similar lines.

Given the importance of peer-to-peer meetings to security collaboration, what happens when the influence of individuals representing their respective national bureaucracies varies drastically? Large and fluctuating asymmetries should impede collaboration. To understand why this is the case, it is worthwhile to examine a generic case of Anglo-French armaments collaboration.

When British and French officers meet to establish requirements for the future weapons system, the influence of the two groups of actors could not be more different. Whereas British military commanders exercise a high degree of control over setting their national requirements, their French counterparts are frequently circumvented or overruled. Then, when it comes time to negotiate work-shares, these asymmetries in power are reversed. Whereas British procurement personnel have the functional of managing projects to answer military requirements, their French counterparts are the dominant actors in their own national procurement process. Responsible for the overall health of the state's military-industrial complex, the DGA's armament engineers regularly re-write military requirements and tamper with the industrial arrangements envisioned to fulfill them. Finally, when it comes time to collaborate at the industrial level, British companies enjoy less direct political access than their French alternatives.

To judge the impact that multiple power asymmetries can have on a collaborative program, we should return to the example of the Anglo-French Variable Geometry (AFVG) aircraft, which was detailed in chapters 5 and 6. The AFVG was an abortive Anglo-French attempt to create a variable geometry fighter-bomber. As is usual, a joint military committee was established to elaborate requirements for the aircraft once political leaders had signed a memorandum of understanding. Laboriously, the military representatives from the two states negotiated an agreed set of joint requirements. Unfortunately for the AFVG project, neither France's procurement agency (the Ministerial Delegation for Armaments or DMA) nor aircraft manufacturer (Dassault) felt bound by the requirements agreed upon by the French Air Force. Dassault resented the work-share agreement and the DMA thought the aircraft too large and sophisticated. Opposition from these two groups precipitated France's withdrawal from the AFVG shortly after joint requirements have been agreed upon.

While different domestic policymaking processes contributed to the failure of the AFVG, similar trends hindered cooperation during foreign military interventions. As discussed in chapters 7 and 8, France had a comparatively difficult time operating alongside allies during the 1990-91 Persian Gulf Crisis because of incompatible defense policymaking processes. Whereas the international coalition's leading partner, the United States, delegated a high degree of autonomy to its commanders, French political leaders micromanaged events from Paris. In the field, the inability of French military commanders to negotiate on equal terms with their allies led to frustration, suspicion of French motives and a loss of French influence within the coalition.

Ironically, the inverse phenomenon occurred in the waters surrounding Arabia at precisely the same time as the French had trouble defining their place in the international coalition. When tasked with participating in the Western European Union's (WEU's) sanctions enforcing operations, the British Royal Navy had difficulty integrating itself with the politically-driven WEU command structure. The local British commander considered the meetings between political representatives of the member states to be tedious and unproductive. Ultimately, the British Navy starved the WEU of anything more than symbolic cooperation.

From the above cases, it appears that states with similar domestic defense policymaking processes collaborate well together, while those with dissimilar systems cooperate only with great difficulty. If states' institutional structures of defense policymaking impact their ability to collaborate together, what impact is this likely to have on European security cooperation?

A close examination of the pre-enlargement (1999 and 2005 respectively) memberships of the European Union and NATO were divided amongst states with histories of civil-military strife and those with more constructive civil-military legacies. Overall, the British Isles, Scandinavia, the Benelux countries and Anglophone states in North America enjoyed good civil-military relations, while Mediterranean and Central European states suffered from civil-military crises. Table

III, below, classifies the historic members of the European Union and NATO according to their civil-military legacies.

Table III:	
Civil-Military Legacies of European Union and NATO Members	
States with Good Civil-Military Legacies	States with Poor Civil-Military Legacies
----- Members of Both the European Union and NATO -----	
Belgium	France
Denmark	Italy
Luxembourg	Germany
the Netherlands	Greece
the United Kingdom	Portugal
	Spain
----- Members of NATO Alone -----	
Canada	Turkey
Iceland	
Norway	
the United States	
----- Members of the European Union Alone -----	
Finland	Austria
Ireland	
Sweden	

If collaboration is difficult between states with diverse patterns of defense policymaking, then both the European Union and NATO are likely to face problems in achieving greater degrees of policy integration than currently exists. Within NATO, this problem is partially resolved by the United States' predominant role. However, even in NATO's case, differences in national defense policymaking processes can undermine collective endeavors. For example, during the 1999 Kosovo War, American military commanders were taken aback by the willingness of certain Eu-

ropean political leaders to forbid the bombing of a wide range of targets. Without a single dominant member, the European Union will probably face even greater problems.

Overcoming the difficulties posed by distinct national policymaking processes is certainly possible, but will require states either converging on a common model or surrendering national sovereignty to supranational institutions. Within the European Union's history, both of these phenomena have occurred. States have harmonized their competition, fiscal and trade policies, and have surrendered control of their monetary policy to the European Central Bank. However, until present, European leaders have been unwilling to spend the political capital or compromise their national sovereignty by supplanting distinct national institutions with a single collective structure. Short of this radical step, which would transform the European Union from a supranational institution to a confederal state, differences in national defense policymaking institutions are likely to constitute a durable obstacle to European security cooperation.

If tensions between distinctive national policymaking processes are likely to undermine large multinational alliances such as NATO and the European Union, similar concerns do not apply to smaller groupings of compatible states. In fact, the record shows a growing and impressive amount of collaboration between advanced industrial democracies that possess similar institutions. For example, after the frustrating experience of the Kosovo campaign, NATO self-selected into two ensembles for the Afghanistan War. Whereas the United States and United Kingdom have operated together under the aegis of Operation Enduring Freedom, other NATO members have collaborated under a common International Stabilization Force (ISAF) command.

Earlier, during the WEU's first intervention in the Persian Gulf in 1987 and 1988, the participating states divided into two ensembles that correspond to their historic differences in civil-military relations. The United Kingdom, Belgium and the Netherlands--all states without legacies of civil-military crises--formed one operational group, while France and Italy formed the

other one. According to participants, coordination of British, Belgian and Dutch operations was informal and managed by commanders in the field, while Franco-Italian cooperation was more political and formulistic.

As far as can be ascertained, successful armaments collaboration is also more common between states with similar defense policymaking institutions. For example, while Anglo-French programs have generally proved disappointing, 14 Franco-German collaborative programs were brought to a successful conclusion between 1958 and 1998. More recently, international defense industry consolidation has followed the lines drawn by domestic policymaking institutions. While aerospace companies in France, Germany and Spain have merged to form the EADS conglomerate, the United Kingdom's BAE Systems has acquired Tracor and United Defense Industries in the United States, Hägglunds in Sweden and Reumech OMC in South Africa.

In short, distinct national defense policymaking institutions will shape security cooperation between advanced industrial states into the distant future. Large formal organizations encompassing states practicing both maximal and minimal control of the armed forces are likely to find it difficult to deepen the degree of security integration that already exists. This means that NATO will have trouble adapting itself to new missions and the European Union's road to creating a truly integrated European army and defense industrial base will be rocky.

However, a more promising future awaits states that choose to pursue integration with other polities sharing the same civil-military legacies. Already, steps can be discerned in this direction. States practicing minimal civilian control of the armed forces are operating increasingly together, as witnessed by the frequency of Anglo-American-Australian operations and a proliferation of joint structures, such as the British-Dutch landing force and a Nordic battlegroup. Meanwhile, states practicing maximal civilian control of the armed forces have also increased their collaborating, giving rise to the European Operational Rapid Reaction Force (EUROFOR)

established by France, Italy, Spain and Portugal, a Italo-Spanish amphibious battle group, a Franco-German brigade and the multinational Eurocorps.

It very well may be that the future of transnational defense integration will see Europe evolve into two blocs. A grouping of states practicing minimal civilian control of the armed forces could emerge under British leadership, encompassing the Benelux states and Scandinavia, and maintaining strong ties with the Anglophone democracies of North American and Oceania. Meanwhile, Central and Mediterranean Europe may integrate around a Franco-German partnership. This grouping will practice maximal civilian control of the armed forces and will maintain more distant relations with the United States.

VII. Avenues for Future Research

The most obvious avenue for exploring the generalizability of civil-military legacy theory is to expand the number of cases considered. Although developed in the context of the British and French cases, civil-military legacy theory should be applicable to other advanced industrialized democracies where armed forces no longer pose a threat, actual or potential, to civilian governments. Because the theory yields clear predictions about what form of civilian control of the armed forces should follow from different patterns of civil-military relations, civil-military legacy theory is easy to verify or disprove. At present, there is very little literature linking historic civil-military relations to present-day defense policymaking in advanced industrial states and civil-military legacy theory provides a good analytic framework for exploring these issues.

Besides re-verifying civil-military legacy theory, expanding the number of cases examined may shed new light on aspects of the theory. The present work identified five institutional mechanisms by which civilian leaders can invasively control the armed forces. These mechanisms include divesting armed forces of non-military functions, intrusively monitoring their activi-

ties, weighing their advice against that provided by think-tanks, exploiting inter-service rivalries, and establishing parallel military staffs. While these institutional strategies are well-documented in the civil-military relations literature and played a critical role in explaining maximal political control of the armed forces in France, there is no reason for supposing that these five institutional strategies represent the sum total of options available to the leaders of democratic states.

Another reason for expanding the list of cases studies would be to examine the relationship between constitutional structures and the form of civil-military control exercised. Both the United Kingdom and France represent cases of powerful control governments that face few institutional checks and balances. Once elected, French presidents or British prime ministers face few constitutional obstacles to imposing the form of defense policy they like best.

This situation is far from ubiquitous in advanced industrial democracies. Some states, such as the United States, feature both a powerful executive and an independent legislature. In Deborah Avant's comparative study of British and American responses to insurgencies, this constitutional difference was credited with fostering weaker American political control of the armed forces. Huntington himself viewed the United States' constitutional checks and balances as a cause of the greater politicization of defense policy. Within this context, it would be valuable to compare the American case, where political checks and balances coexist with a history of peaceful civil-military relations, to a state with comparable political institutions, but a legacy of poor civil-military relations.

