# Bombs Unbuilt:
# Power, Ideas, and Institutions in International Politics

by

James Joseph Walsh

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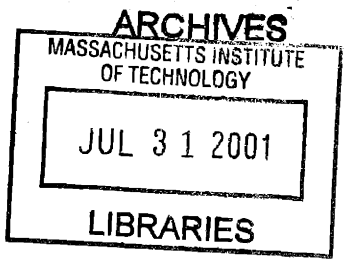




Signature of the Author.....
Department of Political Science
May 4, 2001

Certified by.....
George W. Rathjens
Professor of Political Science, Emeritus
Thesis Supervisor

Accepted by.....
Barry R. Posen
Professor of Political Science
Chairman, Graduate Program Committee

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ABSTRACT

Nuclear weapons are the most powerful weapons in human history, but contrary to virtually every prediction by scholars, relatively few states have acquired them. Why are there so few nuclear weapons states? What factors lead governments to reject and even renounce the ultimate weapon? What do the disconfirmed predictions of widespread proliferation tell us about contemporary theories of international relations?

To answer these questions, this study tests 15 hypotheses based on core categories in international politics: power, resources, ideas, and institutions. The hypotheses on power suggest that a state's nuclear decisions are a function of its external threats and its place in the international system. They claim that the slow pace of proliferation can be explained by several factors: a lack of threat, bipolarity, security guarantees, and superpower pressure. The resource hypotheses emphasize material capability, i.e., whether a state has the money, scientific talent, or access to foreign technology required to develop nuclear weapons. Hypotheses on the role of ideas often focus on the beliefs held by decision makers. This study tests the influence of anti-nuclear norms on proliferation decision making. Institutional explanations highlight either domestic institutional arrangements (whether a state is democratic, whether it is liberalizing economically, its organizational politics) or international institutions like the nonproliferation regime.

Many of the tests employ a data set consisting of 132 nuclear decisions and outcomes. The data set is based on archival and interview material that documents nuclear decision making in two countries: Australia and Egypt. The test results suggest that the dominant explanations for nuclear decision making -- explanations based on power, resources, and norms -- fail to account for outcomes. By contrast, institutional explanations, especially those involving organizational politics and regimes, generate robust results. The findings have direct implications for broader theories of international relations, and in particular, for variants of Realism, where a number of scholars have used proliferation decisions as an explicit test of their theory. Overall, the findings point to the enduring and decisive importance of politics and institutions, even in circumstances where fundamental questions of security and national survival are at stake.

Thesis Supervisor: George W. Rathjens
Title: Professor of Political Science, Emeritus

"When in history have many nations had the capability to produce a powerful weapon, and chosen not to exercise it?"[1]

# Chapter 1. Nuclear Puzzles

## I. The Puzzle of Limited Proliferation

The advent of the nuclear weapon -- the "absolute weapon" -- marked a turning point in world politics.[2] To some, nuclear weapons represent an unprecedented danger, a threat to the very survival of states and the international system.[3] To others, they offer the possibility of perpetual peace.[4] All sides agree that nuclear weapons constitute a power unknown in international politics.

Among scholars of international relations, power and survival are thought to be fundamental influences on state behavior. This study investigates the effects of power -- and the effects of ideas and institutions -- by looking at how countries responded to the development of the most powerful weapon in human history.

After fifty years, the most striking feature of the nuclear age is that there are so few nuclear states -- far fewer than scholars predicted. As one observer noted, "almost all the published predictions of the spread of nuclear weapons have been too pessimistic."[5] An overwhelming majority of nuclear-capable countries have opted to forgo nuclear weapons, and over time, the rate of proliferation has

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1 George H. Quester, "The Epistemology of Nuclear Proliferation," *Journal of International Affairs*, Vol. 40 (Summer 1986), p. 178.

2 On the revolutionary character of nuclear weapons, see John H. Herz, *International Politics in the Atomic Age*, (New York: Columbia University Press, 1959); Bernard Brodie, *Strategy in the Missile Age*, (Princeton: Princeton University Press), 1959; Robert Jervis, *The Meaning of the Nuclear Revolution Statecraft and the Prospect for Armageddon*, (Ithaca: Cornell University Press, 1989).

3 Morganthau warned, for example, that "if the nuclear armaments race cannot be brought under control before any number of nations will have nuclear weapons, only a miracle will save mankind," Cited in Fred Charles Ikle, "Nth Countries and Disarmament," *Bulletin of the Atomic Scientists*, December, 1960, p. 391.

4 According to Waltz, nuclear weapons are so powerful that the "...the probability of major war among states having nuclear weapons approaches zero." Waltz goes on to describe nuclear weapons as one of the few unit level attributes that generate systemic effects. Kenneth N. Waltz, "The Origins Of War in Neorealist Theory," in *The Origin and Prevention of Major Wars*, Robert I. Rotberg and Theodore K. Rabb, eds., (Cambridge: Cambridge University Press), 1988, pp. 50-51. For a more detailed discussion of Waltz' views regarding nuclear weapons, see Chapter 11.

5 George H. Quester, "The Statistical "n" of "nth" Nuclear Weapons States," *Journal of Conflict Resolution*, Vol. 27, No. 1 (March 1983), p. 167. Similarly, Mitchell Reiss notes that nuclear weapons did not prove to be "the irresistible temptation that many feared they would be." Mitchell Reiss, The Future That Never Came, *Wilson Quarterly*, Vol. 19, No. 2 (Spring 1995), p. 47.

actually *declined*. "When in history," asked George Quester, have so "many nations had the capability to produce a powerful weapon, and chosen not to exercise it?"[6]

This puzzle of limited proliferation provides the starting point for this investigation. Why are there so few nuclear weapons states?[7] What factors lead countries to renounce the most powerful weapon in warfare? The answers to these questions have implications that extend beyond nuclear decision-making to some of the central theoretical and empirical issues in international relations, including the role of international law and international organizations, the nature of alliances, and the intersection between the international politics and domestic decision making.

The central finding of this study, based on an analysis of 132 nuclear decisions and outcomes spanning four decades, is that the dominant theory of nuclear behavior -- one based on external threats and technical capability -- is unsupported by the facts. Moreover, the main critique of this theory, the notion that nuclear outcomes can be attributed to international norms, is equally untenable. Instead, the results of this inquiry suggest that influence of institutions and the internal politics of decision making are consistently more important than the power, resources, or ideas for explaining nuclear behavior, and in particular, for explaining the puzzle of limited proliferation.

The remainder of this chapter offers a brief overview of the dissertation. It begins with a look at past predictions about the spread of nuclear weapons and the explanations that have been offered for the puzzle of limited proliferation. The discussion then turns to methodology and a description of the research design used in this study. It concludes with a summary of the findings and a consideration of the larger implications for theory and research in international relations.

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6 Quester, "The Epistemology of Nuclear Proliferation," p. 178. Quester describes the limited spread of nuclear weapons "mysterious." NPT opponents used this history to argue that the treaty would fail. As one critic of the argued.... "The Treaty appears in some ways to be a negation of history. All people with the knowledge and resources they needed have progressed through evolutions and revolutions in industry, transport and weapons; from the manual to the machine, from sailing ships to steamers, from the oxcart to the aeroplane, and from the club to gun and bomb." X. "Australian Doubts on the Treaty." *Quadrant* 12:53 (May-June 1968), p. 31.

7 The puzzle of limited proliferation became obvious very early on. Rosecrance observed that, "Indeed, some specialists remark that what is surprising about the current situation is not that three countries have been able to fabricate nuclear weapons since 1945, but rather that a dozen nations have not already done so." Richard Rosecrance, "International Stability and Nuclear Diffusion," in Richard Rosecrance, ed., *The Dispersion of Nuclear Weapons*, (New York: Columbia Press, 1964), p. 1. See also William B. Bader, *The United States and the Spread of Nuclear Weapons*, (New York: Pegasus, 1968), pp. 63-66; Michael E. Sherman, *Nuclear Proliferation The Treaty and After*, (Lindsay, Ontario: Canadian Institute of International Affairs), 1968, p. 9-14.

# II. Background: Proliferation Predictions

Perhaps the most famous -- or infamous -- prediction about nuclear proliferation was offered President John F. Kennedy. In March of 1963, Kennedy warned that in 10 years, an additional twenty-one countries might develop nuclear weapons.[8] The young president's projection was consistent with classified estimates[9] and with published work from universities and think tanks. As one commentator put it, "The belief was common that nuclear spread had proceeded and would continue to proceed about as fast as technology could carry it."[10] Proliferation, wrote Gallois, was "as irreversible as . . . the generalization of firearms."[11]

Predictions of widespread proliferation were based an expectation that nuclear technology would become more widely available and that any single proliferator might set off a chain of acquisition decisions. "The chief cause for anxiety," explained Sir John Cockcroft, a central figure in Britain's nuclear program, "is the likelihood of a chain reaction in which the acquisition of nuclear weapons by one new country would provoke other nations to follow suit. For example, if three nations made nuclear weapons for the first time in the 1970s, ten might do so in the 1980s and thirty in the 1990s."[12]

More recently, a number of scholars associated with the Realist school of international relations have offered their own predictions.[13] At the beginning of the decade, Ben Frankel warned that "...nuclear arms proliferation will likely intensify in the 1990s and beyond, and that the owners of these newly acquired weapons will likely brandish them more openly to advance their political objectives." He went on to conclude that, "The accelerated proliferation of weapons of mass destruction will be an early and noticeable consequence of this change [in the international system]."[14] Frankel presents his "explicit predictions about nuclear weapons proliferation" as "a test for the explanatory and predictive power of structural analysis."

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8 *Public Papers of the President of the United States: John F. Kennedy*, 1963 (Washington, D.C.: Government Printing Office, 1964), p. 280 or *New York Times*, March 23, 1963, p. 1.

9 See, for example, Draft Memorandum for the President from the Secretary of Defense, "The Diffusion of Nuclear Weapons with and without a Test Ban Agreement," February 12, 1963, Table 1 (p. 4); Draft Memorandum for the President from the Secretary of State, "The Diffusion of Nuclear Weapons with and without a Test Ban Agreement," July 27, 1962, Table 1, John F. Kennedy Presidential Library. See also William B. Bader, *The United States and the Spread of Nuclear Weapons*, pp. 11-12.

10 Sherman, *Nuclear Proliferation The Treaty and After*, p. 32.

11 Pierre Gallois, *The Balance of Terror*, (Boston: Houghton Mifflin), 1961, p. 229.

12 Sir John Cockcroft, "The Perils of Nuclear Proliferation," in *Unless Peace Comes*, in *Unless Peace Comes*, Nigel Calder, ed., (New York: Viking Press, 1968), p. 37. See also Lincoln P. Bloomfield, "Nuclear Proliferation - A Current Appraisal," Speech delivered September 28, 1967, (Cambridge: Center for International Studies, MIT), 1967, p. 5; Robert Rothstein, *On Nuclear Proliferation*, (New York: Columbia University), 1966, p. 65.

13 Waltz had made a series of predictions about proliferation starting in the late 1970s.

14 Benjamin Frankel, "The Brooding Shadow: Systemic Incentives and Nuclear Weapons Proliferation," The *Proliferation Puzzle: Why Nuclear Weapons Spread and What Results*, Zachary S. Davis and Benjamin Frankel, eds., (London: Frank Cass, 1993), p. 37.

Waltz, Mearsheimer, and Van Evera, among others, also reasoned that the end of the Cold War and the consequent decline of bi-polarity would result in a new round of proliferation, most likely in countries such as Germany, Japan, and Ukraine.[15] In the wake of India's 1998 nuclear test, Mearsheimer took to the *New York Times* and declared that it was "likely that other states will follow India's footsteps. ...[T]he US will have to learn to live with the spread of nuclear weapons in the decades ahead. ...[W]e cannot stop it."[16]

A decade after the fall of the Berlin Wall, however, Realist predictions have fared no better than their predecessors. As Brad Roberts, points out, "...since the end of the Cold War denuclearization rather than nuclearization has been the dominant phenomenon... ...[H]istorical experience to date in the post-cold war era has not unfolded in the manner predicted, as most states have decided that more is not better for them."[17]

In every decade since the discovery of atomic weaponry, the consensus view has been that nuclear weapons would spread more widely than they actually have. Indeed, almost no one has predicted that nuclear weapons would not spread or that the number of nuclear weapon states would actually decline.[18] As regards nuclear weapons, to predict at all, is to predict more.[19]

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[15] John J. Mearsheimer, "Back to the Future: Instability in Europe after the Cold War," *International Security*, Vol. 19, No. 3 (Winter 1994), pp. 5-49; Lincoln P. Bloomfield, "Nuclear Proliferation - A Current Appraisal," p. 1; Stephen Van Evera, "Primed for Peace: Europe After the Cold War," *International Security*, Vol. 15, No. 3 (Winter 1990), pp. 7-57. See also Bradley A. Thayer, "The Causes of Nuclear Proliferation and the Nonproliferation Regime," *Security Studies*, Vol. 4, No. 3, pp. 519. On Ukraine in general, see John J. Mearsheimer, "The Case for a Ukrainian Nuclear Deterrent," *Foreign Affairs*, Vol. 72, No. 3 (Summer 1993), pp. 50-66.

[16] John J. Mearsheimer, "Here We Go Again," *New York Times*, May 17, 1998, p. 17.

[17] Brad Roberts, "Rethinking the Proliferation Debate: A Commentary," *Security Studies*, Vol. 4, No. 4 (Summer, 1995), p. 797. Of course, a decade may be insufficient for judging the prediction. It may yet come true, but Frankel predicted that the effects would be "early and noticeable." In the decade after the collapse of the Soviet Union, no new nuclear programs have been identified (Iraq and North Korea's programs predate the collapse of the Cold War); four states have given up nuclear weapons; and additional states have joined the NPT.

[18] So far, I have found only two exceptions: Chafetz, who predicts that pressures for proliferation will decrease in the years ahead and Donald Brennan, who at a conference in 1966, said that he would "bet even money that the numbers of nuclear powers would not increase in the next ten to fifteen years." Glen Chafetz, "The End of the Cold War and the Future of Nuclear Proliferation: An Alternative to the Neorealist Perspective," *The Proliferation Puzzle: Why Nuclear Weapons Spread and What Results*, Zachary S. Davis and Benjamin Frankel, eds., (London: Frank Cass, 1993), p. 128; Stanley Foundation, *Proliferation Unlimited: A Strategy for Peace*, [Report of a conference held March 10-11, 1966 in Washington, D.C.], (Muscatine, Iowa: Stanley foundation, 1966), p. 24.