One group of states deserves particular attention from scholars desirous of understanding institutional processes of defense policymaking. Since the end of the Cold War, Eastern Europe has transitioned from command to free-market economies, and from communist dictatorship to liberal democracy. While many former communist states have not yet obtained advanced indus-

trial status or finished the process of democratic consolidation, they appear to be moving in this direction.

With the admission of ten former communist states to the European Union and NATO, these states are becoming critical to the functioning of both international organizations.⁵ Unfortunately, many former communist states are difficult to classify according to civil-military legacy theory. While states such as the Czech Republic and Hungary may never have suffered from domestic civil-military turmoil, one of the primary missions of their armed forces was upholding the Soviet Union's domination of Eastern Europe. In other states, such as the Baltic Republics and Slovenia, national independence has been a recent phenomenon. In these cases, it is questionable the extent to which today's small nation states indentify with the civil-military legacies of the larger ensembles (the Soviet Union and Yugoslavia respectively) to which they formerly belonged.

Former communist states also pose an interesting challenge for civil-military legacy theory because of the mechanisms by which political control of the armed forces was once maintained. Totalitarian communist states maintained large secret police organizations to spy on their armed forces and insisted on ideological purity (party membership) to climb the ranks of the officer corps. Are civil-military control mechanisms such as these likely to survive transitions to democracy? If not, what will replace them?

Another group of states that may prove anomalous from the point-of-view of civil-military legacy theory are states where armed forces imposed the conditions for a return to democracy after long periods of military rule. In Spain, Chile, Turkey and Brazil, military regimes surrendered power after negotiating conditions meant to preserve the autonomy of the armed forces under subsequent civilian governments. Thus, while civil-military legacy theory predicts

that states such as these should feature maximal civilian control of the armed forces, outgoing military regimes left power only once they had obtained a commitment to minimal control.

Perhaps the most fruitful avenue for applying civil-military legacy theory in the future lies in the effects of distinct domestic civil-military institutions on the functioning of international allies. While I have touched on this issue, its full development deserves a specialized study. At peace amongst each other, advanced industrial democracies collaborate together with greater frequency than states with any other form of regime. Peacekeeping, peacemaking, collaborative armaments projects and transnational military industrial mergers are only some of the ways that the security of modern day advanced industrial democracies is becoming a collective good. Given this phenomenon, understanding the factors dictating the success or failure of multinational collaboration will be increasingly essential.

In the final analysis, the manner that today's advanced industrial democracies produce and use military power remains conditioned by events in their pasts. Whether or not military officers ever crossed the ill-defined Rubicon separating loyal service to the state from efforts to impose their will over it continues to demarcate one set of advanced industrial states from another. While future generations of policymakers may forget or forgive military interventions in politics, the collective memory of the state remembers these indiscretions by erecting durable institutions designed to prevent their repetition. These institutions continue to shape defense policies decades after they outgrew their original function.

Endnotes

¹States suffering from legacies of contentious civil-military relations include, Austria, France, Italy, Germany, Greece, Japan, Portugal, South Korea and Spain.

²States with unproblematic civil-military pasts include, Australia, Belgium, Canada, Denmark, Finland, Israel, Luxembourg, New Zealand, Singapore, Switzerland, the Netherlands, the United Kingdom and the United States.

³In his own way, Amos Perlmutter also argued that it was the overall nature of the state that determined what form of civil-military relations would predominate. Perlmutter argued that three types of military organization prevail in the modern nation state. The professional soldier characterizes stable political systems; the praetorian soldier emerges in conditions of political instability; and the revolutionary soldier develops from new or transitional political orders. S. E. Finer, *The Man on Horseback: The Role of the Military in Politics*, 2nd ed. (Boulder, CO: Westview, 1988, originally 1962); and Amos Perlmutter, *The Military and Politics in Modern Times: On Professionals, Praetorians and Revolutionary Soldiers* (New Haven: Yale University Press, 1977).

⁴Morris Janowitz, *The Professional Soldier: A Social and Political Portrait* (New York, 1960).

⁵The states so far admitted include, Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

Bibliography

Unpublished Sources

Archives

France

Service Historique de l'Armée de Terre (SHAT), Château de Vincennes, Paris

3 S: 61

11 S: 130, 133, 140, 141

Service Historique de l'Armée de Terre (SHAT) Oral History Archive, Château de Vincennes, Paris

3 K 2 General François Valentin

3 K 3 General François Gerin-Roze

3 K 4 General Guy Méry

3 K 6 General Bernard Saint Hillier

3 K 34 General Pierre Langlois

3 K 37 General Hugo Geoffrey

3 K 39 Colonel André Perrin

3 K 71 Bob Maloubier

3 K 81 Pierrick Boquet

United Kingdom

Imperial War Museum (IWM) Oral History Archive, London

IWM 9071 Admiral John Woodward

IWM 11156 General John Akehurst

IWM 12428 General Julian Thompson

IWM 12558 Commodore Michael Clapp

IWM 13470 General Peter de la Billière

IWM 16197 General Nigel Bagnall et al.

IWM 17144 General Julian Thompson

Public Record Office (PRO), Kew

AIR 2: 18602

AIR 8: 2196

AIR 20: 10576, 11420-11425, 11750-11752

AIR 77: 576

AVIA 18: 3250

AVIA 65: 1678, 2384

AVIA 97: 30

CAB 21: 3585, 5584

CAB 65: 39

CAB 128: 37-57

CAB 130: 495, 732

CAB 148: 1, 16, 18-19, 32, 121-122, 130

CAB 158: 47-71

CAB 163: 29

CAB 164: 351, 904

CAB 186: 17

DEFE 11: 653-657, 725, 736-737, 741, 759-761, 790

DEFE 13: 245, 305, 482, 963, 975

DEFE 15: 2220

DEFE 24: 575, 1333

DEFE 25: 186-187, 236, 299, 312

DEFE 31: 153

DEFE 48: 33, 574, 769

DEFE 72: 52

DSIR 23: 28528, 32965, 33256, 41952

FCO 8: 1856

FCO 25/145

FCO 46: 609, 1183

FCO 65: 613

PREM 11: 4182, 4791, 5104

PREM 13: 119, 1308, 2688, 2718

PREM 15: 37, 1037, 1163, 1290, 1374, 2155

T 225: 983, 2685, 3308, 3667, 3712

T 230: 843

The B.H. Liddell-Hart Archive of Private Military Papers, King's College, London

Stockwell Papers

Suez Oral History Project

Unpublished Studies and Documents

2ième Régiment étranger d'infanterie, *Journal des marches et opérations: "Opération Daguet,"* n.d..

2ième Régiment étranger d'infanterie, *Rapport sur l'opération Daguet: du 20 septembre 1990 au 11 avril 1991,* 1991.

Aldrich, Richard. "Intelligence within NATO." unpublished manuscript, 2007.

_____. "Waiting to be Kissed?: NATO, NORTHAG and Intelligence," unpublished paper, 2007.

Armée de terre française, Division Daguet, *Ordre d'opérations No. 1: Modificatif No. 1 du 18 février 1991.*

Boschel, Jean-Paul. "Partage objectif des opérations de maintien en conditions pour le char moyen de combat AMX 30," *Diplôme technique, option "Spécialité."* Paris: Materiel, 1987.

Contrôle Général des Armées, *Rapport de Synthèse* (No. 37 DEF/CGA/OCF/RI/CD/91). 6 August 1991.

Delcourt, André (Captain). "Un exemple de réalisation de matériel d'armement: le char AMX 30," *Direction de l'enseignement militaire supérieur scientifique et technique.* Paris: Stage d'information générale, 1965.

Forget, Michel. "Mauritanie 1977: 'Lamantin,' Une intervention extérieure à dominante 'air.'" (n.d. unpublished manuscript).

Jourdren, Gustave. "La fin du régime du président Tombalbaye: Le Tchad de 1969 à 1975," *Mémoire de Brevet du Centre des Hautes Etudes pour l'Afrique et l'Asie Modernes,* 1988.

Les Interventions Militaires Françaises au Tchad, vol. 1. Vincennes: SHAT (unpublished study), 1989.

Les interventions militaires françaises au Tchad, vol. 2. Vincennes: SHAT (unpublished study), 1989.

Maufinet, Alain. "La France et la guerre du Liban," *Enseignement militaire supérieur scientifique et technique (Diplôme technique: Option "Histoire")*. Paris: 1991-1992.

Rappolt, Lieutenant. *Les missions impossibles des forces françaises au Liban, mars 1978 - aout 1986*. Mémoire, Année 1986-1987.

Vaïsse, Maurice. "Valéry Giscard d'Estaing: de la défense de l'Europe à la défense européenne" (n.d. unpublished manuscript).

Personal Papers Consulted

Colonel Henri Billaudel

Général Edouard Cortadellas

Colonel Jean-Louis Dufour

General Michel Forget

Colonel Pierre Frouin

Admiral Jacques Lanxade

General Michel Roquejoffre

General Jean Salvan

Ambassador (High Commissioner) Fernand Wibaux

Commandant Michael Clapp

Interviews with

France

Colonel Henri Billaudel

Admiral Pierre Bonnot

Admiral Gilles Cambarieau

General François Cann

General Coullon

General Jean Delaunay

General Bertrand de Sauville de La Presle

Colonel Robert Denard

Colonel Jean-Louis Dufour

General Michel Forget

Colonel Pierre Frouin

General Hervé Gobillard

Minister (of Cooperation) Alain Joyandet

François Heisbourg

Admiral Bernard Klotz

Admiral Jacques Lanxade

General Georges Lebel

General Yves le Chatelier

Admiral Bernard Louzeau

General Christian Quesnot

General Michel Roquejoffre

General Jean Salvan

General Maurice Schmitt

Ambassador (High Commissioner) Fernand Wibaux

United Kingdom

General John Akehurst

General Peter de la Billière

Field Marshall John Chapple
Commandant Michael Clapp
Air Marshall Patrick Hine
General John Kiszely
Admiral Henry Leach
General Jeremy Moore
Air Marshall Peter Norris
General Kenneth Perkins
General Julian Thompson
Admiral Sandy Woodward

Published Works

- “A Visit to the B.A.O.R.,” *The Fighting Forces: Service Notes and Articles* (January 1950): 221-22.
- Ailleret, Charles. *L'art de la guerre et la technique*. Paris: Charles-Lavauzelle, 1950.
- _____. *L'aventure atomique française: comment naquit la force de frappe*. Paris: Grasset, 1968.
- _____. “Défense ‘dirigée’ ou défense ‘tous azimuts,’” *Revue de défense nationale* (December 1967): 1923-32.
- _____. *Général du contingent: En Algérie 1960-1962*. Paris: Grasset, 1998.
- _____. “Unité fondamentale des armements nucléaires et conventionnels,” *Revue de défense nationale* (April 1964): 565-77.
- Akehurst, John. *Generally Speaking: ‘Then Hurrah for the Life of a Soldier’*. Norwich: Michael Russel, 1999.
- _____. *We Won a War: The Campaign in Oman, 1965-1975*. Salisbury: Michael Russel, 1982.
- Alex-Assenson, Yvette and A.B. Assenson. *African Military History and Politics: Coups and Ideological Incursions, 1900-present*. London: Palgrave, 2001.

- Allavena, Jacky. "Le 1er Escadron au combat," *Batailles & Blindés: Histoire de la Guerre Mécanisée et des Engins Militaires*, hors série 2 (April-May 2006) : 38-46.
- Allison, Graham and Philip Zelikow. *Essence of Decision: Explaining the Cuban Missile Crisis*, 2 ed. New York: Longman, 1999.
- Aloni, Shlomo. *Israeli Mirage and Nesher Aces*. London: Osprey, 2004.
- _____. "L'avion du désespoir: Israel Aircraft Industries 'Kfir'," *Le Fana de l'Aviation*, no. 439: 54-61.
- Andrew, Christopher and Vasili Mitrokhin. *The World Was Going Our Way: The KGB and the Battle for the Third World*. New York: Basic Books, 2005.
- Andrew, Christopher and Jeremy Noakes, ed. *Intelligence and International Relations, 1900-1945*. Exeter: University of Exeter, 1987.
- Armacost, Michael. *The Politics of Weapons Innovation: The Thor-Jupiter Controversy*. New York: Columbia University Press, 1969.
- Art, Robert. *The TFX Decision: McNamara and the Military*. Boston: Little, Brown and Company, 1968.
- Ashley, Glenn. *Hawker Hunter in Action*. Carrollton, Texas: Squadron/Signal, 1992.
- Avant, Deborah. "The Institutional Sources of Military Doctrine: Hegemons in Peripheral Wars," *International Studies Quarterly* 37, no. 4 (December 1993): 409-430.
- Bagnall, Nigel. *The Punic Wars: Rome, Carthage and the Struggle for the Mediterranean*. London: Pimlico, 1990.
- Ballantyne, Iain. *Strike from the Sea: The Royal Navy and US Navy at War in the Middle East, 1949-2003*. Annapolis: Naval Institute, 2004.
- Bankwitz, Philip. *Maxime Weygand and Civil-Military Relations in Modern France*. Cambridge, Massachusetts: Harvard, 1967.
- Barnett, Correlli. *Britain and Her Army: A Military, Political and Social Survey*. London: Allen Lane, 1970.
- Basbous, Antoine. and Annie Laurent. *Guerres secrètes au Liban*. Paris: Gallimard, 1987.
- Beaufre, André. *Introduction à la stratégie* (1963) reprint ed. Paris: Pluriel, 1998.
- _____. "La quatrième guerre Israélo-Arabe," *Forces armées françaises*, no. 18 (January-February 1974): 8-15.

- Bechter, Jean-Pierre et al. *L'épopée Dassault: Les plus belles histoires de Dassault*. Paris: Timée-Éditions, 2006.
- Beckett, Ian and David Chandler, ed. *The Oxford History of the British Army*. Oxford: Oxford University Press, 1994.
- Beckman, Margareta. "‘Very Well Go, and Let Our Destinies be Accomplished’—Napoleon Loses a Marshal – But Gains a King?," in *Between the Imperial Eagles: Sweden's Armed Forces during the Revolutionary and the Napoleonic Wars, 1780-1820* (Stockholm: Armémuseum, 2000), 372-87.
- Belkin, Aaron and Evan Schofer. "Toward a Structural Understanding of Coup Risk," *The Journal of Conflict Resolution* 45, no. 5 (October 2003): 594-620.
- Belyakov, R.A. and J. Marmain. *MiG: Fifty Years of Secret Aircraft Design*. Annapolis: Naval Institute, 1994.
- Bénichou, Michel. *Un siècle d'aviation française*. Paris: Docavia, 2000.
- ben-Sultan, Khaled. *Desert Warrior: A Personal View of the Gulf War by the Joint Forces Commander*. New York: HarperCollins, 1995.
- Bergot, Erwan. "Opération Daguet": les français dans la guerre du golfe. Paris: Presses de la Cité, 1991.
- Bernstein, Alvin, et. al. *The Making of Modern Strategy: Rulers, States, and War*. London: Cambridge, 1994.
- Betts, Richard. *Soldiers, Statesmen and Cold War Crises*. New York: Columbia University Press, 1991.
- Bidwell, Shelford. *Modern Warfare*. London: Allen Lane, 1973.
- Bidwell, Shelford et al. *World War 3: A Terrifying Military Projection Founded on Today's Facts*. Feltham, United Kingdom: Hamlyn, 1978.
- Bilder, Carl. *The Masks of War: American Military Styles in Strategy and Analysis*. Washington D.C.: The Johns Hopkins University Press, 1989.
- Bishop, Farzad and Tom Cooper. *Iran-Iraq Air War: 1980-1988*. Atglen, Pennsylvania: Schiffer, 2000.
- Bluth, Christoph. *Britain, Germany and Western Nuclear Strategy*. Oxford: Clarendon, 1995.
- Bock, Fabienne. *Un parlementarisme de guerre, 1914-1919*. Paris: Belin, 2002.

- Bodemer, Alfred and Robert Laugier. *L'ATAR et tous les autres moteurs à réaction français*. Riquewihr, France: J.D. Reber, 1996.
- Boniface, Pascal. *Contre le révisionnisme nucléaire*. Paris: Ellipses, 1994.
- Boniface, Pascal and Heisbourg, François. *La puce, les hommes et la bombe: l'Europe face aux nouveaux défis technologiques et militaires*. Paris: Hachette, 1986.
- Bouchery, Jean. *The British Soldier from D-Day to VE-Day: vol. 2, Organization, Armament, Tanks and Vehicles*. Paris: Histoire et Collections, 1999.
- Bourret, Michel. "Opération Daguet: L'Armée de terre française dans la guerre du golfe," *Batailles & Blindés: Histoire de la Guerre Mécanisée et des Engins Militaires*, hors série 2 (April-May 2006): 5-6.
- Bowman, Martin. *English Electric Lightning*. Marlborough, United Kingdom: Crowood, 1997.
- Bozo, Frédéric. *La France et l'OTAN: De la guerre froide au nouvel ordre européen*. Paris: Masson, 1991.
- Bramall, Dwin and Bill Jackson. *The Chiefs: The Story of the United Kingdom Chiefs of Staff*. London: Brassey's, 1992.
- Bramall, Edwin. "British Land Forces: The Future," *The RUSI Journal* 127, no. 2 (June 1982): 17-22.
- Breffort, Dominique and André Jouineau. *Mirage III: Mirage 5, 50 et dérivés de 1955 à 2000*. Paris: Histoire et Collections, 2004.
- Brossollet, Guy. *Essai sur la non-bataille*. Paris: Belin, 1975.
- Bud, Robert and Philip Gummett, ed. *Cold War, Hot Science: Applied Research in Britain's Defence Laboratories, 1945-1990*. Amsterdam: Harwood Academic Publishers, 1999.
- Butowski, Piotr and John Fricker. *Yakovlev's V/STOL Fighters: The Full Story of Russia's Rivals to the Harrier*. Leicester, United Kingdom: Aerofax, 1995.
- Buttler, Tony. *British Secret Projects: Jet Bombers Since 1949*. Hinckley, United Kingdom: Midland, 2003.
- _____. *British Secret Projects: Jet Fighters Since 1950*. Hinckley, United Kingdom: Midland, 2000.
- Buzzanco, Robert. *Masters of War: Military Dissent and the Politics of the Vietnam War*. Cambridge: Cambridge University Press, 1996.
- Byron, Michael. "Satisficing and Optimality," *Ethics*, no. 109 (October 1998): 67-93.