[19] This brief survey actually understates the consensus. As falsificationists have lamented, most predictions are general or conditional. Few people have the methodological conviction of a Ben Frankel, willing to pursue strong predictions in order to construct strong theories. Instead, the typical proliferation analysis asserts that as many as 15 or 20 or 30 countries *could* become nuclear weapons states and implying that the number will be large. Even these marshmallow predictions have proven wrong, however, since most of the countries named in these analyses have remained non-nuclear.

# III. Explaining the Puzzle: Hypotheses on Power, Resources, Ideas, and Institutions

The puzzle of limited proliferation raises an obvious question: why are there so few nuclear weapons states? Chapter 2 describes fifteen of the most common hypotheses. Each of these hypotheses is associated with one of four core concepts in international politics: power, resources, ideas, and institutions.

**1) Power:** The hypotheses on power suggest that a state's nuclear decisions are, first and foremost, a function of the threats it faces and its place in the international system. States that face intense threats -- be they nuclear or conventional -- will seek nuclear weapons to balance the capabilities of their adversaries. In the absence of such threats, states do not seek nuclear weapons. The power hypotheses also include explanations based on bipolarity and the role of the superpowers. Bipolarity is said to slow the pace of proliferation, in part, because the most powerful players in the international system are able to perform two tasks. They can provide credible security guarantees, and they can pressure other countries to abandon their nuclear ambitions. Together, these hypotheses -- (H1) lack of threat, (H2) bipolarity, (H3) security guarantees, (H4) superpower pressure -- assert that the slow pace of proliferation is a function of power and the influence of the international system.

**2) Resources:** The resource hypotheses maintain that the absence of widespread proliferation reflects a lack of material capability on the part of developing states. Poor states lack the (H5) money or (H6) scientific talent or (H7) access to foreign technology that would enable them to acquire nuclear weapons.

**3) Ideas:** A third avenue of explanation focuses on the role of ideas. The most popular hypothesis from this camp contends that (H8) the emergence of an anti-nuclear norm accounts for limited proliferation.

**4) Institutions:** Institutional explanations for the nuclear decision making come in two groups. One group focuses on the effects of *domestic* institutional arrangements: (H9-10) whether a state is democratic, (H11) whether it is liberalizing economically, (H12) the structure of its organizational politics. A second group emphasizes the role of *international* institutions, and in particular, (H13-15) the nonproliferation regime.

# IV. Testing the Hypotheses: Methodology and Research Design

### Past Research: Problems in the Dependent Variable

Testing the hypotheses requires a valid research design and an appropriate set of cases. The research design used in most studies of proliferation begins with the question "why do states 'go

nuclear?'"[20] Researchers then attempt to answer that question by studying the countries that "went nuclear." This approach suffers a number of shortcomings.[21]

First there is the problem of *selection bias* or "selecting on the dependent variable." Numerous guides to research design caution against selection bias, warning, for example, that case selection is "crucial to the outcome of the research."[22] Yet most studies of nuclear proliferation restrict their analyses to the behavior of nuclear weapons states. The thirty states that considered the acquisition of nuclear weapons but that remained non-nuclear are virtually ignored.[23]

The problem of selection bias is made far worse by a *lack of variation in the dependent variable.*[24] Proliferation studies not only restrict the pool of cases to nuclear weapons states, they limit their analysis to these states' acquisition of nuclear weapons. Many nuclear weapons states -- the US, France, India -- at first rejected the idea of developing nuclear weapons only to reverse course at a

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[20] For an interesting discussion of what it means to "go nuclear, see Thomas C. Schelling, 'Who Will Have the Bomb?', *International Security* (Summer 1976) pp. 77-91.

[21] There are also problems with the unit of analysis, which in most studies of proliferation is defined as states. Using states as the unit as states results in an inherently small pool of potential observations, thus raising the "more variables than observations" problem. Even if the states that "said no" are included in the pool, the number of observations is still so small that it would be difficult to sustain generalizations about a phenomenon like nuclear decision making. On the question of how many observations are required for valid causal inferences, see King, Keohane, and Verba, *Designing Social Inquiry*, (Princeton: Princeton University Press, 1994), p. 216. On the "more variables than observations" problem, see Alexander George, "The Role of the Congruence Method for Case Study Research," Paper presented at the Annual Convention of the International Studies Association, Toronto, March, 18-22, 1997.

[22] King, Keohane, and Verba, *Designing Social Inquiry*, p. 128. For a discussion of selection bias in political science, see King, Keohane, and Verba, *Designing Social Inquiry*, pp. 124-149; David Collier and James Mahoney, "Insights and Pitfalls: Selection Bias in Qualitative Research," *World Politics*, Vol. 49, No. 1 (October 1996), pp. 56-91; David Collier, "Translating Quantitative Methods for Qualitative Researchers: The Case of Selection Bias," *American Political Science Review*, Vol. 89, No. 2 (June 1995). For a different view, see Stephen Van Evera, *Guide to Methodology for Students of Political Science*, (Ithaca: Cornell University Press), 1997, p. 23.

[23] Of the roughly 30 states that considered the acquisition of nuclear weapons but remained non-nuclear, eight are countries for which there is not a single English language book on any aspect of their nuclear history. Another five are the subject of a single volume. These estimates are based on a September 17, 1997 search of the Worldcat database using the search "subject: [country] and nuclear weapons." Worldcat includes thirty-six million records covering most major libraries in the United States. Book contents and titles were then reviewed to determine if the books related in some way to nuclear decision-making. Countries with zero books included Taiwan, Indonesia, Romania, Algeria, Libya, Saudi Arabia, Spain, and Yugoslavia. Countries with one book included Egypt, Italy, Norway, Switzerland, and Finland.

[24] On the distinction between selection bias and variation in the dependent variable, see Collier and Mahoney, "Insights and Pitfalls: Selection Bias in Qualitative Research," p. 36 or 91.

later point, but conventional studies of proliferation limit their focus to the acquisition of nuclear weapons. Research designs of this kind are particularly suspect.[25]

**Respecifying the Research Question, Dependent Variable and the Unit of Analysis**
The research design employed in this study offers an alternative specification of the research question, the dependent variable, and the unit of analysis. The research question is not why states go nuclear, but why they remain non-nuclear. The dependent variable is not the acquisition of nuclear weapons but "action favoring the renunciation of nuclear weapons." The unit of analysis is decisions, not states.[26]

Organizing the data on the basis of decisions makes it possible to assemble a pool of observations that numbers in the hundreds rather than the dozens. This construction also allows for a wide ranges of values on the dependent variable. Box 1.1 illustrates one continuum of possibilities.

**Box 1.1. Continuum of Nuclear Decisions**

| -2 | -1 | 1 | 2 |
|---|---|---|---|
| Acquire Nuclear Weapons | Acquire Nuclear Weapons Option | Reject Nuclear Weapons | Renounce Nuclear Weapons Option |

At one end are decisions to renounce the nuclear option. Following that are decisions in which a particular a proposal for nuclear weapons is rejected, but in a way that does not preclude a future decision favoring nuclear weapons. Negative values on the continuum would include decisions to pursue a nuclear weapons option (capability without weaponization) and the outright acquisition of nuclear weapons.

**Data, Cases, and Tests**
Beginning with this conceptualization, the study looks at a total of 132 decisions and outcomes.[27] The data set covers several decades of decision making in two states, Australia and Egypt. Both countries sought nuclear weapons, but neither became a nuclear weapons state. The selection of Australia and Egypt serves a number of research interests,[28] but its most important virtue is that it mitigates the general selection bias favoring the study of nuclear weapons states.[29]

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25 King, Keohane, and Verba, for example, warn that "when observations are selected on the basis of a particular value on the dependent variable, nothing whatsoever can be learned about the causes of the dependent variable...." King, Keohane, and Verba, *Designing Social Inquiry*, p. 129

26 A more precise description of the dependent variable would be "decisions and related outcomes." The case narrative is disaggregated into decision sequences, each of which consists of a proposal, a decision, and an outcome. The last two parts of the decision sequence constitute the "thing to be explained," but it turns out that the generation of proposals is also an important phenomenon.

27 This figure includes 78 nuclear weapons-related decisions and outcomes in Australia and 54 decisions and outcomes in Egypt.

28 This case selection maximizes the total number of observations in the general pool of observations, the empirical base for all scholars working on this topic. By examining two unresearched cases, twice as many new observations are generated compared with a research design that compares a nuclear weapons state and a non-nuclear weapons state. Another research interest served by these cases is the preservation of a vanishing data. Nuclear decision-making involves a

Australia is generally known for its efforts on behalf of nuclear abolition, not acquisition. Chapter 3 tells a different story, however. It documents the largely unknown history of Australia's attempts to get the bomb as well as the decision to abandon it. Egypt's actions are no less intriguing. As Chapters 6 and 7 point out, Egypt finds itself in one of world's most dangerous neighborhoods. Since 1952, Egypt has been involved in six wars, and among its neighbors are one country armed with nuclear weapons and three others that have tried to acquire them.[30] Egypt, it would seem, had every reason to want nuclear weapons and Australia no reason at all. Yet both countries sought nuclear weapons, and both countries gave up their nuclear ambitions.

The data on the nuclear decisions is drawn largely from unpublished archival and interview material. Archival documents were collected from eight archives in four countries. Most all of the 59 interviews were with Australian and Egyptian respondents, including nuclear scientists, diplomats, military officers, and former heads of state. The archival and interview material form the foundation for a narrative case history of each country's nuclear decisions. These case histories are then disaggregated into individual decision sequences, which are then used in data sets for hypothesis testing.

Four types of tests are used to evaluate the hypotheses. In cases where it is possible to assign values for the independent and dependent variables, there are direct tests for correspondences (i.e., whether the values for the variables correlate or covary in the manner predicted). In other situations, where data for the variables is poor, other observable implications of a hypothesis are deduced and tested. There are also tests that rely on "process tracing," which in this study includes both the mapping of causal sequences and the use of chronological deduction. Finally, the hypotheses that survive are then compared with one another in order to determine which have the greatest explanatory power. Every hypothesis is subjected to at least two -- and as many as five -- different tests.

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comparatively small number of people. Information from individuals is essential, and when the individuals die, they take their data with them. This case selection seeks to maximize data from cases that are under-documented and whose source material may soon be lost. These cases also meet at least three of the case selection criteria suggested by Van Evera -- data richness, large within case variation, and cases that resemble current policy problems. Stephen Van Evera, *Guide to Methodology for Students of Political Science*.

[29] Selecting original cases of non-nuclear weapons states maximizes the increase in the representativeness of the general pool of observations. On the conditions when it is appropriate to select on the dependent variable, see Van Evera, *Guide to Methodology for Students of Political Science*; King, Keohane, and Verba, *Designing Social Inquiry*, p. 139-149; Collier and James Mahoney, "Insights and Pitfalls: Selection Bias in Qualitative Research."

[30] The wars include the Suez War (1956), the Yemen civil war (1962-1967), the Six Day War (1967), the War of Attrition (1969-1970), the Ramadan or Yom Kippur War (1973), and the Gulf War (1991). Among its neighbors, Israel has nuclear weapons; while Libya, Iraq, and Iran have sought nuclear weapons.

# VI. Findings

The results of the hypothesis testing are generally strong. The hypotheses that perform poorly do very poorly; and the hypotheses that perform well do reasonably well. Perhaps the most striking results involve the hypotheses based on power. The lack of threat, bipolarity, security guarantees, and superpower pressure hypotheses fail most of their tests. There is some evidence that increases in threats or declines in the credibility of a security guarantees can stimulate proliferation decisions, but decisions favoring the renunciation came *despite* the persistence of threats from nuclear armed adversaries. The bipolarity and superpower pressure hypotheses also fail to account for the observed outcomes, with the evidence against the pressure hypothesis being especially strong.

The resource hypotheses -- lack of money, lack of scientists, and lack of access to foreign technology -- perform only marginally better. In general, a lack of financial resources did not prevent either country from acquiring nuclear weapons. (The one exception might be Egypt between 1965 and 1973, when work on a number of weapons programs stalled because of economic difficulties.) The "lack of scientists" hypothesis fails all of its tests.

The strongest resource explanation is the "lack of access to foreign technology" hypothesis. On numerous occasions in both countries, attempts to acquire nuclear weapons were stymied by the denial policies of potential supplier states. Weighing against the hypothesis is the fact that the denial policies applied only to the outright transfer nuclear weapons or especially sensitive technologies. In neither case, however, was the transfer of nuclear weapons the only path to the bomb. Both countries had the financial and scientific resources to pursue a nuclear option, and outside a very limited number of technologies, most suppliers were ready and willing to expand each country's nuclear infrastructure.

The hypothesis based on the role of ideas -- the anti-nuclear norms explanation -- also fails its tests. One problem is that norms cannot account for nuclear restraint during the first thirty years of the nuclear age (when there was no norm). Secondly, and more importantly, it appears that the creation of the nonproliferation *regime* led to the development of an anti-nuclear norm, and not the other way around. So while it may be the case that norms have contributed their own, independent effects, from a historical and macro-causal perspective, they have played a largely secondary role in nonproliferation outcomes.

Among the hypotheses involving institutions, some perform quite well, others not at all. Hypotheses on the effects of democracy and liberalizing economies are not sustained, but explanations based on organizational politics and regimes are fairly robust. The organizational politics hypothesis, particularly in the case of Australia, passes several demanding tests and does so decisively.

As regards regimes, there is evidence that the nonproliferation regime influenced nuclear outcomes in both countries, though the case is stronger for Australia than for Egypt. At a minimum, regime commitments appear to strengthen or consolidate a decision to forgo weapons, but there are occasions when the regime can *induce* a renunciation decision. Of the two explanatory variants of the regime hypothesis -- the prisoners' dilemma and international law hypotheses -- the international law hypothesis comes out the better. The prisoners' dilemma fails both its tests for both countries.

# VII. Implications

The focus of the study is the puzzle of limited proliferation, but solving the puzzle has implications for a number of topics of interest to scholars of international relations. The study's results touch on issues involving alliance politics, balancing behavior, and evolution of sovereignty, but two implications are particularly noteworthy.