- Cahiers du CEHD*, no. 21: *La participation militaire française à la guerre du golfe*. Paris: Ministère de la Défense, 2001.
- Cailleteau, François. "Un modèle d'organisation et de gestion?" *Institut international d'administration publique* (June 1988): 179-87.
- Callet, Jean. *Légitime défense*. Paris: Lavauzelle, 1976.
- Carlier, Claude. *Serge Dassault: 50 ans de défis*. Paris: Perrin, 2002.
- Carver, Michael. *Britain's Army in the 20th Century*. London: PAN, 1998.
- _____. *Out of Step: The Memoirs of Field Marshal Lord Carver*. London: Hutchinson, 1989.
- _____. "Tanks and Infantry—The Need for Speed," *Journal of the Royal United Services Institution* 95, no. 3 (August 1951): 452-56.
- _____. *The Apostles of Mobility: The Theory and Practice of Armoured Warfare*. New York: Lees Knowles, 1979.
- Castañeda, Jorge. *Compañero: The Life and Death of Che Guevara*. New York: Vintage, 1997.
- Castex, Raoul. "Les liens des diverses strategies (un cas concret)," *Revue des Questions de Défense Nationale* 1, no. 1 (May 1939): 45-73.
- _____. "Toujours 'La Revanche du Barème,'" *Revue de Défense Nationale* 7 (June 1951): 696-699.
- Castillon, Michel. "Low Intensity Conflict in the 1980s: The French Experience," *Military Review* 66, no. 1 (January 1986): 69-77.
- Centner, Christopher. "Ignorance is Risk: The Big Lesson from Desert Storm Air Base Attacks," *Airpower Journal*, 6, no. 4 (Winter 1992): 25-35; also located in: www.airpower.maxwell.af.mil/airchronicles.
- Chahine, Patrick. "Le Liban et son armée," *Armée & défense*, no. 12 (December 1990): 39-46.
- Chevenement, Jean-Pierre. *Une certaine idée de la République m'amène à....* Paris: Albin Michel, 1992.
- Chirac, Jacques. "Au sujet des armes nucléaires tactiques françaises," *Défense nationale* (May 1975): 11-15.
- CIA's Analysis of the Soviet Union, 1947-1991*. Washington, DC: Central Intelligence Agency, 2001.

- Citno, Robert. *Blitzkrieg to Desert Storm: The Evolution of Operational Warfare*. Lawrence, Kansas: University of Kansas Press, 2004.
- Clancy, Tom and Chuck Horner. *Every Man a Tiger*. New York: G.P. Putnam's Sons, 1999.
- Clapp, Michael and Ewen Southby-Tailyour. *Amphibious Assault Falklands: The Battle of San Carlos Water*. London: Orion, 1997.
- Clarke, Bob. *Four Minute Warning: Britain's Cold War*. London: Tempus, 2005.
- Close, General. *Europe sans défense?* Brussels: Arts et Voyages, 1977.
- Cobban, Alfred. *A History of Modern France*, vol. 2, 1799-1871. London: Penguin, 1991.
- Coburn, Mike. *Soldier Five: The Real Story of the Bravo Two Zero Mission*. London: Mainstream, 2004.
- Cocroft, Wayne and Roger Thomas. *Cold War: Building for Nuclear Confrontation, 1946-1989*. London: English Heritage, 2003.
- Cohen, Elliot et al. *Gulf War Airpower Survey*, vol. 2. Washington D.C.: United States Government Printing Office, 1993.
- _____. *Gulf War Air Power Survey*, vol. 5. Washington D.C.: U.S. Government Printing Office, 1993.
- Cohen, Elliot. *Supreme Command: Soldiers, Statesmen, and Leadership in Wartime*. New York: FreePress, 2002.
- Cohen, Samy. *La défit des généraux: Le pouvoir politique et l'armée sous la Ve République*. Paris: Fayard, 1994.
- _____. *La monarchie nucléaire: Les coulisses de la politique étrangère sous la Ve République*. Paris: Hachette, 1986.
- Colin, Jean. *Les transformations de la guerre* (1911) reprint ed. Paris: Economica, 1989.
- Connor, Ken and David Hebditch. *How to Stage a Military Coup: From Planning to Execution*. Greenhill: London, 2005.
- Conte, Arthur. "Joseph, Jacques, Cesaire Joffre: catalan et maréchal de France," *Revue historique des armies*, no. 154 (March 1984): 4-8.
- Cooke, James. *100 Miles from Baghdad: With the French in Desert Storm*. Westport, Connecticut: Praeger, 1993.
- Cooksey, Jon. *3 Para Mount Longdon: The Bloodiest Battle*. London: Pen and Sword, 2004.

- Cooper, Tom and Ahmad Sadik. "Les 'Mirage' de Baghdad: Les Dassault 'Mirage' F1 dans la force aérienne irakienne, 1^{er} partie" *Fana de l'Aviation*, no. 434: 18-27.
- _____. "Les 'Mirage' de Baghdad: Les Dassault 'Mirage' F1 dans la force aérienne irakienne, 2^{ème} partie" *Fana de l'Aviation*, no. 435: 64-75.
- Copel, Etienne. *Vaincre la guerre: Une autre défense, une autre armée*. Paris: Lieu Commun, 1984.
- Cordingly, Patrick. *In the Eye of the Storm: Commanding the Desert Rats in the Gulf War*. London: Hodder and Sloughton, 1996.
- Corm, Georges. *Liban: les guerres de l'Europe et de l'Orient, 1840-1992*. Paris: Gallimard, 1992.
- Corvisier, André. *Histoire militaire de la France, vol. 4, de 1940 à nos jours*. Paris: Presses Universitaires de France, 1994.
- Coulam, Robert. *Illusions of Choice: The F-111 and the Problem of Weapons Acquisition Reform*. Princeton: Princeton University Press, 1977.
- Coutau-Bégarie, Hérve. *Castex: le stratège inconnu*. Paris: Economica, 1985.
- Cradock, Percy. *Know Your Enemy: How the Joint Intelligence Committee Saw the World*. London: John Murray, 2001.
- Craig, Chris. *Call for Fire: Sea Combat in the Falklands and the Gulf War*. London: John Murray, 1995.
- Craig, Gordon. *The Politics of the Prussian Army, 1640-1945*. London: Oxford University Press, 1955.
- Crossland, Peter. *Victor Two: Inside Iraq - The Successful SAS Mission*. London: Bloomsbury Publishing, 1996.
- Crutch, Mike and John Lake. *Tornado Multi-Role Combat Aircraft*. Hinckley, United Kingdom: Midland, 2000.
- Cuny, Jean. "SE 212 Durandal: La brève histoire d'une grande famille," *Le Fana de l'Aviation*, no. 254 (January 1991): 12-21.
- d'Abzac-Epezy, Claude. "Le bouclier antinucléaire et le programme français d'intercepteurs (1953-1957)," *Revue Historique des Armées*, no. 215 (June 1999): 95-104.
- d'Abzac-Epezy, Claude and Véronique de Touchet. "L'aviation militaire française au Tchad, des origines à nos jours," *Revue historique des Armées*, no. 225 (December 2001): 113-127.

- David, Dominique. *La politique de défense de la France: Textes et documents*. Paris: Fondation pour les études de défense nationale, 1989.
- David, François. "Deux théâtres, un même conflit? Le poids de l'Union française sur l'intégration atlantique, 1952-1956," *Revue historique des armées*, no. 236 (2004): 18-32.
- Debay, Yves. "La division Daguet," *Batailles & Blindés: Histoire de la Guerre Mécanisée et des Engins Militaires*, hors série 2 (April-May 2006): 70-94.
- _____. *Leopard 1*. Paris: Histoire et Collections, 2005.
- _____. "Special 6e Division légère blindée," *RAIDS*, no. 51 (August 1990): 19-43.
- Debré, Michel. *Combattre toujours: Mémoires*, vol. 5, 1969-1993. Paris: Albin Michel, 1994.
- de Gaulle, Charles. *Le Fil de l'épée et autres écrits*. Paris: Omnibus, 1999.
- _____ . *de Gaulle et ses Premiers ministres, 1959-1969*. Colloque organize par l'Institute de Charles de Gaulle et l'Association française de science politique. Paris: Plon, 1990.
- de Gaulle, Philippe. *De Gaulle, mon père*, vol. 2. Paris: Plon, 2004.
- de la Billière, Peter. *Looking for Trouble: SAS to Gulf Command*. London: HarperCollins, 1995.
- _____. *Storm Command: A Personal Account of the Gulf War*. London: HarperCollins, 1992.
- de Boissieu, Alain. "Entretien avec le général de Boissieu," *Défense nationale* 31 (July 1975): 17-44.
- de La Gorce, Paul-Marie. *La république et son armée*. Paris: Fayard, 1963.
- Delaunay, Jean, "Après la guerre du Kippour nos chars à la ferraille?..." *Forces armées française*, no. 21 (May 1974): 10-13.
- _____. *La foudre et le cancer: Face à l'atome et à la subversion, la guerre se gagne en temps de paix*. Paris: Pygmalion, 1985.
- de La Gorce, Paul-Marie. *La République et son armée*. Paris: Fayard, 1963.
- de Lespinois, Jérôme. *L'Armée de terre française de la défense du sanctuaire à la projection*, vol. 1, 1974-1981. Paris: Harmattan, 2001.
- _____. *L'Armée de terre française de la défense du sanctuaire à la projection*, vol. 2, 1981-1996. Paris: Harmattan, 2001.

- de Lestapis, Jacques. "The Will to Adapt: An Interview with Charles Millon, French Defense Minister," *Armed Forces Journal International* (June 1996): 44-45.
- de Lombardès, Michel et al. *Histoire de l'artillerie française*. Paris: Charles-Lavauzelle, 1984.
- Démier, Francis. *La France du XIXe siècle, 1814-1914*. Paris: Seuil, 2000.
- de Montferrand, Bernard. *Défendre l'Europe: La tentation Suisse*. Paris: Economica, 1999.
- Déplante, Henri. *A la conquête du ciel*. Aix-en-Provence: EDISUD, 1985.
- Dexter, Keith and Yefim Gordon. *MiG-23/27 Flogger: Soviet Swing-Wing Fighter/Strike Aircraft*. Leicester, United Kingdom: Aerofax, 2005.
- Dick, C.J. "Soviet Battle Drills: Vulnerability or Strength?," *International Defense Review*, no. 5 (1985): 663-65.
- _____. "Soviet Operational Concepts: Part 1," *Military Review* 65, no. 9 (September 1985): 29-45.
- _____. "Soviet Operational Concepts: Part 2," *Military Review* 65, no. 10 (October 1985): 4-19.
- _____. "Soviet Operational Manoeuvre Groups: A Closer Look," *International Defense Review*, no. 6 (1983): 769-776.
- _____. "Soviet Operational Manoeuvre Groups," *International Defense Review* (June 1983): 769-76.
- Dickens, Peter. *The Jungle Frontier: 22 Special Air Service Regiment in the Borneo Campaign, 1963-1966*. London: Arms and Armour, 1983.
- Dockrill, Michael. *British Defence since 1945*. London: Blackwell, 1988.
- Dockrill, Saki. *Britain's Withdrawal from East of Suez: The Choice Between Europe and the World*. London: Palgrave, 2002.
- _____. "Retreat from the Continent? Britain's Motives for Troop Reductions in West Germany, 1955-1958," *The Journal of Strategic Studies* 20, no. 3 (September 1997): 45-70.
- Donnelly, C.L. "Tactical Problems Facing the Soviet Army: Recent Debates in the Soviet Military Press," *International Defense Review*, no. 9 (1978): 1410.
- _____. "The Soviet Concept of the Desant," *The Royal United Services Institute Journal* (September 1973): 52-55.

- _____. "The Soviet Operational Manoeuvre Group – A New Challenge for NATO," *International Defense Review*, no. 9 (1982): 1177-1186.
- Doughty, Robert. *Pyrrhic Victory: French Strategy and Operations in the Great War*. Cambridge, Massachusetts: Belknap Press, 2005.
- _____. *The Seeds of Disaster: The Development of French Army Doctrine, 1919-1939*. Hamden, Connecticut: Archon, 1985.
- Dufour, Jean-Louis. *Les Crises internationales, de Pékin (1900) à Bagdad (1996)* reprint ed. Paris: Complexe, 2004.
- Dufour, Pierre. *La Légion dans la guerre du golfe*. Paris: Jacques Grancher, 1991.
- Duhamel, Eric, et al. *Militaires et République, 1870-1962: Les officiers, le pouvoir et la vie publique en France*. Paris: Publications de la Sorbonne, 1999.
- Dumas, Roland. *Affaires étrangères, vol 1, 1981-1988*. Paris: Fayard, 2007.
- Dumoulin, André and Remacle, Eric. *L'Union de l'Europe occidentale: Phénix de la défense européenne*. Brussels: Bruylant, 1998.
- Duval, Marcel and Mongin, Dominique. *Que sais-je? Histoire des forces nucléaires françaises depuis 1945*. Paris: Presses Universitaires de France, 1993.
- Ebbinghaus, Bernhard and Philip Manow, ed. *Comparing Welfare Capitalism: Social Policy and Political Economy in Europe, Japan and the USA*. London: Routledge, 2001.
- Encyclopédie de l'armée de terre, vol 1*. Paris: Hachette, 1992.
- Engammare, Philippe. "Les parties politiques français face à la bombe atomique: de la clandestinité au consensus," *Défense nationale* (February 1987): 37-51.
- Esper, Philippe et al. *Défendre la France et l'Europe*. Paris: Perrin, 2007.
- Evangelista, Matthew. "Stalin's Postwar Army Reappraised," *Soviet Military Policy: An International Security Reader*. Cambridge, Massachusetts: MIT, 1989: 283-311.
- Evans, Andy. *SEPECAT Jaguar*. Marlborough, United Kingdom: Crowood, 1998.
- Evans, R.S. "The Need for Offensive Operations on Land," *Journal of the Royal United Services Institution* (September 1979): 28-33.
- Faure, Claude. *Aux Services de la République du BCRA à la DGSE*. Paris: Fayard, 2004.
- Feaver, Peter. *Armed Servants: Agency, Oversight, and Civil-Military Relations*. Cambridge, Massachusetts: Harvard University Press, 2003.

- Feaver, Peter and Christopher Gelpi. *Choosing Your Battles: American Civil-Military Relations and the Use of Force*. Princeton: Princeton University Press, 2004.
- Ferrard, Stéphane. *Engins blindés français: Cent ans d'histoire*. Paris: EPA, 1996.
- Finer, S. E.. *The Man on Horseback: The Role of the Military in Politics*, 2nd ed. Boulder, Colorado: Westview, 1988.
- Fleury, Jean. *Faire face: mémoires d'un chef d'état-major*. Paris: Jean Picollec, 1997.
- Foccart, Jacques. *Journal de l'Elysée, vol 2, 1968-1969, Le Général en Mai*. Paris: Fayard, 1998.
- _____. *Journal de l'Elysée, vol 3, 1969-1971, Dans les bottes du Général*. Paris: Fayard, 1999.
- Foccart, Jacques (with Philippe Gaillard), *Foccart Parle: Entretiens avec Philippe Gaillard*. Paris: Fayard, 1995.
- Forget, Michel. *Notre défense dans un monde en crise: de 1960 à nos jours*. Paris: Economica, 2006.
- _____. *Puissance aérienne et stratégies*. Paris: Economica, 2001.
- Forsberg, Randall, ed. *The Arms Production Dilemma: Contraction and Restraint in the World Combat Aircraft Industry*. Cambridge, Massachusetts: MIT, 1994.
- Fourquet, General. "Emploi des différents systèmes de forces dans le cadre de la stratégie de dissuasion," *Revue de défense nationale* 25 (May 1969): 757-67.
- Fowler, William. *Battle for the Falklands (1): Land Forces*. London: Osprey, 1982.
- Francona, Rick. *Ally to Adversary: An Eyewitness Account of Iraq's Fall from Grace*. Annapolis: Naval Institute Press, 1999.
- Freedman, Lawrence. *The Official History of the Falklands Campaign, vol. 2, War and Diplomacy*. London: Routledge, 2005.
- Freedman, Lawrence and Virginia Gamba-Stonehouse. *Signals of War: The Falklands Conflict of 1982*. London: Faber and Faber, 1990.
- Friedberg, Aaron. "Why Didn't the United States become a Garrison State," *International Security* 16, no. 4 (Spring 1992): 109-42.
- Friedman, Norman. *The Fifty Year War: Conflict and Strategy in the Cold War*. Annapolis: Naval Institute Press, 2000.

- Fullick, Roy. *Shan Hackett: In Pursuit of Exactitude*. Barnsley, United Kingdom: Leo Cooper, 2003.
- Furniss, Edgar. *De Gaulle and the French Army*. New York: Twentieth Century Fund, 1964.
- Gabriel, Richard. *Fighting Armies: NATO and the Warsaw Pact—A Combat Assessment*. London: Greenwood, 1983.
- Gaddis, John. *Strategies of Containment: A Critical Appraisal of Postwar American National Security Policy*. Oxford: Oxford, University Press, 1982.
- Gaget, Robert. *Au-delà du possible: Recherche du renseignement en régions hostiles*. Paris: Grancher, 2002.
- Gallagher, Thomas. "British Military Thinking and the Coming of the Franco-Prussian War," *Military Affairs* 39, no. 1 (1975): 19-22.
- Gallois, Pierre. *Le sablier du siècle*. Paris: l'Age d'Homme, 1999.
- Gálvez, William. *Che in Africa: Che Guevara's Congo Diary*. Melbourne: Ocean, 1999.
- Gandy, Alain. *Royal Etranger: Légionnaires cavaliers au combat, 1921-1984*. Paris: Presses de la Cité, 1985.
- Garnier, Pierre-Louis, "La guerre d'Algérie et la consecration de l'ALAT," *Revue historique des armées*, no. 229 (December 2002): 17-24.
- Geraghty, Tony. *Brixmis: The Untold Exploits of Britain's Most Daring Cold War Spy Mission*. London: HarperCollins, 1997.
- Gautier, Louis. *Mitterrand et son Armée*. Paris: Grasset, 1999.
- Girardet, Raoul. *La Société militaire de 1815 à nos jours*. Paris: Perrin, 1998.
- Giscard d'Estaing, Valéry. *Le pouvoir et la vie*. Paris: Compagnie 12, 1991.
- Glantz, David. *The Evolution of Soviet Operational Art, 1927-1991*, vol 2, *Operational Art, 1965-1991*. London: Frank Cass, 1995.
- Gordon, Yefim. *Mikoyan MiG-29 Fulcrum Multi-Role Fighter*. Shrewsbury, the United Kingdom: AirLife, 1999.
- Gras, Yves. *La guerre de Vendée (1793-1796)*. Paris: Economica, 1994.
- Greenwood, Sean. *Britain and the Cold War, 1945-91*. London: Macmillan, 2000.

- _____. *The Alternative Alliance: Anglo-French Relations Before the Coming of NATO, 1944-48*. London: Minerva, 1996.
- Gregory, Shaun. *Nuclear Command and Control in NATO: Nuclear Weapons Operations and the Strategy of Flexible Response*. London: Macmillan, 1996.
- Grier, Peter. "Constant Peg: A Tale of Purloined MiG Fighters, Secret Desert Airfields, and Double-Wide Trailers..." *Air Force Magazine* (April 2007): 86-89.
- Griffin, Rob. *Conqueror*. Ramsbury, United Kingdom: Crowood, 1999.
- Grolleau, Henri-Pierre. "Dassault Rafale: Omnirole fighter," *International Air Power Review* 4 (Spring 2002): 50-85.
- Grove, Eric. *Vanguard to Trident: British Naval Policy Since World War Two*. Annapolis: Naval Institute Press, 1987.
- Guisnel, Jean. *Charles Hernu ou la République au Coeur*. Paris: Fayard, 1993.
- _____. *Les généraux: Enquête sur le pouvoir militaire en France*. Paris: La Découverte, 1990.
- Hackett, John. *The Third World War: August 1985*. New York: Macmillan, 1978.
- Hall, Peter. *Governing the Economy: The Politics of State Intervention in Britain and France*. Oxford: Oxford University Press, 1986.
- Hall, Peter and David Soskice, ed. *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*. Oxford: Oxford University Press, 2001.
- Hall, Peter and Rosemary Taylor. "Political Science and the Three New Institutionalisms," *Political Studies*. 44 (1996): 936-957.
- Halliday, Fred. *Arabia without Sultans*. Middlesex: Penguin, 1974.
- Halperin, Morton. *Bureaucratic Politics and Foreign Policy*. Washington D.C.: Brookings, 1974.
- Harkins, Hugh. *Eurofighter 2000*. Leicester, United Kingdom: Aerofax, 1997.
- Hart, B.H. Liddell. *Deterrent or Defense: A Fresh Look at the West's Military Position*. New York: Praeger, 1960.
- Healy, Denis. *The Time of my Life*. London: Michael Joseph, 1989.
- Heisbourg, François. "Une politique de défense nouvelle: L'évolution doctrinale et les réformes en cours," *La France et sa défense*. Paris: La documentation française, 1997: 23-29.