The first relates to role of treaties and international law. Institutionalists have long argued that international regimes can influence the behavior of states, though these claims have traditionally been associated with the field of political economy, not security. There has been some disagreement, however, over the exact way in which this influence is exercised. The results obtained in this study offer a different perspective on international law, namely, that treaties constrain the behavior of states by reshaping a country's internal decision processes. Treaties, by influencing the composition of the decision group, the character of the decision set, the timing of the policy result, and the nature of post-treaty organizational coalitions, can have a powerful impact on the domestic policy process. These effects are independent of the influence of norms, attitudes towards international law, or the regime's ability to solve prisoners' dilemmas, coordination games, or other rational dysfunctions.

The notion that the power of treaties is the power to structure internal deliberations finds support in the most counter-intuitive finding of the study: the sometimes perverse effects of nonproliferation treaties. On occasion treaties can actually encourage states to seek nuclear weapons. Treaties act as agenda setters, creating decision opportunities for interested policy actors. When the preferences of the decision group favor the acquisition of nuclear weapons, the creation of decision opportunities increases the likelihood that bomb advocates will be able to successfully press their cause. Several instances of this phenomenon are described in Chapters 3 and 5.

A second implication has to do with how one conceptualizes the intersection between domestic and international politics. Perhaps most popular metaphor for conceptualizing this intersection is Putnam's two level game.[31] This study suggests some of the other ways one can describe that relationship. The case histories, for example, reveal a high level of cross-national interaction on the issue of nuclear weapons, particularly between the militaries of nuclear weapons states and the militaries of their non-nuclear allies. In some circumstances, contact with states that own or seek nuclear weapons appears to stimulate an interest in nuclear weapons. On other occasions, bomb advocates in non-nuclear countries used their organizational colleagues in nuclear states to help them in their domestic policy battles. In Australia, for example, the Australian Air Marshall successfully enlisted his British counterpart in an elaborate lobbying scheme to promote a plan for Australian nuclear weapons. Foreign officials were treated as like-minded political allies, not interests on the other side of a bargaining table. Indeed, the lines of negotiation were often drawn on the basis of *organizational* affiliation rather than *national* affiliation.

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31 Robert Putnam, "Diplomacy and Domestic Politics: The Logic of Two-Level Games," *International Organization*, Vol. 42 (Summer 1988), pp. 427-460; Peter B. Evans, Harold K. Jacobson, and Robert D. Putnam, eds., *Double-edged Diplomacy: International Bargaining and Domestic Politics*, (Berkeley: University of California Press, 1993).

# VIII. Rethinking the Nuclear Age

The record of the first half century of the nuclear age has to be counted as among the most remarkable outcomes in all of international affairs. Despite the obvious importance of power in world politics, most nations have forsaken the world's most powerful weapon. This study concludes that the reasons for this unexpected outcome have to do with the politics of decision making and the role of domestic and international institutional arrangements. It would appear that politics and institutions are of decisive importance, even in circumstances where fundamental questions of security and national survival are at stake.

The record of the nuclear age also suggests that countries are not slaves to inexorable forces. The spread of nuclear weapons was not inevitable, as most scholars and policy makers contended. Instead, states made a series of individual and collective choices that fundamentally altered the course of international politics.

# Chapter 2. Hypotheses on Nuclear Decision Making

## I. Introduction

This inquiry began with a puzzle: why have so few countries acquired nuclear weapons? One way to get at this puzzle is to look at how states make decisions about nuclear weapons. In this chapter, we review the leading hypotheses on nuclear decision making and specify how they might be tested.

The study of nuclear decision making has enjoyed somewhat of a renaissance in recent years as new archival documents and methodologies have become available. Today, one can employ everything from spatial voting models[1] and game theory[2] to identity politics,[3] prospect theory,[4] and historical sociology[5] to analyze how states decide their nuclear postures. This study focuses on the most common explanations for why states forgo nuclear weapons. In all, four groups of hypotheses are examined: 1) hypotheses having to do with *power* (the role of threats, security guarantees, superpower pressure), 2) hypotheses having to do with *resources* (lack of money, lack of scientific personnel, denial policies by nuclear suppliers), 3) hypotheses having to do with *ideas* or beliefs (anti-nuclear norms), and 4) hypotheses having to do with *institutions* (democracy, liberalization, organizational politics, regimes).

The chapter begins with a brief description of the different kinds of tests employed in this study, and then proceeds to examine each hypothesis -- it logic, its pedigree, and the kinds of tests to which it can be subjected.

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1 Bruce Bueno de Mesquita, James D. Morrow, and Samuel S. G. Wu, "Forecasting the Risks of Nuclear Proliferation: Taiwan as an Illustration of the Method," *The Proliferation Puzzle: Why Nuclear Weapons Spread and What Results*, Zachary S. Davis and Benjamin Frankel, eds., (London: Frank Cass, 1993), pp. 311-331.

2 Harald Muller, "A Theoretical Approach to Nonproliferation Policy," in *Nuclear Proliferation in the 1980s*, William H. Kincade and Christoph Bertram, eds., (New York: St. Martin's Press, 1982), pp. 42-59; and more recently, Peter D. Feaver and Emerson Niou, "Managing Nuclear Proliferation: Condemn, Strike or Assist," *International Studies Quarterly*, Vol. 40 (June 1996), pp. 209-33.

3 Glenn Chafetz, "The Political Psychology of the Nuclear Nonproliferation Regime," *The Journal of Politics*, Vol. 57, No. 3 (August 1995), pp. 743-775; and Glen Chafetz, " The End of the Cold War and the Future of Nuclear Proliferation: An Alternative to the Neorealist Perspective," *The Proliferation Puzzle: Why Nuclear Weapons Spread and What Results*, Zachary S. Davis and Benjamin Frankel, eds., (London: Frank Cass, 1993), pp. 127-158.

4 Janice Gross Stein, "Abstainers, Proliferators, and Penitents: Reframing the Problem," Paper presented at the Conference on Non-Proliferation, IGC, University of California, held at Limassol, Cyprus, August, 19-23, 1995.

5 Steven Flank, "Exploding the Black Box: The Historical Sociology of Nuclear Proliferation," *Security Studies*, Vol. 3, No. 2 (Winter 1993/94), pp. 259-294.

# II. Testing Hypotheses

A hypothesis "is a conjectured causal relationship between two phenomena."[6] It posits a link between a cause (A) and the effect (B). There are a variety of tests one can employ to test the strength of a hypothesis, depending on the kinds of data that are available. In this study, three types of tests are used.

## A. Congruence Tests

To apply a congruence test, the "investigator asks: given the value of the independent variable in this particular case, what prediction(s) can be made from the theory regarding the outcome of the dependent variable. ...If the outcome is consistent with the prediction, then there is at least a presumption of the possibility of a causal relationship."[7]

When there are good data for values on the independent and dependent variables, the researcher can make a direct comparison to see if the variables correspond in the predicted manner. There are times when a direct congruence test is not possible, however, because data on the independent or dependent variables is lacking. In these circumstances, it may be possible to get around the data problem by testing for a correspondence between the hypothesized relationship and other observable implications. Under this test, one *assumes* a relationship between A and B, and looks for the presence of *other* observable phenomena. If the A->B relationship is true, what else should also be true?

## B. Process Tracing

With congruence tests, the researcher compares two sets of values to see if they match. With process tracing, the focus is not on two separate variables, but rather on the connection between them.[8] Process tracing is an activity known by many names,[9] but all applications of process tracing start with the premise that certain outcomes can explained by reconstructing the sequence of events leading up to the outcome. Recently, there has been some debate on the logical status of process tracing as a distinct methodology. Does it involve a different kind of testing or is it simply correspondence testing at the micro-level? King, Keohane, and Verba insist that there is nothing special about process tracing, that it is an extension "of the more fundamental logic of analysis we have been using, not [a way] of bypassing it." They politely note that process tracing can be "very

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6 Stephen Van Evera, *Guide to Methodology for Students of Political Science*, (Ithaca: Cornell University Press, 1997), p. 2.

7 Alexander George, "The Role of the Congruence Method for Case Study Research," Paper presented at the Annual Convention of the International Studies Association, Toronto, March, 18-22, 1997.

8 On process tracing, see Alexander L. George, "Case Studies and Theory Development: The Method of the Structured, Focused Comparison," in P. G. Lauren (ed.), *Diplomacy: New Approaches in History, Theory, and Policy*, (New York: The Free Press, 1979), and Alexander L. George, Timothy J. McKeown, "Case Studies and Theories or Organizational Decision Making," *Advances in Information Processing in Organizations*, Vol. 2 (1985), pp. 21-58.

9 Clayton Roberts cites eight different phrases, including my personal favorite, "the model of the continuous series." Process tracing or "sequential explanation" is a mainstay of historical analysis, but its use is not limited to historians and social scientists. Geologists and other natural scientists also employ process explanations. Clayton Roberts, *The Logic of Historical Explanation*, (University Park: Pennsylvania University Press, 1996), pp. 17, 20.

valuable," but they caution that a focus on causal mechanisms "is unlikely to yield strong causal inferences...."[10]

There is another view, however.[11] Some scholars contend that process tracing is not a correlations method writ small. Process tracing, they insist, is a matter of description, not a search for micro-correlation. It is "molecular narrative," and as such, relies other modes of inference.[12] For example, the social scientist using process tracing can test propositions by what might be called "direct observation."[13] By establishing the sequence of events at the point of causation, researchers can sometimes establish an unmediated link between *the action and intention of a political actor who is responsible for an outcome.* When the killer admits in court that he is guilty, his conviction

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10 Gary King, Robert O. Keohane, and Sidney Verba, *Designing Social Inquiry*, (Princeton: Princeton University Press, 1994), pp. 228, 85-87. They argue that attention to causal mechanisms -- the heart of process tracing -- will not yield strong inferences "because more than one mechanism can be activated, and within each mechanism, the relative strength of the explanatory variables may be unclear." Van Evera appears to endorse KKV's conclusion that process tracing relies on the same logic of causal inference as correspondence tests. He describes process tracing as a kind of micro-level congruence testing. Causality is disaggregated into chains, and each segment in the chain is established on the basis of the testing its predictions. Van Evera apparently disagrees with KKV, however, as to the value of process tracing. He points out that the data from process tracing is so rich, it offers the promise of exceptionally strong tests. Stephen Van Evera, *Guide to Methodology for Students of Political Science*, pp. 33-34, 40. A an excellent example of process tracing's strengths is Yueng Foong Khong, *Analogies at War: Korea, Munich, Dien Bien Phu, and the Vietnam Decisions of 1965*, (Princeton: Princeton University Press, 1992). On causal mechanisms in general, see Roberts, *The Logic of Historical Explanation*, p. 25; Daniel Little, *Varieties of Social Explanation: An Introduction to the Philosophy of Social Science*, (Boulder: Westview, 1991).

11 Critics have responded that KKV offer an overly narrow notion of causality, one that is "cause and effect" without the cause. See, for example, Andrew Bennett, "Lost in Translation: Big (N) Misinterpretation of Case Study Research," Paper delivered at the Annual Convention of the International Studies Association, Toronto, March 18-22, 1997, pp. 18-21.

12 Roberts, *The Logic of Historical Explanation*, p. 47. Roberts goes on to argue that process tracing "turns correlation into causation [p. 29]."

13 Philosophers and psychologists have long maintained that humans do not enjoy direct perception of the external world. Still, it may be possible to test a limited number of hypotheses with what is tantamount to direct observation. To do so, the researcher must get as close as possible to the temporal-spatial point of causation, usually by means of archival documentation. Process tracing can also provide the basis for *chronological deduction*, another kind of inference that depends, not on correlations, nor on direct observation, but instead on temporal logic. Most deductions on social science take the form of a covering law: if 1) X is a member of class Y, and 2) Y conforms to rule R, then 3) X conforms to rule R. This form of reasoning is based on the logic of identity. If something has a certain identity, then it has certain characteristics and not others. Chronological deduction, by contrast, relies on time, not identity. It suggests that if 1) X is an outcome with the temporal location $T_1$, and 2) Y is a possible cause of X, then 3) Y has a temporal location $T_{-n}$ to $T_1$. Chronological deduction is a powerful tool for falsification. It does not, however, provide support or confirmation for a hypothesis. If several potential causes precede the event to be explained, then simple chronological order will not provide strong grounds for choosing one hypothesis over another.

comes not because of correlational evidence, but because of his confession.[14] When a policy maker about to act declares to her close aids that the reason for her action is cause X and not cause Y, the evidence for X is not correlation but direct documentation.

### C. Performance Against Rival hypotheses

The first two tests can be used to evaluate a single hypothesis. This last test pits rival hypotheses against each other. Hypotheses can be judged on several bases, including how many tests they pass, how strongly they pass those tests (e.g., strong or weak correspondences), the strength of the tests they pass (e.g., meeting unique predictions), and finally, the depth and range of their explanatory power (how much does a hypothesis explain and over how many cases).

## II. Hypotheses on Power and Nuclear Decision Making

This first set of hypotheses emphasizes power as an influence on a state's decision to pursue or forgo nuclear weapons. These hypotheses suggests that a state's nuclear decision making is a function of its threat environment. The first and most commonly held hypothesis focuses on the power of potential adversaries to threaten a state, thus giving it cause for wanting nuclear weapons. Of course, power is held not only by enemies, but by friends as well. Thus, three of the hypotheses examine the role of very powerful allies -- superpowers in a bipolar system -- and how their behavior can slow the rate of proliferation. One hypothesis looks at the general effects of bipolarity. The other two concentrate on specific aspects of bipolarity: superpower security guarantees and superpower pressure. In sum, this set of hypotheses maintains that a decision for or against nuclear weapons can be understood as a response to the capabilities and intentions of enemies and allies.[15]

### A. The Role of Security Threats

Without question, the presence or absence of security threats is the single most cited factor used to explain nuclear decision making. Typically, threats are discussed as the reason that states pursue nuclear weapons, i.e., to balance threats posed by potential adversaries. According to Waltz,[16]

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[14] For a different formulation that also employs a legal model of causal inference, see Timothy J. McKeown, "Case Studies and the Statistical Worldview: Review of King, Keohane, and Verba's *Designing Social Inquiry: Scientific Inference in Qualitative Research*," *International Organization*, Vol. 53, No. 1(Winter 1999), pp. 161-190.

[15] For a review of writing on threats and proliferation decision making, see Stephen M. Meyer, *The Dynamics of Nuclear Nonproliferation*, (Chicago: University of Chicago, 1984); William C. Potter, *Nuclear Power and Nonproliferation*, (Cambridge, MA: Oelgeschlager, Gunn & Hain, 1982), pp. 131-144; Peter Lavoy, "Nuclear Myths and the Causes of Nuclear Proliferation," in Zachary S. Davis and Benjamin Frankel, eds., *The Proliferation Puzzle: Why Nuclear Weapons Spread (and What Results)*, (London: Frank Cass, 1993), pp. 193-199; Scott Sagan, "Why Do States Build Nuclear Weapons? Three Models in Search of a Bomb," *International Security*, Vol. 21, No. 3 (Winter, 1996-1997), pp. 54-86.

[16] In all, I count four slightly different versions of Waltz' "more may be better" paper: Kenneth N. Waltz, "What Will the Spread of Nuclear Weapons Do to the World," *International Political Effects of the Spread of Nuclear Weapons*, John K. King, ed., (Washington: National Foreign Assessment Center, Central Intelligence Agency, GPO, 1979); Kenneth N. Waltz, "The Spread of Nuclear Weapons More May Be Better," Adelphi Papers, No. 171, (London: IISS), Autumn, 1981; Kenneth N. Waltz, "Toward Nuclear Peace," *Strategies for Managing Nuclear Proliferation*,

"nuclear weapons have spread for two reasons: either because one's adversary had them or because one's great power ally was not thought to be sure to retaliate on one's behalf if the other great power attacked."[17] The need to balance against the capabilities of potential enemies has meant that nuclear weapons have "spread from one country to another." [18] Indeed, Waltz summarizes the history of nuclear spread as a chain of balancing....

> Once the US had [nuclear weapons], it was [almost] inevitable that the Soviet Union would not only get them but get them as soon as they possibly could. The Soviet Union having them was a spur for the Chinese Communists getting them. China's having them was a spur for India, India a spur for Pakistan, and so it goes. Now that's not uniformly the pattern but it's a very important part [of what has happened]....[19]

Many scholars stress the importance of threat as a cause of proliferation, including Van Evera, Betts, Feldman, Mearsheimer, Frankel, van Creveld, Rosecrance, Quester, Kahn, Greenwood, and Potter.[20] Meyer finds strong evidence for what he calls a "motivational" model of proliferation. Of

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Dagobert L. Brito, Michael D. Intriligator, Adele Wick, eds., (Lexington, MA: D.C. Heath and Co., 1983), pp. 117-134; Kenneth N. Waltz, "More May Be Better," *The Spread of Nuclear Weapons*, Scott D. Sagan and Kenneth N. Waltz, eds., (New York: W.W. Norton & Company, 1995). In addition, I will make use a version of Waltz's arguments that he has presented orally: Kenneth N. Waltz, "Nuclear Proliferation," Transcript of remarks made at Seminar XXI, March 3, 1995, Washington, D.C., (Cambridge, MA: Seminar XXI, MIT). Given the very similar titles of these works, they will hereafter be referred to as follows: Waltz, 1979; Waltz, 1981, Waltz, 1983; Waltz, 1995; and Waltz, Transcript. Where possible, I will rely on Waltz, 1995, since it is more widely available.

17 Waltz, 1979, p. 167. In his IISS article, Waltz lists seven reasons why a country would want nuclear weapons: 1) balancing and imitation; 2) doubts about a nuclear ally, 3) a country without a nuclear ally wants to balance, 4) present or future conventional threat, 5) nucleaer weapons are cheaper and safer, 6) for offensive purposes, 7) to gain international standing. Waltz, 1981, pp. 78-79.

18 Waltz, 1981, p. 79; Waltz, Transcript.

19 Waltz, Transcript.

20 Stephen Van Evera, "Hypotheses of the Causes of the Rate of Nuclear Proliferation," Unpublished paper, March 4, 1976; Stephen Van Evera, "The Effects of Nuclear Proliferation," Unpublished paper, June 13, 1976; Richard Betts, "Paranoids, Pygmies, Pariahs and Nonproliferation Revisited," in Zachery Davis and Benjamin Frankel, *The Proliferation Puzzle* (London: Frank Cass, 1993), p. 107; Shai Feldman, *Israeli Nuclear Deterrence: A Strategy for the 1980s* (New York: Columbia University Press, 1982); John J. Mearsheimer, "The Case for a Ukrainian Nuclear Deterrent," *Foreign Affairs*, Vol. 72, No. 3 (Summer 1993), pp. 50-66; John J. Mearsheimer, "Back to the Future: Instability in Europe after the Cold War," *International Security*, Vol. 15, No. 1 (Summer 1990), pp. 5-56; Benjamin Frankel, "An Anxious Decade: Nuclear Proliferation in the 1990s," *Journal of Strategic Studies* 13, No. 3 (September 1990), pp. 1-14; Benjamin Frankel, "The Brooding Shadow: Systemic Incentives and Nuclear Weapons Proliferation, "The *Proliferation Puzzle: Why Nuclear Weapons Spread and What Results*, Zachary S. Davis and Benjamin Frankel, eds., (London: Frank Cass, 1993), p. 45; Martin van Creveld, *Nuclear Proliferation and the Future of Conflict*, (New York: Free Press, 1993); p. 463-

the ten motivational conditions he cites, only one (domestic turmoil) is wholly unrelated to threat or capabilities.[21] Perhaps the broadest claim comes from Thayer, who asserts that "security is the only necessary and sufficient cause of nuclear proliferation."[22]

In the most obvious case, a country's acquisition of nuclear weapons can be intended to offset the actual or anticipated acquisition of nuclear weapons by an adversary, but nuclear weapons can also be used to balance against purely conventional threats. Waltz, for example, claims that this was Israel's motivation for developing nuclear weapons.[23] In either case, the underlying motivation is fear. States fear other countries, and seek nuclear weapons for security.[24]

Scholars also cite the *lack of threat* as a reason more countries did not develop nuclear weapons. Van Evera contends that "...small states don't need nuclear weapons because they don't need many weapons, period."[25] Similarly, Waltz points out that many states find themselves in low threat environments. He concludes that "Many states feel fairly secure living with their neighbors. Why should they want nuclear weapons?"[26]

These views suggest the following hypothesis:

H1. States seek nuclear weapons to balance against the capabilities or threats posed by current or potential adversaries; in the absence of threats, states do not seek nuclear weapons.

To test this hypothesis, we begin with a congruence test. The threat hypothesis predicts a correspondence between the level of threat and nuclear decision making. When threats are high, states should take more numerous and/or more serious actions towards nuclear weapons. As threats go to zero, we should expect fewer and less serious actions towards nuclear weapons. Moreover, one should expect actions towards renunciation only when threats are low or nonexistent.

Operationalizing the independent variable -- threats or threats warranting nuclear weapons -- can be a tricky business. To simplify matters, this study borrows from Meyer, who operationalizes threat as the presence or absence of three threat conditions.

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519. To this list can be added Rosecrance, Quester, Dunn and Kahn, Greenwood, and Potter. See Meyer, *The Dynamics of Nuclear Nonproliferation*, pp. 48-49. Indeed, in Meyer's survey of the literature, threat-related motivations were cited by eleven of twelve authors and constituted the most often cited reason for wanting the bomb.

21 Of the remainder, four are solely related to threat: "nuclear threat," "latent capacity threat," "overwhelming conventional threat," regional nuclear proliferation." The others motivations are a mix of power, prestige, and economics: "regional power status/pretensions," "global power status/pretensions," "pariah status," "loss of war," and "defense expenditure burden."

22 Bradley A. Thayer, "The Causes of Nuclear Proliferation and the Nonproliferation Regime," *Security Studies*, Vol. 4, No. 3, (Spring 1995), p. 486.

23 Waltz, 1981, p. 79.

24 Waltz, Transcript.

25 Van Evera, "Hypotheses of the Causes of the Rate of Nuclear Proliferation," p. 7.

26 Waltz, 1995, p. 9. See also Sagan, "Why Do States Build Nuclear Weapons? Three Models in Search of a Bomb," pp. 46, 54-55.

**Table 2.2 Meyer's Threat Conditions**[27]

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| Nuclear armed adversary |
| Adversary with a latent NW capacity |
| Overwhelming conventional military threat[28] |

Further details about the operationalization come in Chapters 4 and 8. In addition, process tracing tests will be possible on those occasions where decision makers or organizations make explicit statements linking or decoupling threat with a nuclear decision.

## B. Bipolarity and the role of superpowers

Bipolarity, or more precisely, the presence of two dominating superpowers, is said play a critical role in a potential proliferator's calculations. The biploarity hypotheses assert that under bipolarity, superpowers act to retard the pace of proliferation. In the absence of bipolarity, the key state actor or actors are reluctant or unable to perform the same role, and so the spread of nuclear weapons increases. In this section, three versions of the bipolarity hypothesis as considered: a general bipolarity hypothesis and two additional explanatory hypotheses that focus on the role of security guarantees and superpower pressure.

### B1. General Bipolarity Hypothesis

With the end of the Cold War and the decline of bipolarity, a number of writers have argued that the pace of proliferation would increase anew.[29] The bipolar international system, it is said, produces a more certain or predictable environment in which states can operate.[30] States can count on the superpowers to regulate world politics. In the absence of bipolarity, states are less confident about their friends and their enemies and more likely to seek solace in nuclear weapons. At its most basic, the bipolarity hypothesis suggests that....

H2. Under bipolarity, states are less likely to acquire nuclear weapons; in the absence of bipolarity, states are more likely to acquire nuclear weapons.

The general effect of bipolarity can be tested with a congruence test that compares nuclear behavior before and after the end of bipolarity. Given the hypothesis, one would expect more numerous and more serious efforts to acquire nuclear weapons during a non-bipolar period compared with a bipolar period.

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27 Meyer, *The Dynamics of Nuclear Nonproliferation*, pp. 56-63.

28 Waltz suggests that conventional threats, not *overwhelming* conventional threats, are sufficient to cause states to seek nuclear weapons. Waltz, 1981, pp. 78-79.

29 John J. Mearsheimer, "Back to the Future: Instability in Europe after the Cold War," *International Security*, Vol. 19, No. 3 (Winter 1994), pp. 37-40; Stephen Van Evera, "Primed for Peace: Europe After the Cold War," *International Security*, Vol. 15, No. 3, (Winter 1990), p. 7-57; Frankel, "The Brooding Shadow: Systemic Incentives and Nuclear Weapons Proliferation," p. 37; Thayer, "The Causes of Nuclear Proliferation and the Nonproliferation Regime," pp. 503-504.

30 On the general effects of bipolarity and multipolarity, see Waltz, 1981, pp. 72-78. A somewhat different formulation is found in Kenneth N. Waltz, "The Emerging Structure of International Politics," *International Security*, Fall, 1993, Vol. 18, No. 2, pp. 44-79.

**B2. Superpower Security Guarantees**

Many scholars attribute the nonproliferation effects of bipolarity to a specific mechanism -- the provision of security guarantees. Frankel, for example, maintains that...

> The end of bipolarity means that superpower guarantees - the most effective instrument to moderate the effects of systemic characteristics - will be reduced and weakened. As a result, the international system will revert to a more unvarnished form of anarchy in which systemic attributes such as the security dilemma and self-help will be accentuated. The accelerated proliferation of weapons of mass destruction will be an early and noticeable consequence of this change.[31]

Mearsheimer offers a similar logic, as does Waltz , who cites a declining faith in security guarantees as one of the two most important reasons states seek nuclear weapons.[32]

These same authors credit bipolarity as the reason that nuclear weapons have been slow to proliferate in the past. Frankel contends that "The early predictions about the rapid spread of nuclear weapons did not materialize because they failed to take into account the logic of bipolarity."[33] Waltz describes security guarantees as "the strongest way for the United States to persuade other countries to forego nuclear weapons...."[34] Van Evera, Frankel, Thayer, Nye, Greenwood, Potter, and Meyer all credit security guarantees as a reason for the slower than expected rate of proliferation.[35] These views suggest the following hypothesis.

H3. When a country enjoys the protection of a security of guarantee, it is less likely to seek nuclear weapons; states that lack security guarantees or that harbor doubts about their security guarantee, are more likely to seek nuclear weapons.

To assess the effect of security guarantees, one can begin with a congruence test. As variables go, the presence of a security guarantee is nicely visible. Usually, there is a piece of paper or other evidence of commitment.[36] In this study, two measures of security guarantee are used. The first is

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31 Frankel, "The Brooding Shadow: Systemic Incentives and Nuclear Weapons Proliferation," p. 37. See also p. 46.

32 John J. Mearsheimer, "Here We Go Again," *New York Times*, May 17, 1998, p. 17; Waltz, 1981, pp. 78-79.

33 Frankel, "The Brooding Shadow: Systemic Incentives and Nuclear Weapons Proliferation," p. 46.

34 Waltz, 1995, p. 42.

35 Van Evera, "Hypotheses of the Causes of the Rate of Nuclear Proliferation," p. 6; Frankel, "The Brooding Shadow: Systemic Incentives and Nuclear Weapons Proliferation," p. 37; Thayer, "The Causes of Nuclear Proliferation and the Nonproliferation Regime," p. 503; for Greenwood Potter, and Meyer, see Meyer, *The Dynamics of Nuclear Nonproliferation*, pp. 68, 102.

36 Indeed, guarantees must be made visible in order to reassure the country being protected, but also to communicate to potential aggressors that these states are under protection. Without such signaling, the cooperating parties take great risks: 1) an adversary may not be deterred from attack and 2) the protector might be dragged into an unnecessary war.

simply whether a country enjoys a defense treaty with a superpower.[37] Each year under study is coded for the presence or absence of a defense treaty with a bipolar superpower. Of course, a state's confidence in a security guarantee can wax or wane, even if the paper commitment remains unchanged. In order to capture the strength of a security commitment over time, this study employs another measure: troop deployments by the guarantor to the ally's region. The advantage of using a indicator such as troop deployments is that it provides a continuous, rather than a bivariate, measure of the alliance relationship.

In general, one should expect that states that score positively for a defense treaty (and especially states enjoying the protection of large or increasing allied troop deployments) will not engage in numerous and/or serious actions to acquire nuclear weapons and may take actions towards renunciation. States that suffer the absence of a defense treaty or declining commitments from an ally should exhibit more acquisition-related behaviors, and few if any renunciation-related behaviors. Process tracing tests will be possible for those occasions where decision makers explicitly invoke security guarantees as relevant or irrelvant to their actions.