- Hennessy, Peter. *The Prime Minister: The Office and its Holders Since 1945*. London: Penguin, 2000.
- _____. *The Secret State: Whitehall and the Cold War*. London: Penguin, 2002.
- Henry, Chris. *British Anti-tank Artillery, 1939-45*. London: Osprey, 2004.
- Hines, John and Peterson, Phillip. "The Warsaw Pact Strategic Offensive: The OMG in Context," *International Defense Review*, no. 10 (1983): 1391-95.
- Hoff, Pierre. *Les programmes d'armement de 1919 à 1939*. Vincennes: Etat-Major de l'Armée de Terre, 1982.
- Holtmark, Sven et al. *War Plans and Alliances in the Cold War: Threat Perceptions in the East and West*. London: Routledge, 2006.
- Horowitz, Donald. *Ethnic Groups in Conflict*. Berkeley: California, 1985.
- House, Jonathan. *Combined Arms Warfare in the Twentieth Century*. Kansas: University Press of Kansas, 2001.
- Hublot, General. "Rôle des forces terrestres de manœuvre," *Forces armées françaises* (July 1972): 24-34.
- Huertas, Salvador. *Dassault Mirage: The Combat Log*. Atglen, Pennsylvania: Schiffer, 1996.
- Hulot, Frédéric. *Le Général Moreau*. Paris: Pygmalion, 2001.
- Hunter, Jamie. *Sea Harrier: The Last All-British Fighter*. Hinckley, United Kingdom: Midland, 2005.
- Huntington, Samuel. *The Soldier and the State: The Theory and Politics of Civil-Military Relations*. Cambridge, Massachusetts: Harvard, 1998.
- Isby, David. *Ten Million Bayonets: Inside the Armies of the Soviet Union*. London: Arms and Armour, 1988.
- Isnard, Jacques. "Enterré à Paris: Le centre nerveux des opérations," *le Monde* (19 January 1991).
- Jackson, Paul. "Dassault Mirage F1: Gallic Guardian," *World Air Power Journal* 17 (Summer 1994): 46-95.
- Jackson, Robert. *Cold War Combat Prototypes*. Marlborough, United Kingdom: Crowood, 2005.
- Jackson, William. *Britain's Defence Dilemma: An Inside View*. London: Batsford, 1990.
- Jaures, Jean. *L'Armée nouvelle*. Paris: l'Humanité, 1915.

- Jeapes, Tony. *SAS Operation Oman*. London: HarperCollins, 1980.
- _____. *SAS Secret War: Codename Operation Storm*. London: HarperCollins, 1996.
- Jenkins, Dennis. *Boeing/Bae Harrier*. North Branch, Minnesota: Specialty, 1998.
- Jennings, Christian and Weale, Adrian. *Green-Eyed Boys: 3 Para and the Battle for Mount Longdon*. London: HarperCollins, 1996.
- Johnson, Franklyn. *Defence by Ministry: The British Ministry of Defence, 1944-1974*. London: Duckworth, 1980.
- Kaldor, Mary. *The Baroque Arsenal*. London: Abacus, 1983.
- Kaplan, Robert. "Making Sense of the Rennes Verdict: The Military Dimension of the Dreyfus Affair," *Journal of Contemporary History* 34, no. 4 (October 1999): 499-515.
- Katzenbach, Edward. "The Horse Cavalry in the Twentieth Century," in *The Use of Force*. Boston: Little, Brown and Company, 1971.
- Kersaudy, François. *De Gaulle et Churchill*. Paris: Tempus, 2003.
- Kier, Elizabeth. *Imagining War: French and British Military Doctrine Between the Wars*. Princeton: Princeton, 1997.
- Kiszely, John. "The British Army and Approaches to Warfare since 1945," *The Journal of Strategic Studies* (December 1996): 179-206.
- Klen, Michel. "L'action de Cuba en Afrique," *Défense nationale* (June 1991): 125-34.
- Kocs, Stephan. *Autonomy or Power?: The Franco-German Relationship and Europe's Strategic Choices, 1955-1995*. Westport, Connecticut: Praeger, 1995.
- Kokoshin, Andrei. *Soviet Strategic Thought, 1917-91*. Cambridge: MIT, 1999.
- Krepinevich, Andrew. *The Army in Vietnam*. Baltimore: The Johns Hopkins University Press, 1986.
- Lacoste, Pierre. *Un amiral au secret*. Paris: Flammarion, 1997.
- Lacouture, Jean. *De Gaulle: The Ruler, 1945-1970*. New York: W.W. Norton & Company, 1991.
- Lagarde, Jean. "Armée de terre: ses missions," *Armées d'aujourd'hui* (June 1976): 8-9.
- Laming, Tim. *Buccaneer: The story of the last all-British strike aircraft*. Sparkford, Somerset: Patrick Stephens Ltd, 1998.

“L’AMX 30, Char de bataille de l’armée française,” *Revue d’histoire militaire*, no. 11 (1976): 51-55.

Lanxade, Jacques. *Quand le monde à basculé*. Paris: Fayard, 2001.

La politique de défense de la France: textes et documents. Paris: Fondation pour les Etudes de la Défense Nationale, 1989.

Lasswell, Harold. "The Garrison State," *The American Journal of Sociology* 46, no. 4 (January 1941): 455-468.

L’Atlas des avions de combat français: de la première guerre mondiale à nos jours. Paris: Atlas, 2004.

Law, John. *Aircraft Stories: Decentering the Object in Technoscience*. Durham: Duke University Press, 2002.

Leach, Henry. *Endure no Makeshifts: Some Naval Recollections*. London: Leo Cooper, 1993.

Lebow, Richard Ned. "The Soviet Offensive in Europe: The Schlieffen Plan Revisited?" in *Soviet Military Policy*. Cambridge, MIT Press, 1989.

Le Chatelier, Yves, “La surprise du Yom Kippour,” *Forces armées françaises*, no. 21 (May 1974): 14-19.

Lefevre, Eric. “Opération Manta,” *RAIDS*. no. 15 (August 1987): 19-26.

Legro, Jeffrey. *Cooperation Under Fire: Anglo-German Restraint During World War II*. Ithaca: Cornell, 1995.

Lellouche, Pierre and Dominique Moisi. “French Policy in Africa: A Lonely Battle Against Destabilization,” *International Security* (Spring 1979): 108-33.

Lepotier. "Un an a l'Institut des Hautes Etudes de Défense Nationale," *Revue de défense nationale* (July 1950): 74-84.

_____. "La cinquième session de l'Institut des Hautes Etudes de Défense Nationale," *Revue de défense nationale* (January 1953): 76-83.

Lert, Frédéric. *Mirage F1: tome 1, F1C et F1B*. Paris: Histoire et Collections, 2007.

Les systèmes d’information et de commandement, 1955-1975: Actes du colloque organisé le 29 mars 2001 à l’Ecole militaire. Paris: Lavauzelle, 2002.

Lippisch, Alexander. *The Delta Wing: History and Development*. Ames, Iowa: Iowa State University, 1981.

- Lipset, Seymour and Stein Rokkan, ed. *Party Systems and Voter Alignments*. New York: The Free Press, 1967.
- List, Friederich. *French Deltas: The Dassault Mirage 2000 over Europe – Part 1*. Erlangen, Germany: AirDOC, 2005.
- Lombardi, Fiona. *The Swiss Air Power: Wherefrom? Whereto?* Zurich: VDF, 2007.
- Lord, Dick. *Vlamgat: The Story of the Mirage F1 in the South African Air Force*. Weltevreden Park, South Africa: Covos Day, 2000.
- Lorell, Mark. *The Cutting Edge: A Half Century of United States Fighter Aircraft R&D*. Santa Monica: RAND Corporation, 1998.
- _____. *Troubled Partnership: A History of U.S.-Japan Collaboration on the FS-X Fighter*. Santa Monica: RAND, 1995.
- Luttwak, Edward. *Coup d'Etat*. London: Penguin, 1968.
- MacKenzie, Donald. *Inventing Accuracy: A Historical Sociology of Nuclear Missile Guidance*. Cambridge, Massachusetts: MIT, 1993.
- Mackenzie, J.J. and Brian Holden Ried, ed. *The British Army and the Operational Level of War*. New Delhi: Lancer, 1989.
- Mäder, Markus. *In Pursuit of Conceptual Excellence: The Evolution of British Military-Strategic Doctrine in the Post-Cold War Era, 1989-2002*. Brussels: Peter Lang, 2004.
- Major, John. *John Major, The Autobiography*. London: HarperCollins, 1999.
- Malaparte, Curzio. *Coup d'Etat: The Technique of Revolution*. New York: E.P. Dutton and Company, 1932.
- Marmont, Auguste. *De l'esprit des institutions militaires*. Paris: Economica, 2001.
- Martel, Giffard. "Tank Policy," *Journal of the Royal United Services Institute* 95, no. 3 (August 1951): 448-51.
- Marzloff, Jean. "The French Mechanized Brigade and its foreign counterparts," *International Defense Review* (April 1973): 176-80.
- Massoulié, François. *Les conflits du Proche-Orient*. Paris: Casterman, 1993.
- Mastny, Vojtech and Andreas Wenger, ed. *War Plans and Alliances in the Cold War: Threat Perceptions in the East and West*. London: Routledge, 2006.