**B3. Superpower Pressure**

The decline of bipolarity is said to reduce the effectiveness of security guarantees, but it also has a second, related consequence -- a decline in the ability and interest of superpowers to pressure states to give up their nuclear ambitions.[38] Under bipolarity, the two dominant players have the interest and the wherewithal to prevent nuclear proliferation -- a view expressed by Deudney, Thayer, Mearsheimer, and Greenwood among others.[39] The Warsaw Pact countries, for example, had no

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[37] Of course, not every defense treaty is tantamount to a security guarantee. Indeed, it appears that both the providers and recipients of defense pledges take the precise language of the agreements very serious matter. Nevertheless, a defense treaty provides a practical, if crude, proxy for a security guarantee.

[38] Still another way in which bipolarity may discourage proliferation is suggested by Waltz. He argues that the US and the USSR developed so many warheads and such sophisticated arsenals that the price of entry was too high for other countries to consider. The French and British stockpiles, given their small size and inability to compete with the ever modernizing forces of the superpowers, were not credible and simply demonstrated to the rest of the world that modest nuclear forces were not worth the trouble. This is an argument that Waltz abandons in later versions of the "more is better" series. As Feaver and Sagan point out, Waltz' earlier stance fit uncomfortably with his current view that even small nuclear forces offer the protection of robust deterrence. It is worth noting a certain irony here. If one accepts Waltz' earlier position that small forces are not credible, and if one accepts Waltz' unrelated contention that the superpower arsenals were unnecessarily large, that much of the nuclear arms race was *irrational* given the absence of relative gains in the nuclear domain, then one is put in the position of arguing that an irrational behavior on the part of the superpowers -- not bipolarity -- contributed to nonproliferation. Waltz, 1979, p. 180; Kenneth Waltz, *Theory of International Politics*, (Reading, MA: Addison-Wesley, 1979); Peter D. Feaver, "Optimists, Pessimists, and Theories of Nuclear Proliferation Management," *Security Studies*, Vol. 4, No. 4 (Summer 1995), pp. 760-761.

[39] Daniel Deudney, "Dividing Realism: Structural Realism Versus Security Materialism on National Security and Proliferation," *The Proliferation Puzzle: Why Nuclear Weapons Spread and What Results*, Zachary S. Davis and Benjamin Frankel, eds., (London: Frank Cass, 1993), p. 13; Thayer, "The Causes of Nuclear Proliferation and the Nonproliferation Regime," p. 506; Mearsheimer, "Here We Go Again," p. 17; Meyer, *The Dynamics of Nuclear Nonproliferation*, p. 68.

choice but to remain non-nuclear or suffer the wrath of the Soviet Union.[40] The United States was able to achieve a similar result among most of its allies. South Korea and Taiwan, for example, are often cited as having canceled their nuclear programs because of American pressure.[41] From this perspective, the Nuclear Non-Proliferation Treaty was the vehicle used by the superpowers to force their respective allies into nuclear abstinence. More generally, this logic suggests the following hypothesis....

H4. Superpower pressure causes states to forgo or abandon the pursuit of nuclear weapons.

Superpower pressure is a phenomenon that differs from security guarantees in several respects. Security guarantees are highly visible. Pressure can be visible, but it can also take place behind closed doors. Security guarantees tend to be written documents that oblige the parties to behave in certain ways. Pressure is often delivered verbally, can take a variety of forms, and can be vague in the extreme. Finally, security guarantees once given, tend to persist over time, while applications of pressure tend to be case specific and more narrowly bounded in time.

To get at this elusive variable, a variety of tests are employed. Given a successful application of pressure, what else would one expect to see? Three predictions are deduced.

Prediction 1. The superpower will be aware of proliferation-related activities taking place within the country. The typical sequence of events consists of: a) a prospective proliferator engages in some objectionable nuclear behavior, b) a superpower discovers this activity, c) the superpower applies pressure to the proliferator, and d) the proliferator ceases the activity.[42] A superpower cannot apply pressure (c), without first having discovered some activity (b).

Prediction 2. The superpower will communicate its displeasure to the prospective proliferant. A particularly striking example of this kind of communication is Dean Rusk's warning to Israel in 1966 about its nuclear program. Speaking to Israel's Ambassador, the Secretary of State....

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[40] It may be that Soviet control of nuclear activity in the Eastern Europe has been overestimated. There are strong indications that both Romania and Yugoslavia had clandestine nuclear weapons programs. Rodney W. Jones and Mark G. McDonough, *Tracking Nuclear Proliferation*, (Washington: Carnegie Endowment for Peace, 1998), pp. 103-108; Andrew Koch, "Yugoslavia's Nuclear Legacy: Should We Worry?," *The Nonproliferation Review*, Vol. 4, No. 3 (Spring/Summer 1997), pp. 123-128; William C. Potter and Jonathan B. Tucker, "Well-Armed and Very Dangerous," *Los Angeles Times*, April 4, 1999, http://cns.miis.edu/pubs/reports/pottuck.htm.

[41] On the South Korean and Taiwanese nuclear programs see Michael J. Mazarr, *North Korea and the Bomb*, (London: Macmillan, 1995), pp. 25-28; Don Oberdorfer, *The Two Koreas*, (New York: Basic Books, 1997), pp. 68-74; Mitchell Reiss, *Without the Bomb: The Politics of Nuclear Nonproliferation*, (New York: Columbia University Press, 1988), pp. 78-108; Ta-you Wu, "A Footnote to the History of Our Country's 'Nuclear Energy' Policies," *Biographical Literature*, May, 1988, Translation from Chinese by ISIS; http://www.isis-online.org/publications/ index.html; Joseph A. Yager, "Northeast Asia," *Nonproliferation and U.S. Foreign Policy*, Joseph A. Yager, ed., (Washington: Brookings Institution, 1980), pp. 47-81; Frankel, "The Brooding Shadow: Systemic Incentives and Nuclear Weapons Proliferation," pp. 48-51.

[42] Alternatively, the sequence goes a) a proposal by the superpowers that their clients renounce nuclear weapons, b) pressure by the patron on its clients to accede to the proposal, and c) the client agreeing to the proposal.

> ...raised question of Israeli nuclear intentions. Would Israel agree to IAEA safeguards, he asked. Secretary noted our assumption GOI does not wish go nuclear, and added: if you do, you will lose US support. ...Secretary then told Israelis that nothing would be more disastrous to GOI than enter nuclear weapon field, and urged them to agree to international safeguards.

Ambassador Rafael responded, but Rusk continued to press the issue...

> The Secretary said either this card is in your deck, or it is not. If it's not, then get it out of the way by accepting safeguards. He again noted that if Israel is holding open the nuclear option, it would lose US support. We would not be with you, he said.[43]

Prediction 3. Decision makers will express the belief that they are being pressured. i.e., they understand the intent of the superpower's words or actions as pressure to abandon nuclear weapons, and refer to this fact during policy deliberations. Once again, the Rusk-Rafael episode provides a vivid example of a proliferator recognizing the application of pressure. After Rusk's initial comments, news of the encounter made its way back to Israel. When Abba Eban met with the American ambassador in Tel Aviv, he expressed his unhappiness...

> Referring to the secretary's conversation with Rafael, he took exception to what had been reported to him and the suggestion the U.S. would be quote through with Israel unquote if Israel did not do what we wanted in this respect. He felt this suggestion of sanctions against Israel was not in accord with the atmosphere of trust and good will that should prevail between good friends. ...I added it not question of sanctions, on contrary it matter of losing U.S. support. ...Eban concluded that he had gotten the signal.[44]

In addition, process tracing tests will be possible in those instances when decision makers or organizations invoke or dismiss superpower pressure as a reason for their behavior. So, for example, one could imagine that there might be an Israeli document in which the Prime Minister declares that the nuclear program will go forward regardless of Rusk's threat.

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43 As it turned out, the threat went nowhere. In October, when senior representatives of the governments met again, the US did not raise the issue, much to the surprise of the Israelis. On Rusk's original threat, see Telegram from Dean Rusk to US Embassy, Tel Aviv, "US Mission Geneva for Goldberg," June 28, 1966, p. 1, [Exdis], NAII, General Records of the Department of State, Central Decimal File, 1964-1966, Political and Defense, Def-Defense Affairs Israel 12 Armaments 1/1/65, Box 1643. On the US dropping the issue, see Telegram from Barbour to Secstate Washington, October 12, 1966, p. 1, NAII, General Records of the Department of State, Central Decimal File, 1964-1966, Political and Defense, Def-Defense Affairs Israel 12 Armaments 1/1/65, Box 1643.

44 Telegram from Barbour to Secstate Washington, October 12, 1966, p. 1, NAII, General Records of the Department of State, Central Decimal File, 1964-1966, Political and Defense, Def-Defense Affairs Israel 12 Armaments 1/1/65, Box 1643.

# III. Hypotheses on Resources and Nuclear Decision Making

A second set of hypotheses focuses on resources -- the role of money, scientific personnel, and foreign technology. Resource hypotheses have a long, if checkered, history. Early in the nuclear age, it was thought that the very capability to produce nuclear weapons would lead states to acquire them. Often referred to as the technological momentum hypothesis, it maintained that the attraction of turning the technically possible into the powerfully real would prove irresistible, and that technological development would take on a life of its own.[45] This notion has since fallen into disfavor, and for obvious reasons. As the nuclear age progressed, the number of states with the capacity to develop a nuclear option increased several fold, but proliferation did not.[46] Capability, it seems, do not cause states to *seek* nuclear weapons.[47]

Resource hypotheses have continued to persist in another form, however. Today, the argument is not that resources encourage the acquisition of nuclear weapons, but rather that a lack of resources inhibits the spread of nuclear weapons.[48] Put another way, the development of nuclear weapons requires a certain *minimum level* of resources, and this threshold functions as a barrier to further

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45 For a review of the technological momentum hypothesis, also known as the technological determinism thesis, see Lavoy, "Nuclear Myths and the Causes of Nuclear Proliferation," pp. 194-195; Meyer, *The Dynamics of Nuclear Nonproliferation*, pp. 9-12 and passim. For examples of this view, see Dietrich Schroeer, *Science Technology, and the Nuclear Arms Race*, (New York: Wiley, 1984); Lord Solly Zuckerman, *Nuclear Illusion and Reality*, (New York: Viking Press, 1983); and Herbert York, *Race to Oblivion A Participant's View*, (New York: Simon and Schuster, 1970). Though widely rejected today, the technological momentum thesis may find partial corroboration in the South African case, where, as one weapons scientist put it, "we did it because we could." Robert E. Kelley, "Two Substantially Different Approaches to Proliferation: The Cases of South Africa and Iraq," Paper presented for the Conference on Non-Proliferation, IGC, University of California, held at Limassol, Cyprus, August, 18, 1995, p. 9.

46 For critiques of the technological momentum thesis, see Cynthia Cannizzo, "A Critique of the Technical Approach," in *Nuclear Proliferation in the 1980s*, William H. Kincade and Christoph Bertram, eds., (New York: St. Martin's Press, 1982); pp. 173-193; Graham Spinardi, "Aldermaston and British Nuclear Weapons Development: Testing the 'Zuckerman Thesis,'" *Social Studies of Science*, Vol. 27, No. 1 (August 1997), pp. 547-582, and Meyer, *The Dynamics of Nuclear Nonproliferation.*

47 A more sophisticated version of the technical thesis is offered by Meyer: "1. The more advanced a country's nuclear infrastructure, the lower the direct financial and technical cost of 'going nuclear.' The lower the direct costs of 'going nuclear,' the easier the decision to do so. 2. The more advanced a country's nuclear infrastructure, the shorter the time lag between proliferation decision and the first weapon produced. The shorter the lag time, the greater the relevance of the 'nuclear option' to events at hand, and hence the greater the likelihood of making a proliferation decision. The shorter the lag time, the less likely the possibilities for timely and effective anti-proliferation intervention." Meyer finds that even this improved version does not survive empirical tests. Stephen M. Meyer, "A Statistical Risk Model for Forecasting the Proliferation of Nuclear Weapons," in Dagobert L. Brito et al, eds., *Strategies for Managing Nuclear Proliferation*, (Lexington, MA: Lexington Books, 1983), pp. 225-6.

48 Examples of the resource hypothesis include Rosecrance, Greenwood, Dunn and Kahn, among others. According to Meyer's survey, lack of technical and/or economic capability was the most frequently cited reason for why more countries have not developed nuclear weapons. Meyer, *The Dynamics of Nuclear Nonproliferation*, p. 68.

proliferation in the developing world.[49] There are two parts to the resource equation. One is a proliferator's indigenous resources, i.e., what a country has on hand or can mobilize. The second is access to the resources of other countries, and in particular, the ability to arrange technology transfers of nuclear weapons-related equipment. Put another way, in assessing the resources of a prospective proliferant, one must ask "what do they have?" and "what can they get?"

## A. The Proliferator's Indigenous Resources

Among a state's indigenous resources, two are particularly relevant: money and scientific personnel.[50] The influence of each is summarized in the following hypotheses.

H5. Developing states do not acquire nuclear weapons, because they lack the necessary financial resources.

H6. Developing states do not acquire nuclear weapons, because they lack the necessary scientific and technical personnel.

Both hypotheses can be evaluated using four general tests, the first three of which are based on the hypotheses' observables implications. Given a lack of money and personnel preventing the acquisition of nuclear weapons, what else one might expect to see?

Prediction 1. A country prevented from acquiring nuclear weapons because of resource constraints will have fewer resources than nuclear weapons states had at the time those countries decided to seek the bomb. The resource hypotheses maintain that there is a threshold, a minimum level of resources required for states to pursue nuclear weapons. One way to establish that minimum is to look at the states that successfully went down the nuclear path. China, for example, decided to seek nuclear weapons in 1955;[51] Pakistan made the decision no later than 1972;[52] and Israel made its decision in the mid-1950s.[53] One would expect that a state prevented by resource constraints from pursuing nuclear weapons would have fewer financial resources -- measured in real GNP, central government expenditure, and defense expenditures -- than nuclear weapons states at the time they

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[49] Presumably, countries lacking the capability to build nuclear weapons realize their own limitations and give up before they begin, while others start down the path and have to quit, because they discover that the project is beyond them.

[50] Industrial capacity has proven to be a less useful category of capability. Low levels of industrialization in Pakistan, Iraq, North Korea, and China did not prevent those countries from establishing advanced nuclear programs. The problem with using society-wide measures of capability, such as industrial output is that states have the capacity to focus a tremendous amount of resources on a particular problem if they so choose. For a contrary view, see Meyer, *The Dynamics of Nuclear Nonproliferation*, p. 109; Yair Evron, "The Arab Position in the Nuclear Field: a Study of Policies up to 1967," *Cooperation and Conflict*, Vol. 8, (1973), p. 21.

[51] John Wilson Lewis and Xue Litai, *China Builds the Bomb*, (Stanford,: Stanford University Press, 1988); Evan Feigenbaum, "The Military Transforms China: The Politics of Strategic Technology from the Nuclear Age to the Information Age," Unpublished Ph.D.. Dissertation, Stanford University, 1997, UMI Dissertation Service, pp. 45-54.

[52] Samina Ahmed, "Pakistan's Nuclear Weapons Program: Turning Points and Nuclear Choices," *International Security*, Vol. 23, No. 4 (Spring 1999), p. 183.

[53] Avner Cohen, *Israel and the Bomb*, (New York: Columbia University Press, 1998).

committed to the acquisition of nuclear weapons. Similarly, one would expect that a resource constrained stated would have a smaller base of scientists and engineers than similarly situated weapons states at the time they decided to seek the bomb.

Prediction 2. Countries held back by a lack of monetary or scientific resources will have little or no excess capacity, i.e., slack. If resource constraints are inhibiting a nuclear program, then one should not observe low levels of resource utilization relative to what could be mobilized. According to the resource hypotheses, states live at the margins of their resource extraction and therefore, the demands of a nuclear weapons program exceed their means.

Prediction 3. States that do not pursue nuclear weapons because of resource constraints will not have the money or scientific personnel to spend on similar but less important projects of equal cost. If a country has the resources to spend on non-nuclear military projects of lesser importance -- resources that could otherwise go towards a nuclear program -- then lack of resources cannot explain the lack of a nuclear weapons program.

The fourth test is a process tracing test. Do decision makers cite resource constraints as a reason for their decisions? Of course, the record may also reflect the opposite point of view, as in Zulfigar Ali Bhutto's famous declaration that Pakistanis would "eat grass" if necessary to acquire the bomb.[54]

## B. Access to External Resources

Even when a state lacks the indigenous resources to pursue nuclear weapons, it may be able to start down the nuclear path with a little help from its friends. Nuclear suppliers, eager to sell their wares or to win political favor, can facilitate a state's entry into the nuclear club. On the other hand, efforts to deny potential proliferators access to nuclear technology could inhibit proliferation.[55] Proponents of this idea point to a variety of national, multi-lateral, and international efforts -- export controls, the London Suppliers Group, IAEA efforts to combat nuclear smuggling, etc. -- that are said to have prevented the spread of nuclear weapons. Thus, the final resource hypothesis contends that....

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54 Ahmed, "Pakistan's Nuclear Weapons Program: Turning Points and Nuclear Choices," p. 183.

55 Denial of nuclear technology is distinct from superpower pressure, because a state or international regime may deny access to weapons without threatening the potential proliferator with further punishment. On denial as a nonproliferation tool, see Peter Clausen, "U.S. Nuclear Exports and the Nonproliferation Regime," in *Limiting Nuclear Proliferation*, Jed C. Snyder Samuel F. Wells, eds., (Cambridge: Ballinger, 1985), pp. 183-212; Victor Galinsky, "Restraining the Spread of Nuclear Weapons: A Walk on the Supply Side," in Limiting Nuclear Proliferation, *Limiting Nuclear Proliferation*, Jed C. Snyder Samuel F. Wells, eds., (Cambridge: Ballinger, 1985), pp. 255-283; C. Raja Mohan, "Why Nations Go Nuclear: An Alternate History," in *Nuclear Proliferation in the 1980s: Perspectives and Proposals* , William Kincade and Christopher Bertram, eds., (New York: St. Martin's Press, 1982), p. 38; William Potter, "Soviet Nuclear Export Policy, in Limiting Nuclear Proliferation," *Limiting Nuclear Proliferation*, Jed C. Snyder Samuel F. Wells, eds., (Cambridge: Ballinger, 1985), pp. 213-252. For a critique of denial approach, see George Rathjens, "Rethinking Nuclear Proliferation," in *Weapons Proliferation in the 1990s*, Brad Roberts, ed., (Cambridge: MIT Press, 1995), pp. 93-106.

H7. Developing states do not acquire nuclear weapons, because supplier states have nonproliferation policies that deny nuclear technology to potential proliferators.

Three testable predictions are deduced from this hypothesis. Each is based on an observable implication of the hypothesis; i.e., something that one should see if the hypothesis is true.

Prediction 1. Nuclear technologies denied by one supplier cannot be obtained from another supplier.

Prediction 2. Supplier states that deny a transfer of technology on nonproliferation grounds will avoid other nuclear transfers to that country. One would not expect, for example, that a supplier state would bid on nuclear projects or provide nuclear aid to a country that was suspected of seeking the bomb.

Prediction 3. A supplier state will attempt to encourage other suppliers to refrain from selling nuclear technology to the suspected state. Getting other supplier states to enforce denial policies would increase the effectiveness of the denial policy, while simultaneously protecting the market share of the supplier state.

The process tracing test for this hypothesis seeks documents and declarations by decision makers linking the policies of the supplier states with nonproliferation outcomes or decisions to forgo nuclear weapons.

# IV. Hypotheses on Ideas and Nuclear Decision Making

Hypotheses having to do with power and resources stress the objective features of international politics. This third category emphasizes the influence of subjective factors, internal to the state and its leaders. It suggests that a decision maker's beliefs in specific ideas and norms determine outcomes.[56] In particular, this study looks at the influence of norms, in this case, international norm against the possession of nuclear weapons.[57]

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[56] For an introduction to the role of ideas in international politics, see Judith Goldstein and Robert Keohane, eds., *Ideas and Foreign Policy: Beliefs, Institutions, and Political Change*, (Ithaca: Cornell University Press, 1993).

[57] Norms were a central part of the burgeoning regimes literature of the 1970s, but interest in norms waned until recently, when social constructivism, culture, and the sociology of knowledge began to play a more prominent role in writings on international affairs. On norms and international relations in general, see Friedrich Kratochwil, *Rules, Norms and Decisions*, (Cambridge: Cambridge University Press, 1989), and more recently, Martha Finnemore and Kathryn Sikkink, "International Norm Dynamics and Political Change," *International Organization*, Vol. 52, No 4 (Autumn 1998), pp. 887-917; Martha Finnemore, "International Norm Dynamics and Political Change, *International Organization*, Vol. 52, No. 4 (Autumn 1998), pp. 887. On norms and national security policy, see Peter J. Katzenstein, ed., *The Culture of National Security: Norms and Identity in World Politics*, (New York: Columbia University Press, 1996); Richard M. Price, *The Chemical Weapons Taboo*, (Ithaca: Cornell University Press, 1997). In this study the focus in on norms as distinct from other kinds of ideas that might conceivably influence nuclear behavior, e.g., belief in a particular military doctrines or expectations about the future.

Scholars refer to different categories of norms -- regulatory norms, constitutive norms, practical norms, and evaluative norms.[58] The focus here is on the last of these, i.e., norms which entail a moral judgment. Understood from this perspective, adherence to the anti-nuclear norm constitutes a moral rejection of nuclear weapons, not a calculation of costs and benefits. Advocates of norms-based explanations for nuclear behavior often refer to a "nuclear taboo."[59] Nehru's resistance to developing an Indian bomb and Japan's "nuclear allergy" are sometimes cites as examples of norm-driven behavior.[60] Proponents of norms also point to the NPT as one consequence of the growing international consensus against nuclear weapons.[61] A norms hypothesis would suggests the following....

H8. States reject nuclear weapons, because their leaders subscribe to a norm against the possession of nuclear weapons.

Testing the influence of an anti-nuclear norm raises difficult methodological challenges. One problem is circularity. How should the presence or absence of a norm be defined. If one defines the norm in terms of behavior, the result can be a tautology: norm-driven states will, as a matter of

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58 Peter J. Katzenstein, Introduction: Alternative Perspectives on National Security," in *The Culture of National Security: Norms and Identity in World Politics*, Peter J. Katzenstein, ed., (New York: Columbia University Press, 1996), p. 5.

59 On the taboo against the use of nuclear weapons, see Nina Tannenwald, "The Nuclear Taboo: The United States and the Normative Basis of Nuclear Non-Use," *International Organization*, Vol. 53, No. 3 (Summer 1999); Richard Price and Nina Tannenwald, "Norms and Deterrence: The Nuclear and Chemical Weapons Taboos," in *The Culture of National Security: Norms and Identity in World Politics*, Peter J. Katzenstein, ed., (New York: Columbia University Press, 1996), pp. 114-152.

60 On the Nehru, see Sumit Ganguly, "India's Pathway to Pokhran II: The Prospects and Sources of New Delhi's Nuclear Weapons Program," *International Security*, Vol. 23, No. 4 (Spring 1999), pp. 150-151; Stephen M. Meyer, "Nuclear Decision Making in India," (Cambridge: Center for International Studies, MIT, 1981), pp. 5, 9. For a different view of Nehru, see George Perkovich, *India's Nuclear Bomb*, (Berkeley: University of California Press, 1999). On Japan, see, for example, Peter J. Katzenstein and Nobui Okawara, *Japan's National Security: Structures, Norms, and Polices,* (Ithaca: East Asia Program, Cornell University, 1993), pp. 165-171; Selig S. Harrison, "Japan and Nuclear Weapons," in *Japan's Nuclear Future*, Selig S. Harrison, ed., (Washington: Carnegie Endowment for International Peace, 1996), pp. 5, 14-18.

61 Reiss, for example, maintains that norms -- what he calls "the general consensus against nuclear weapons" -- have been a contributing but secondary factor in nuclear restraint, particularly in the cases such as Sweden. Dunn credits anti-nuclear norms with anti-nuclear outcomes in "Indonesia, the Philippines, Singapore, Venezuela, Mexico, Chile, Egypt, Algeria, Nigeria, and Yugoslavia." Sagan argues that norms help explain why Ukraine gave up its nuclear weapons. A related and fascinating possibility is that during the Iran-Iraq War, religious leaders in Iran resisted the development of chemical weapons because of normative concerns. Mitchell Reiss, *Without the Bomb: The Politics of Nuclear Nonproliferation*, pp. 263-265; Lewis A. Dunn, "Four Decades of Nuclear Nonproliferation: Some Lessons from Wins, Losses, and Draws," *The Washington Quarterly*, Vol. 14 (Summer 1999), p. 7; Sagan, "Why Do States Build Nuclear Weapons? Three Models in Search of a Bomb," pp. 80-82; Gregory F. Giles, "Iranian Approaches to Chemical Warfare," Paper presented at the conference "WMD Use Concepts and Command and Control Practices, Naval Postgraduate School, August 6, 1997, Monterey, CA.

definition, engage in anti-nuclear behaviors. To avoid this problem, this study deduces an observable implication that does not rely on nuclear behavior. Given the hypothesized relationship -- that the rejection and renunciation of nuclear weapons are driven by normative concerns -- what else would one expect to see?

Prediction 1. States that reject nuclear weapons because of anti-nuclear norms will not seek, possess, or use stocks of chemical or biological weapons. This prediction is based on the assumption moral objections to nuclear weapons would apply with equal or greater force to non-nuclear weapons of mass destruction. Evidence for the presence or absence of interest in chemical and biological weapons would include a) documents from the proliferator's archives referring to current or planned activities in the field of chemical or biological weapons, b) UN and Red Cross reports of alleged use of chemical or biological weapons, and/or c) SIPRI and ADCA country assessments of chemical and biological programs.

Process tracing tests will be possible for those occasions where decision makers or organizations explicitly link or decouple their moral stance towards nuclear weapons and their nuclear decisions.

# V. Hypotheses on Institutions and Nuclear Decision Making

A fourth and final set of hypotheses looks at institutions -- the rules and arrangements through which humans organize their behavior. Two very different kinds of institutions are considered. One group consists of domestic institutions. States can organize themselves in a variety of ways, and some scholars argue that the choice of one form of institutional arrangement over another has a direct influence on the kinds of decisions states are likely to make regarding nuclear weapons. A second group consists of international institutions, and in particular the international nonproliferation regime.

We begin with domestic institutions. Three different kinds of domestic institutional arrangements are examined: political arrangements (democracy), economic arrangements (a liberalizing economy), and organizational arrangements.

## A. Democracy

Democracies, it is said, behave very differently from other kinds of states. Advocates of the "democratic peace" thesis, for example, maintain that full fledged democracies are less likely to engage in warfare against other democratic states.[62] A smaller group of scholars argue that this democratic difference influences the direction of nuclear policy as well. There are two versions of the democracy hypothesis.

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62 There is now a voluminous literature on the democratic peace, including, Michael Doyle, "Liberalism and World Politics," *American Political Science Review*, Vol. 80, No. 4 (December, 1986), 1151-1169; Bruce Russett, *Grasping the Democratic Peace: Principles for a Post-Cold War World*, (Princeton: Princeton University Press, 1993); Zeev Maoz and Bruce Russett, "Normative and Structural Causes of Democratic Peace, 1946-1986. *American Political Science Review* Vol. 87 (Sept. 1993), pp. 624-638. More skeptical views include Edward D. Mansfield and Jack Snyder, "Democratization and the Danger of War," *International Security*, Vol. 20 (Summer 1995), pp. 5-38.

**A1. General Democracy Hypothesis**

The first democracy hypothesis posits that democracies are simply less likely to pursue nuclear weapons. Glen Chafetz argues, for example, that democracies, because of shared norms and a common self-identity, can construct pluralistic security communities, which in turn ameliorate the proliferation-inducing effects of anarchy.[63] It is also argued that the democratic norms restrain nuclear acquisition, because of their effects on domestic politics. "...Having internalized core norms," says Chafetz, "both Germany and Japan would suffer negative and domestic repercussions from a decision to violate the nonproliferation regime."[64] Others have suggested that democratic transitions in Argentina, Brazil, and South Africa reversed earlier nuclear ambitions, in large part, because democracy undercut the domestic authority of those who had favored a nuclear weapons program.[65] A separate but complementary line of thinking suggests that non-democratic states or "rogue states" are more likely to pursue nuclear weapons.[66] Together, these views suggest the following hypothesis....