- Mastny, Vojtech and Byrne, Malcolm. *A Cardboard Castle? An Inside History of the Warsaw Pact, 1955-1991*. Budapest: Central European University Press, 2005.
- Maurin. "Entretien avec le général Maurin," *Défense Nationale* (July 1974): 7-27.
- McInnes, Colin. *Hot War, Cold War: The British Army's Way in Warfare, 1945-95*. London: Brassey's, 1996.
- McMaster, H.R. *Dereliction of Duty: Lyndon Johnson, Robert McNamara, the Joint Chiefs of Staff, and the Lies that Led to Vietnam*. New York: HarperCollins, 1997.
- McNab, Andy. *Bravo Two Zero*. London: Bantam, 1993.
- Mercier, Benjamin and Thierry Sarmat. "La guerre qui n'a pas eu lieu, vision stratégique et plans d'opérations français dans l'hypothèse d'une invasion soviétique, 1945-1969," *Revue historique des armées*, no. 227 (June 2002): 111-28.
- Méry, Guy. "Conférence prononcée par le général Méry," *Défense nationale* (April 1978): 17-41.
- _____. "Réflexions sur le concept d'emploi des forces," *Défense nationale* (November 1975): 15-26.
- _____. "Une armée: pour quoi faire et comment?" *Défense nationale* (July 1976): 11-34.
- Messenger, Charles. *The Steadfast Gurkha: Historical Record of 6th Queen Elizabeth's Own Gurkha Rifles*, vol. 3, 1948-1982. London: Leo Cooper, 1985.
- Middlebrook, Martin. *The Argentine Fight for the Falklands*. London: Pen and Sword, 2003.
- Migdal, J. *Strong Societies and Weak States*. Princeton: Princeton University Press, 1988.
- Munro, Alan. *Arab Storm: Politics and Diplomacy Behind the Gulf War*. London: I.B. Taurus, 2006.
- Murray, Williamson. *The Change in the European Balance of Power, 1938-1939*. Princeton: Princeton University Press, 1984.
- Neau, Jackie. *L'intervention de la France dans le conflit tchadien, 1969-1975*. Paris: Mémoires d'Hommes, 2006.
- Niquet, Valérie trad. *Deux Commentaires de Sun Zi*. Paris: Economica, 1994.
- Noix, Lieutenant-Colonel. *Géographie militaire*, vol. 3: *Allemagne, Hollande, Danemark*. Paris: Librairie Militaire de L. Baudoin, 1885.
- Norris, Robert et al. *Nuclear Weapons Databook*, vol. 5: *British, French and Chinese Nuclear Weapons*. Connecticut: Westview, 1994.

- Ogorkiewicz, Richard. "British Armored Divisions," *Military Review* (October 1958): 81-87.
- _____. *Design and Development of Fighting Vehicles*. Garden City, New York: Doubleday and Company, 1968.
- _____. "L'AMX 32, le dernier-né des chars moyens français," *Revue internationale de défense*, no. 7 (1980): 1082-86.
- _____. "Renault Wheeled Armoured Vehicles," *International Defense Review*, no. 5 (1980): 723-27.
- Oliver, Kendrick. *Kennedy, MacMillan and the Nuclear Test-Ban Debate, 1961-63*. London: MacMillan, 1998.
- Otelli, Jean-Pierre. *Pilotes dans la tourmente*. Paris: Altipresse, 2005.
- Pagedas, Constantine. *Anglo-American Strategic Relations and the French Problem, 1960-1963*. London: Frank Cass, 2000.
- Palmer, Diego Ruiz. "Countering Soviet Encirclement Operations: Emerging NATO Concepts," *International Defense Review* 11 (1988): 1413-17.
- Pavlov, A.S.. *Warships of the USSR and Russia, 1945-1995*. Annapolis: Naval Institute, 1997.
- Peretié, A.. "Les nouveaux pantalons rouges," *Défense nationale* (July 1975): 79-87.
- Perinet, Philippe. "'Opération Tchador' ou la réponse explosive ou 'S.A.' au terrorisme chite," *RAIDS*, no. 41 (October 1989): 44-47.
- Perkins, Kenneth, ed. *Weapons and Warfare: Conventional Weapons and their Roles in Battle*. London: Brassey's, 1987.
- Pérot, Benoit. *Panhard: la doyenne d'avant garde*. Paris: EPA, 1979.
- Perrett, Bryan. *Mechanized Infantry*. London: Osprey, 1984.
- Peyrefitte, Alain. *C'était de Gaulle*, vol. 2. Paris: Fayard, 1994.
- _____. *C'était de Gaulle*, vol. 3. Paris: Fayard, 2000.
- Pestre, Dominique, ed. *Deux siècles d'histoire de l'armement en France: de Gribeauval à la force de frappe*. Paris: CNRS Editions, 2005.
- Philippe, Jean-Paul. *Les Mirage 2000*. Suresnes, France: Jean-Pierre Tallandier, 1991.

- Pierson, Paul. "Increasing Returns, Path Dependence, and the Study of Politics," *The American Political Science Review* 94, no. 2 (June 2000): 251-67.
- Poe II, Bryce. "British Army Reforms, 1902-1914," *Military Affairs* 31, no. 3 (Autumn 1967): 131-38.
- Poirier, Lucien. *Des stratégies nucléaires*. Paris: Hachette, 1977.
- _____. *Stratégie théorique*. Paris: Economica, 1997.
- Pollack, Ken. *The Influence of Arab Culture on Arab Military Effectiveness*. Cambridge, Massachusetts: Ph.D. Dissertation in Political Science, MIT, 1996.
- Porch, Douglas. *The March to the Marne: The French Army, 1871-1914*. Cambridge: Cambridge University Press, 1981.
- Posen, Barry. *Inadvertent Escalation*. Ithaca: Cornell, 1991.
- _____. "Inadvertent Nuclear War?: Escalation and NATO's Northern Flank," *International Security* 7, no. 2 (Autumn 1982): 28-54.
- _____. *The Sources of Military Doctrine: France, Britain, and Germany Between the World Wars*. Ithaca: Cornell, 1984.
- Primakov, Evguéni. *Missions à Bagdad: Histoire d'une négociation secrète*. Paris: Seuil, 1991.
- Pythian, Mark. *The Politics of British Arms Sales Since 1964*. Manchester: Manchester University Press, 2000.
- Qian, Sima. *Mémoires Historiques: Vies de Chinois illustres*. Arles: Picquier, 2002.
- Quinlivan, J.T. "Coup-proofing: Its Practice and Consequences in the Middle East," *International Security*, no. 24 (1999): 131-65.
- Quinio, Louis. "Le cinquantenaire des Hautes Etudes de Défense Nationale," *Défense Nationale* (December 1986): 7-10.
- Ratcliffe, Peter. *Eye of the Storm: Twenty-five Years in Action with the SAS*. Miami: Lewis International, 2000.
- Rinaldi, Richard and Watson, Graham. *The British Army in Germany (BAOR and After): An Organizational History, 1947-2004*. United States: Tiger Lily Publications for Orbat.com, 2005.
- Ripley, Tim. *Operation Deliberate Force: The UN and NATO Campaign in Bosnia, 1995*. Lancaster, United Kingdom: Lancaster University, 1999.

- Rocher, Alexis. "Dassault Mirage 4000," *International Air Power Review* 14 (2004): 112-123.
- _____. "Histoire d'un rêve: Les 'Super Mirage', de l'ACF au 4000, 1^{er} partie" *Fana de l'Aviation*, no. 416 (July 2004): 22-35.
- _____. "Histoire d'un rêve: Les 'Super Mirage', de l'ACF au 4000, 2^{ème} partie," *Le Fana de l'Aviation*, no. 417 (August 2004): 68-75.
- Roos, John. "From the Boardroom: Jacques Loppion, Chairman and CEO, Giat Industries," *Armed Forces Journal International* (June 1996): 54.
- Roquejoeffre, Michel. "Les leçons de la guerre du Golfe," *Relations internationales* (Summer 1995): 9-20.
- Rosen, Stephen. *Winning the Next War: Innovation and the Modern Military*. Ithaca: Cornell University Press, 1991.
- Rosenau, William. *Special Operations Forces and Elusive Enemy Ground Targets: Lessons from Vietnam and the Persian Gulf War*. Santa Monica: Rand Corporation, 2001.
- Rottman, G. and A Takizawa. *Japanese Paratroop Forces of World War II*. London: Osprey, 2005.
- Ruehl, Lothar. *La politique militaire de la cinquième république*. Paris: Presses de la fondation nationale des sciences politiques, 1976.
- Ryan, Chris. *The One that Got Away*. London: Century, 1995.
- Rynning, Sten. *Changing Military Doctrine: Presidents and Military Power in Fifth Republic France, 1958-2000*. Westport, Connecticut: Praeger, 2002.
- Sagan, Scott. "The Perils of Proliferation: Organization Theory, Deterrence Theory, and the Spread of Nuclear Weapons," *International Security* 18, no. 4 (Spring 1994): 66-107.
- Salvan, Jean. *Liban 1978: Les casques bleus de la France*. Paris: Eric Baschet, 1979.
- _____. *Soldat de la guerre, soldat de la paix: Une vie au service de la France*. Paris: Itali-ques, 2005.
- Sanders, Alain. "La France intervient au Tchad, 1969-1971," *RAIDS*, no. 15 (August 1987): 4-9.
- Sapolsky, Harvey. "On the Theory of Military Innovation," *Breakthroughs* 9, no.1 (Spring 2000): 35-39.
- _____. "The Interservice Competition Solution," *Joint Forces Quarterly* (Spring 1997): 50-53.

- Sarmat, Thierry. "Document SHAT: Une hypothèse d'invasion soviétique," *Revue Historique des Armées*, no. 236 (2004): 47-48.
- Scales, Robert. *Firepower in Limited War*. Novato, California: Presidio, 1995.
- Schmidt, Helmut. *The Balance of Power*. London: William Kimber, 1971.
- Schmitt, Maurice. *De Diên Biên Phu à Koweït City*. Paris: Bernard Grasset, 1992.
- Schwartzbrod, Alexandra. *Dassault: le dernier round*. Paris: Olivier Orban, 1992.
- Sechser, Todd. "Are Soldiers Less War-Prone than Statesmen?" *The Journal of Conflict Resolution* 48, no. 5 (October 2004): 746-74.
- Sergent, Pierre. *La légion saute sur Kolwezi: Opération léopard*. Paris: Presses de la Cité, 1978.
- Servir la paix: Les paras à beyrouth*. Paris: SOGEMO, 1984.
- Shaw, Robert. *Fighter Combat: Tactics and Maneuvering*. Annapolis: Navy Institute, 1985.
- Simon, Yolande. *Prospects for the French Fighter Industry in a Post-Cold War Environment: Is the Future More than a Mirage?* Santa Monica: RAND Dissertion, 1993.
- Simpkin, Richard. *Race to the Swift: Thoughts on Twenty-First Century Warfare*. London: Brassey's, 1985.
- Smith, Paul. *Government and the Armed Forces in Britain, 1856-1990*. London: Hambledon, 1996.
- Snyder, Jack. *The Ideology of the Offensive: Military Decision Making and the Disasters of 1914*. Ithaca: Cornell University Press, 1984.
- Soutou, Georges-Henri. *L'alliance incertaine: les rapports politico-stratégiques franco-allemands, 1954-1996*. Paris: Fayard, 1996.
- _____. "La menace stratégique sur la France à l'ère nucléaire: les instructions personnelles et secrètes de 1967 et 1974," *Revue historique des armées*, no. 236 (2004): 6-7.
- Spartacus. *Opération Manta, Tchad 1983-1984: les documents secrets*. Paris: Plon, 1985.
- Special Correspondent, "A Visit to the B.A.O.R.," *The Fighting Forces: Service Notes and Articles* 26, no. 5 (January 1950): 221-22.
- Spence, Cameron. *Sabre Squadron*. London: Penguin, 1997.
- Stone, John. *The Tank Debate: Armour and the Anglo-American Military Tradition*. Amsterdam: Harwood Academic Press, 2000.

- Strachem, Hew. *The Politics of the British Army*. Oxford: Clarendon Press, 1997.
- Summers, Harry. *On Strategy: A Critical Analysis of the Vietnam War*. Novato, California: Presidio, 1982.
- Taylor, Bill. *Royal Air Force Germany Since 1945*. Hinckley, United Kingdom: Midland, 2003.
- “Tchad: regards sur l’opération Manta,” *Afrique défense*, no. 91 (October 1985): 67-74.
- Thatcher, Margaret. *The Downing Street Years*. London: HarperCollins, 1993.
- The International Institute for Strategic Studies. *The Military Balance, 1965-1966*. London: The Institute for Strategic Studies, 1965.
- _____. *The Military Balance, 1970-1971*. London: The Institute for Strategic Studies, 1970.
- _____. *The Military Balance, 1975-1976*. Boulder, Colorado: Westview Press, 1975.
- _____. *The Military Balance, 1980-1981*. London: Arms and Armour Press, 1980.
- _____. *The Military Balance, 1985-1986*. London: Arms and Armour Press, 1985.
- _____. *The Military Balance, 2008*. London: Routledge, 2008.
- “The Nord-Aviation SS.12/AS.12 Missile System,” *International Defense Review* (February 1968): 109-13.
- Thornborough, Anthony. *TSR 2*. Ringshall, the United Kingdom: Ad Hoc, 2005.
- Tillotson, Michael. *Dwin Bramall: The Authorised Biography of Field Marshall the Lord Bramall*. London: Sutton, 2005.
- Timmerman, Kenneth. *Le lobby de la mort: Comment l’Occident a armé l’Irak*. Paris: Calmann-Lèvy, 1991.
- Tiroch, Bertrand. “Une politique de défense nouvelle: Les armées françaises à l’horizon 2015,” in *La France et sa défense*. (Paris: La documentation Française (October-December 1997): 37.
- Touzin, Pierre. *Les véhicules blindés français, 1945-1977*. Paris: EPA, 1978.
- Travers, Tim. “The Hidden Army: Structural Problems in the British Officers Corps, 1900-1918,” *Journal of Contemporary History* 17, no. 3 (July 1982): 523-44.
- Trinquier, Roger. *La Guerre*. Paris: Albin Michel, 1980.

- Tsouras, Peter. *Changing Orders: The Evolution of the World's Armies, 1945 to the Present*. London: Arms and Armour, 1994.
- Tucker, Robert, ed.. *The Marx-Engels Reader*. New York: Norton, 1978.
- Tulard, Jean. *Joseph Fouché*. Paris: Fayard, 1998.
- Turner, John. *Continent Ablaze: The Insurgency Wars in Africa, 1960 to the Present*. London: Arms and Armour, 1998.
- Upton, Jim. *Lockheed F-104 Starfighter*. North Branch, Minnesota: Specialty Press, 2003.
- U.S. Department of State. Historical Office. *The Foreign Relations of the United States: Diplomatic Papers*. Washington D.C.: U.S.G.P.O., 1866-. [Annual]
- Vaïsse, Maurice, ed. *Armement et Ve République: Fin des années 1950 – Fin des années 1960*. Paris: CNRS Editions, 2002.
- _____, ed. *La France et l'atome: Etudes d'histoire nucléaire*. Bussels: Bruylant, 1994.
- _____. *La grandeur: Politique étrangère du général de Gaulle, 1958-1969*. Paris: Fayard, 1998.
- Valentin, François. "l'Europe de l'Ouest et la défense," *Défense nationale* 30 (August-September 1974): 31-38.
- _____. *Une politique de défense pour la France*. Paris: Calmann-Lévy, 1980.
- van der Bijl, Nicholas. *Nine Battles to Stanley*. London: Leo Cooper, 1999.
- van Keersbergen, Kees. *Social Capitalism: A Study of Christian Democracy and the Welfare State*. London: Routledge, 1995.
- Vauxem. *Le dernier combat: Drames et espoirs de l'armée française*. Paris: Jacques Grancher, 1976.
- Védrine, Hubert. *Les mondes de François Mitterrand: à l'Elysée, 1981-1995*. Paris: Fayard, 1996.
- Vennesson, Pascal. "Institution and Airpower: The Making of the French Air Force," *The Journal of Strategic Studies* (March 1995): 36-67.
- Venter, Al. *The Chopper Boys: Helicopter Warfare in Africa*. London: Greenhill, 1994.
- Vercken, Roger. *Histoire succincte de l'Aéronautique navale (1910-1998)*. Paris: Ardhan, 1998.
- Villain, Jacques. *La force de dissuasion française: Génèse et évolution*. Paris: Docavia, 1987.

- Villery, Didier. "‘Bannière’ sur le Liban: Le jour où le réduit Chrétien a été sauvé," *RAIDS*, no. 37 (June 1989) : 18-29.
- von Clausewitz, Carl. *On War*. New York: Alfred Knopf, 1993.
- von Mellenthin, F.W.. *Panzer Battles* (1956) reprint ed. New York: Ballantine, 1971.
- Wall, Irwin. *France, the United States and the Algerian War*. Berkeley, California: University of California Press, 2001.
- Ward, Sharkey. *Sea Harrier Over the Falklands*. London: Cassell, 2001.
- West, Nigel. *The Secret War for the Falklands: The SAS, M16, and the War Whitehall Nearly Lost*. London: Warner Books, 1997.
- White, Rowland. "Rio Rendezvous," *Flypast*, no. 299 (June 2006): 22-31.
- _____. *Vulcan 60.7* London: Bantam, 2006.
- Whitford, Ray. *Fundamentals of Fighter Design*. Marlborough, United Kingdom: Crowood, 2000.
- Williams, Peter. *BRIXMIS in the 1980s: The Cold War’s “Great Game”: Memoires of Liaising with the Soviet Army in East Germany*. Parallel History Project on Cooperative Security, www.php.isn.ethz.ch.
- Winters, Harold et al.. *Battling the Elements: Weather and Terrain in the Conduct of War*. Baltimore: Johns Hopkins, 1998.
- World Armaments and Disarmaments, SIPRI Yearbook 1985*. London: Taylor and Francis, 1985.
- Woodward, Sandy. *One Hundred Days: The Memoirs of the Falklands Battle Group Commander*, 2 ed. London: HarperCollins, 1992.
- Woodham-Smith, Cecil. *The Reason Why: The Incredible Story of the Charge of the Light Brigade*. New York: Barnes and Noble, 1953.
- Yost, David. *France and Conventional Defense in Central Europe*. Boulder, Colorado: Westview, 1985.
- _____. "The French Defense Debate," *Survival* 23, no. 1 (January/February 1981): 19-28.
- Zagorski, P.W.. *Democracy vs. National Security: Civil-Military Relations in Latin America*. Boulder, Colorado: Lynne Rienner, 1992.

Zaloga, Steve. *Inside the Blue Berets: A Combat History of Soviet and Russian Airborne Forces*. Novato, California: Presidio, 1995.

_____. *US Anti-tank Artillery, 1941-45*. London: Osprey, 2005.

_____. *T-72 Main Battle Tank, 1974-1993*. London: Osprey, 1993.

Zisk, Kimberly. *Engaging the Enemy: Organization Theory and Soviet Military Innovation, 1955-1991*. Princeton: Princeton University Press, 1993.

Zuckerman, Solly. *Monkeys, Men and Missiles: An Autobiography 1946-1988*. New York: W.W. Norton, 1988.

_____. *Scientists and War: The Impact of Science on Military and Civil Affairs*. London: The Scientific Book Club, 1966.