H9. Democratic or democractizing states are more likely to reject or renounce nuclear weapons; undemocratic and "rogue" states are more likely to seek nuclear weapons.

To test this hypothesis, one can use a simple congruence test. Values for the independent variable (democracy) can be derived from standard democracy indexes, e.g., Jaggers and Gurr's Polity III, as

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63 Chafetz, "The End of the Cold War and the Future of Nuclear Proliferation: An Alternative to the Neorealist Perspective," p. 133. Chafetz contends elsewhere that identity politics -- "the Liberal collective identity" -- provided the basis for the nonproliferation regime, and that membership in the Liberal community of nations determines how the nonproliferation regime is enforced. Chafetz, "The Political Psychology of the Nuclear Nonproliferation Regime."

64 Chafetz, " The End of the Cold War and the Future of Nuclear Proliferation: An Alternative to the Neorealist Perspective," p. 133.

65 On Argentina, Brazil, and the nonproliferation effects of democratization, see Michael Barletta, "Nuclear Security and Diversionary Peace: Nuclear Confidence-Building in Argentina and Brazil," *National Security Studies Quarterly*, Vol. 5, No. 3 (Summer 1999), pp. 19-38; John. R. Redick, "Factors in the Decisions by Argentina and Brazil to Accept the Nonproliferation Regime," in *Pulling Back from the Nuclear Brink: Reducing and Countering Nuclear Threats*, Barry R Schneider and William Dowdy, eds., (London: Frank Cass, 1998), pp. 67-79.

66 In earlier writings on nonproliferation, rogues states were known as pariah or garrison states, though pariahs tended to be defined in terms of how others states treated them while rogue states have been defined in terms of how they treat other states. On pariahs, rogues and nuclear weapons, see Betts, "Paranoids, Pygmies, Pariahs and Nonproliferation Revisited;" Pierre Lellouche, "The Garrison States", in *Nuclear Proliferation in the 1980s: Perspectives and Proposals*, Kincade, William, and Christopher Bertram, eds., (New York: St. Martin's Press, 1982), p. 63-111; Michael Mandelbaum, "Lessons of the Next Nuclear War," *Foreign Affairs*, Vol. 72, No. 2 (March-April 1995), pp. 22-37; Colin S. Gray, "Deterrence in the New Strategic Environment," *Comparative Strategy*, Vol. 11, No. 3 (July-September 1992), pp. 247-267. For an alternative view of the rogue state concept, see Michael Klare, *Rogue States and Nuclear Outlaws*, (New York: Hill and Wang, 1995); Ashok Kapur, "Rogue States and the International Nuclear Order," *International Journal*, Vol. 51, No. 3 (Summer, 1996), p. 420-439.

well as the Doyle and the Russett indexes .[67] The hypothesis predicts that during democratic or democratizing periods, a country should engage in more anti-nuclear behaviors and fewer pro-nuclear behaviors. Undemocratic or increasingly undemocratic periods should manifest the opposite tendency.

**A2. Electoral Politics**

Another version of the democracy hypothesis suggests that what is unique about democracy is the particular way in which competition for political power is based on electoral support. To maintain political power, leaders must win backing from voters, parties, and other constituencies. This version of the democracy hypothesis suggests that nuclear decisions will be influenced by the political competition for electoral advantage. In Sweden and Japan, for example, nuclear ambitions may have been constrained by what was politically acceptable to voters or coalition partners. This competition for electoral advantage, what Solingen calls "coalition politics" and what Reiss refers to as "domestic pressures," is the basis for the following hypothesis.[68]

H10. Democratic states will reject or renounce nuclear weapons, when it is electorally advantageous to do so.

Testing this hypothesis requires a workable definition of "electoral advantage." This study defines electoral advantage in terms of the preferences of three key electoral constituencies: the median voter, the party voter, and coalition partners in a government.

To assess the relationship between preferences of the median voter and government nuclear policy, one can employ a congruence test. Values for the independent variable -- voter attitudes towards nuclear weapons -- can be operationalized as preferences expressed in public opinion surveys. One can then compare polling numbers on nuclear weapons with actions by the government. When the public favors nuclear weapons, one should see more actions favoring acquisition; when they oppose nuclear weapons, one should see actions in the opposite direction.

The relationship between voter preferences and nuclear behavior can also be evaluated with an observables test. Given the hypothesized relationship -- that the preferences of voters influences nuclear outcomes -- what else should we expect to see?

Prediction 1. The party in power will communicate its position on nuclear issues to voters during election *campaigns*. Voters can only reward political leaders for their behavior if they are aware of the government's record. The most important time to communicate that information is during a campaign.

Of course, there are times when an government's chief electoral worry is not the average voter, but rather the base voter or party activist. At other times, electoral advantage may depend not on party

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67 On Polity III, see Keith Jaggers and Ted Robert Gurr, *POLITY III: Regime Change and Political Authority, 1800-1994*, [computer file], (Study #6695), 2nd ICPSR version, (Ann Arbor: Inter-University Consortium for Political and Social Research, 1996) or http://www.colorado.edu/IBS/GAD/spacetime/data/Polity.html.

68 On the role of Sweden, Japan, and the role of domestic politics more generally, see Reiss, Mitchell Reiss, *Without the Bomb: The Politics of Nuclear Nonproliferation*, pp. 117-119, 249-251; Sagan, "Why Do States Build Nuclear Weapons? Three Models in Search of a Bomb," pp. 63-73.

voters, but on the support of coalition partners. Given the hypothesized relationship, that the preferences of party voters or coalition partners influences nuclear outcomes, what other behaviors can one expect to see?

Prediction 2. The party in power will communicate its position on nuclear issues to party voters via party *platforms*. Again, the only way for a party to reap the electoral reward of its actions is to publicize its accomplishments to the relevant audience. A traditional way for parties to communicate with party voters and activists is through the party platform. Given the hypothesis, one would expect governments to include their position on nuclear weapons in their party platform, and additionally, that there would be a correspondence between the platform and government policy.

Prediction 3. Coalition partners will have platforms and campaigns that feature nuclear issues. The hypothesis suggests that the party in power will trim its nuclear policy in order to win the support of a coalition partner. If nuclear policy is important enough to the coalition partner that it can influence its level of support for the ruling party, then it should be important enough to be included in the party platform or election campaign. If nuclear policy is unimportant to the coalition partner, then the ruling party will have no reason to use it as an instrument for cultivating support.

Process tracing tests will be possible on those occasions where decision makers or organizations cite electoral factors as an influence or a non-factor in their decision calculus.

## B. A Liberal Political Economy

The previous hypotheses focused on domestic political arrangements, the key question being "is the country is democratic?" Here the focus is on political economy, and the question asks instead, "is the country liberalizing its economy?" According to the liberal political economy hypothesis, a state's choice of economic institutional arrangements, a choice between markets and autarky, will influence the direction of its nuclear policy.

The main proponent of this thesis is Solingen.[69] She argues that developing countries participate in restraining nuclear regimes, because it represents a "political component" in a larger "grand strategy for industrialization."[70] These states want economic growth, so they join Western-style international institutions, hoping that membership will improve their international standing and encourage foreign investment. The net effect is that "ruling coalitions pursuing economic liberalization are more likely to embrace regional nuclear regimes than their inward-looking, nationalist, and radical-confession counterparts."[71] Since states seeking the liberal imprimatur must not only join regimes but respect them, the net effect is that choices driven by political economy end up determining the state's nuclear posture.

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69 For the most part, Solingen argues that factors relating to political economy affect choices about regional nuclear regimes, but the logic should apply equally (or even more so) in the case of international regimes.

70 Etel Solingen, "The Domestic Sources of Regional Regimes: The Evolution of Nuclear Ambiguity in the Middle East," *International Studies Quarterly*, Vol. 38, No. 2 (June 1994), pp. 305-337.

71 Etel Solingen, "The Political Economy of Nuclear Restraint," *International Security*, Vol. 39, No. 2 (Fall 1994), p. 136.

According to Solingen, the influence of political economy on nuclear policy is strongest when the countries involved are "fence sitters," countries that have not yet decided what policy to adopt towards the nonproliferation regime. It is their desire for economic development that tips them towards nuclear renunciation. One can summarize the argument this way....

H11. States with liberalizing economies are less likely to seek nuclear weapons, but instead will to join anti-nuclear regimes; illiberal states will not join these regimes and will be more likely to seek nuclear weapons.

One can test this hypothesis in a variety of ways. To begin with, one can construct a crude congruence test in which the independent variable -- the presence of a liberalizing economy -- is defined using standard measures such as changes in the level of foreign direct investment, trade as a percentage of GDP, and levels of foreign owned assets. The hypothesis predicts that increases in one or all of these three measures should be associated with the rejection or renunciation of nuclear weapons and few, if any, behaviors favoring acquisition. Low or declining values should indicate an illiberal or illiberalizing economy, and should therefore, be associated with the opposite kinds of behavior.

There is an obvious problem with this test, however. Just because a country wants foreign investment does not mean that it will get foreign investment. It may fail, regardless of intent or effort. To get around this problem, one can add another measure, namely the presence or absence of a declaratory policy favoring liberalization. One should expect that states with declaratory postures favoring liberalization will pursue renunciation over acquisition, while states with the opposite declaratory policy will behave in the opposite manner.

The liberalizing economy hypothesis can also be evaluated using an "observables test." Given the hypothesis that liberalizing states join nuclear control regimes to boost economic development, what else should one expect to see? One prediction is offered.

Prediction 1. States with liberalizing economies will join other, comparable regimes, e.g., regimes related to non-nuclear weapons of mass destruction and other arms control treaties. This prediction is based on the logic that if states adopt a regime-joining strategy to boost their foreign standing, then they will engage in similar behavior with respect to comparable regimes.

## C. Organizational Politics

Advocates of the organizational politics hypothesis emphasize that nuclear policy making takes place within a set of institutional arrangements that govern the production of decisions, and that these rules directly influence the content or outcome of decisions. For scholars of international relations, the organizational politics approach is most often associated with Allison and his landmark book, *Essence of Decision.* [72] Allison is so closely associated with the organizational politics model that it is easy to forget that bureaucracy has been a topic of contemporary social science since Weber, and that organizational politics attracted a number of serious scholars -- Neustadt, Huntington, and Tullock, among others -- in the years leading up to the publication of

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72 Graham Allison, *Essence of Decision*, (New York: Scott, Foresman and Company, 1971); Graham Allison and Philip Zelikow, *Essence of Decision*, Second Edition, (New York: Longman, 1999).

*Essence of Decision*.[73] Allison offers two related models. Model II focuses on organizational actors, organizational capacities, and the problems of implementation. Model III describes the policy process in terms of "players" (organizations and individuals) and focuses on bargaining. More that one commentator has had difficulty sorting out the two models.[74] Others have struggled to organize the models' many analytic concepts into a coherent whole.[75]

### C1. An Alternative Organizational Politics Model

In this study, the organizational politics hypothesis is grounded in a model that does not strictly conform to either Allison's Model II or Model III, though it shares similarities with both. The intent of this alternative model is to provide a definition of organizational politics that is more modest but more rigorous. As with Allison's models, this one starts with the fact that decisions are made by some combination of individuals and organizations. Since the preference and behavior of individuals is difficult to predict, the focus of this organizational politics model is organizations. To understand the role of organizations in generating policy outcomes, the model looks at three different stages in the policy process: proposals, decisions, and implementation. Depending on a state's institutional arrangements, organizations can play a role in all three areas, though the chief interest of this study is the relationship between organizations and decisions.

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[73] Richard Neustadt, *Presidential Power*, the Politics of Leadership, (New York, Wiley, 1960); Samuel Huntington, *The Common Defense*, (New York: Columbia University Press, 1961); Gordon Tullock, *The Politics of Bureaucracy*, (Washington: Public Affairs Press, 1965).

[74] Critics of Allison and the organizational politics approach include Steven Krasner, "Are Bureaucracies Important (Or Allison in Wonderland)," *Foreign Policy*, Vol. 7 (1972), pp. 159-179; Desmond Ball, "The Blind Men and the Elephant: A Critique of Bureaucratic Politics Theory," *Australian Outlook*, Vol. 28 (1974), pp. 71-92; Robert J. Art, "Bureaucratic Politics and American Foreign Policy: A Critique," *Policy Sciences*, Vol. 4 (December 1973), pp. 467-490; Jonathan Bendor and Thomas H. Hammond, "Rethinking Allison's Models," *American Political Science Review*, Vol. 86, No. 2 (June 1992), p. 301-322; David A. Welch, "The Organizational Process and Bureaucratic Politics Paradigms," *International Security*, Vol. 17, No. 2 (Fall 1992), pp. 112-146; Edward Rhodes, "Do Bureaucratic Politics Matter, Some Disconfirming Findings from the Case of the U.S. Navy," *World Politics*, Vol. 47, No. 1 (October 1994), pp. 1-44.

[75] A remarkable characteristic of Allison's models is that they are both widely used and widely scorned. *Essence of Decision* is an academic best seller, but few scholars have anything positive to say about the models. Within international relations, the critics of organizational politics are disdainful and its defenders apologetic. See, for example, "Whither the Study of Governmental Politics in Foreign Policymaking? A Symposium," *International Studies Quarterly/Mershon International Studies Review*, Vol. 42, Supplement 2 (November, 1998), pp. 205-255. One problem with the critics' critique, however, is that their analysis begins and ends with Allison and his contemporaries. The organizational politics model is lambasted as if it were still the 1970s. As students of international relations increasingly shunned organizational politics, scholars in other sub-disciplines, primarily Americanists and "new institutionalists," constructed a large literature on the importance of institutional arrangements to policy outcomes. See, for example, Jonathan Bendor and Terry M. Moe, "An Adaptive Model of Bureaucratic Politics," *American Political Science Review*, Vol. 39, No. 3 (September 1985), pp. 755-774; Thomas H. Hammond, "Agenda Control, Organizational Structure, and Bureaucratic Politics," *American Journal of Political Science*, Vol. 30, pp. 380-420; Thomas H. Hammond, "Formal Theory and the Institutions of Governance," *Governance*, Vol. 9, No. 2 (April 1996), pp. 107-185.

Decisions, themselves, can be said to have at least three parts: 1) the decision group, 2) the decision set, and 3) the decision rule. In essence, these components provide the "who," "what" and "how" of any decision.[76] All that remains is establishing the preferences of the actors, or in this case, the organizational actors.

Specifying preferences for organizational actors represents the core of the organizational approach, and most every model of organizational politics employs some version of Miles' Law, or the proposition that "where you stand depends on where you sit."[77] This model employs a similar assumption, namely, that organizations seek and prefer proposals that maintain or enhance their organizational interest. The most important interest for an organization is its continued survival. Beyond that, scholars have identified a number of possible interests, but most emphasize four general interests: budgets, autonomy, jurisdiction, and organizational mission.[78]

### C2. Organizational Politics and Nuclear Decision Making

Organizational politics has been used to explain a wide range of phenomena in foreign policy and international politics. It has not , however, been a popular explanation for proliferation decisions. Early writings on proliferation occasionally warned about the likely collusion between scientists and the military, but with the notable exception of Scheinman, it is only recently that the role of organizations in nuclear decision making has received serious attention.[79]

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[76] The decision *group* consists of the individual and organizational actors that render judgments about a given proposal. Actors within the decision group can be characterized by their positions (where they are in the decision hierarchy) and their preferences. The decision *set* is the list of options or alternatives over which the decision group renders a decision. The decision *rule* provides the method by which preferences are aggregated and disagreements resolved. Groups might choose from any number of decision rules, e.g., consensus, majority rule, weighted voting, management by exception, etc. Understood this way, a decision is defined as the product of a decision group applying a decision rule to a set of preferences over a set of alternatives.

[77] Allison, *Essence of Decision*, p. 176.

[78] On organizations and their interests, see Warner Schilling, "The Politics of National Defense: Fiscal 1950," in *Strategy, Politics, and Defense Budgets*, Warner Schilling, Paul Hammond, and Glenn Snyder, eds., (New York: Columbia University Press, 1962); Anthony Downs, *Inside Bureaucracy*, (Boston: Little, Brown, 1967); Morton H. Halperin, *Bureaucratic Politics and Foreign Policy*, (Washington: Brookings Institution, 1974); I. M. Destler, *Presidents, Bureaucrats, and Foreign Policy*, (Princeton: Princeton University Press, 1972); Harvey Sapolsky, *The Polaris System Development: Bureaucratic and Program Success in Government*, (Cambridge: Harvard University Press, 1972); Jerel Rosati, "Developing a Systematic Decision-Making Framework: Bureaucratic Politics in Perspective," *World Politics*, Vol. (1981), pp. 234-253; James Q. Wilson, *Bureaucracy: What Government Agencies Do and Why They Do It*, (New York: Basic Books, 1989).

[79] Studies mentioning a possible link between bureaucratic politics and proliferation decision making include Richard Rosecrance, "International Stability and Nuclear Diffusion," in Richard Rosecrance, ed., *The Dispersion of Nuclear Weapons*, (New York: Columbia Press, 1964); Richard K. Betts, "Incentives for Nuclear Weapons," in Joseph A. Yager, ed., *Nonproliferation and U.S. Foreign Policy*, (Washington: Brookings Institution, 1980), pp. 135-144; Potter, *Nuclear Power and Nonproliferation*, p. 143. The classic treatment of bureaucracies and nuclear proliferation is Lawrence Scheinman, *Atomic Energy Policy in France Under the Fourth Republic*, (Princeton,: Princeton University Press, 1965). For more recent assessments, see Sagan, "Why Do States

The organizational politics model suggests that decisions about nuclear weapons, like other government decisions, are the result of contests between powerful organizations with identifiable interests. Bureaucratic actors whose organizations are likely to benefit from the acquisition of nuclear weapons will place nuclear proposals on the policy agenda and push for their acceptance. Organizations that oppose acquisition, or favor renunciation, are likewise following their organizational interest. Given the preferences of the actors, outcomes are determined by the composition of the decision group, the set of alternatives under review, and the decision rule. In general, it suggests ...

H12. States seek nuclear weapons, because organizations that would benefit from their acquisition pursue them; states reject or renounce nuclear weapons, because organizations that benefit from rejection or renunciation push for that policy.

To assess the strength of the organizational politics hypothesis, we start with three congruence tests. In a world in which the hypothesis holds, how should we expect organizations to behave? Three predictions are offered.

Prediction 1: There will be a correspondence between organizational interest and the source and content of nuclear proposals. Proposals for nuclear weapons programs should come from organizations that are most likely to benefit from a nuclear weapons program, while proposals for renunciation should originate from organizations that stand to gain the most from nuclear renunciation.

Prediction 2: There will be a correspondence between organizational interest and policy positions regarding nuclear weapons. The organizational politics hypothesis suggests that during policy deliberations, organizations and their senior representatives (e.g., ministers and department heads) will take positions that correspond with their organization's interest. As with the prediction concerning proposals, a correspondence between policy positions and organizational interest can not prove or confirm the hypothesis, but the absence of such a correspondence would appear to disconfirm it. Indeed, critics of organizational politics have made just this kind of argument, e.g.,

that positions taken by Excomm members during the Cuban missile crisis did not conform to expectations.[80]

Prediction 3. There will be a correspondence between the composition of the decision group, the decision set, and nuclear decisions. The third test looks at the decision sets, decision groups, and decision outcomes over time and asks whether changes in the organizational players correlate with changes in outcomes.

## D. Regimes

The focus now shifts from domestic level institutional arrangements to institutions at the international level -- international law, international organizations, and more generally, international regimes. Three variants of the regime argument are evaluated: a general version of the regimes hypothesis, and two additional explanatory hypotheses that identify particular causal processes at work. The analysis begins with a brief overview of the regime argument.

The literature on international regimes is an extensive,[81] but a surprisingly modest share of it addresses nuclear weapons and the nonproliferation regime.[82] I say "surprising," because many

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Build Nuclear Weapons? Three Models in Search of a Bomb;" and Thayer, "The Causes of Nuclear Proliferation and the Nonproliferation Regime;" and Flank, "Nonproliferation Policy: A Quintet for Two Violas?," *The Nonproliferation Review* , Vol. 1, No. 3 (Spring/Summer 1994). The historical sociology of technology offers a similar perspective, often blending organizational and constructivist elements. On historical sociology of technology and nuclear decision making see Flank, "Exploding the Black Box;" Tanya Ogilvie-White, "Is There A Theory of Nuclear Proliferation? An Analysis of the Contemporary Debate," *The Nonproliferation Review*, Vol. 4, No. 1 (Fall, 1996), pp. 43-60; and more generally, in the work of Donald MacKenzie and Thomas Hughes, as in Donald A. MacKenzie, *Inventing Accuracy: a Historical Sociology of Nuclear Missile Guidance*, (Cambridge: MIT Press, 1990); and Thomas P. Hughes, "The Evolution of Large Technological Systems," in *The Social Construction of Technological Systems*, Thomas P. Hughes, Wiebe E. Bijker, and Trevor J. Pinch, eds., (Cambridge: MIT Press, 1987). More generally, Sagan has looked at the role of organizations in states that already possess nuclear weapons. Scott D. Sagan, *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons*, (Princeton: Princeton University Press, 1993).

80 David A. Welch, "The Organizational Process and Bureaucratic Politics Paradigms."

81 On regimes, see Stephen Krasner, ed., *International Regimes*, (Ithaca: Cornell University Press, 1983); Robert O. Keohane, *After Hegemony: Cooperation and Discord in the World Political Economy* (Princeton: Princeton University Press, 1984); Robert Keohane, "Neoliberal Institutionalism: A Perspective on World Politics," in *International Institutions and State Power,* Robert Keohane, ed., (Boulder: Westview, 1989); Oran R. Young, "International Regimes: Problems of Conception Formation," *World Politics* (April 1980), pp. 331-356; Oran R. Young, "International Regimes: Toward a New Theory of Institutions," *World Politics*, Vol. 39, No. 1 (1986), pp. 104-122; Stephen Haggard and Beth A. Simmons, "Theories of International Regimes," *International Organization*, Vol. 41, No. 3 (1987), pp. 491-517; Lisa L. Martin and Beth A. Simmons, "Theories and Empirical Studies of International Institutions," *International Organization*, Vol. 52, No. 4, pp. 729-757.

82 Joseph Nye, "Nuclear Learning and U.S.-Soviet Security Regimes," *International Organization*, Vol. 41, No. 3 (1987), pp. 371-402; Roger K. Smith, "Explaining the Non-

view the nonproliferation regime as an example of a successful security regime, a phenomenon that is considered rare in international politics.[83] Among those who cite the salutary effects of nonproliferation regime are Rosecrance, Greenwood, Potter, Meyer, Quester, Smith, Reiss, Mandelbaum, and Sagan. In addition, both Chafetz and Solingen make regime-related arguments.[84]

Understanding the logic of regimes requires a careful parsing of causes and effects. Regimes have been treated as both an independent variable and an intervening variable. Scholars combine regimes with a number of other factors, including superpower pressure, democracy, liberalizing economies, and norms. Norms, for example, are considered both constitutive elements of regimes (along with rules and practices) and an effect of regimes.

The picture is further complicated by fact that regimes may influence different parties in different ways. First, there are the countries that *join* the regime. Second, there are states that are not members, but that are nevertheless constrained by a regime. A nonproliferation regime may, for example, make it more difficult for non-members to acquire weapons-sensitive nuclear technologies. The focus here, however, is on the first group, i.e., states that join the nonproliferation regime.

**D1. General Regime Hypothesis**

The general regime hypothesis suggests that....

H13. Countries that join anti-nuclear regimes are less likely to pursue nuclear weapons; countries that do not join regimes are more likely to seek nuclear weapons.

To test this hypothesis, one can use a simple congruence test, which compares nuclear behavior before and after a country's ratification of the NPT.

Another way to test the regime hypothesis is to look at its explanatory hypotheses. Three explanatory hypotheses for the influence of regimes are commonly offered. The first is that regimes change state behavior through the introduction or reinforcement of norms and through a related

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proliferation Regime: Anomalies for Contemporary International Relations Theory," *International Organization*, Vol. 41, No. 2 (Spring, 1987), pp. 253-281; Harald Muller, "The Internalization of Principles, Norms, and Rules by Governments: The Case of Security Regimes," in *Regime Theory and International Relations*, Volker Rittberger, ed., (Oxford: Clarendon Press, 1995); Allison L. C. de Cerreo, "Nuclear Non-Proliferation: the Origins of a Security Regime," Paper presented at the 1994 Annual Meeting of the American Political Science Association, September 1-4, 1994.

83 Robert Jervis, "Security Regimes," in *International Regimes*, Stephen D. Krasner, ed., (Ithaca: Cornell University Press, 1983), pp. 173-194.

84 On Rosecrance, Greenwood, Potter, Meyer, see Meyer, *The Dynamics of Nuclear Nonproliferation*, pp. 68, 102; see also Quester, "The Epistemology of Nuclear Proliferation," *Journal of International Affairs*, Vol. 40 (Summer, 1986), p. 178; Smith, "Explaining the Non-proliferation Regime: Anomalies for Contemporary International Relations Theory;" Reiss, *Without the Bomb*, pp. 260-263; Mandelbaum, "Lessons of the Next Nuclear War," p. 24; Sagan, "Why Do States Build Nuclear Weapons? Three Models in Search of a Bomb," pp. 76, 80-82; Chafetz, "The Political Psychology of the Nuclear Nonproliferation Regime;" Solingen, "The Domestic Sources of Regional Regimes: The Evolution of Nuclear Ambiguity in the Middle East."

process of "socialization."[85] Others argue that regimes are effective, because they allow countries to escape a nuclear prisoner's dilemma. Still others attribute the impact of regimes to the force of international law.[86] Since the effects of norms are examined elsewhere, the focus here will be on the latter two explanatory hypotheses.

**D2. The Nuclear Prisoner's Dilemma (PD)**

According to one school of thought, the spread of nuclear weapons provides a classic prisoner's dilemma. The virtue of the Nuclear Non-proliferation Treaty, it is argued, is that it provides states with a solution to this game-theoretic problem.[87]

The PD logic posits that Country A's most preferred outcome is to have nuclear weapons while its enemy remains non-nuclear. Its least preferred outcome is for its enemy to develop nuclear weapons while it remains non-nuclear. If both sides develop nuclear weapons, the result is that its security is worse off than if neither side had gone nuclear. The NPT, it is argued, provides the machinery that enables dyads or groups of states to achieve their second most preferred outcome -- for all sides to remain non-nuclear. Countries can remain non-nuclear but be confident that their prospective enemy is not gaining an advantage by their restraint. In sum, the explanatory hypothesis suggests that...

H14. The nonproliferation regime prevent states from seeking nuclear weapons, because it solves the prisoner's dilemma confronting potential proliferators.

The observable implications of this hypothesis are straightforward.

Prediction 1. None of the relevant states already possess nuclear weapons states.

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85 See, for example, Martha Finnemore, "International Organizations as Teachers of Norms: The United Nations Educational, Scientific, and Cultural Organization and Science Policy," *International Organization*, Vol. 47, No. 4 (Autumn 1993), pp. 565-598.

86 Scholars have identified other reasons that might explain the influence of regimes. Moravcsik maintains that states are drawn to regimes, because they dampen domestic political uncertainty. Barnett and Finnemore focus on the ability of international organizations to make rules and create social knowledge. Andrew Moravcsik, "The Origins of Human Rights Regimes: Democratic Delegation in Postwar Europe," *International Organization*, Vol. 54, No. 2, pp. 217-252; Michael N. Barnett and Martha Finnemore, "The Politics, Power, and Pathology of International Organizations," *International Organization*, Vol. 53, No. 4 (Autumn 1999), pp. 699-732.

87 It is also argued that the NPT provides a mechanism for solving another game theoretic problem a coordination game. From this perspective, the absence of nuclear proliferation is a public good that states would like to enjoy but cannot achieve alone. Their efforts are only meaningful if other like-minded states participate together. The treaty serves as a vehicle that allows states to pursue nonproliferation and to pay the costs associated with that policy (e.g., from export controls) confident in the knowledge that they will not be alone and that their efforts entertain a reasonable chance of success. On non-proliferation as a public good, see for example, Ian Bellany, "The Non-Proliferation of Nuclear Weapons: Commentary from a Public Goods' Perspective," in *The Nuclear non-Proliferation Treaty*, Ian Bellany, Coit D. Blacker and Joseph Gallacher, eds., (London: Frank Cass, 1985), pp. 99-108 as well as Van Evera, "Hypotheses of the Causes of the Rate of Nuclear Proliferation," p. 4.

Prediction 2. Signature and ratification of the NPT will be reciprocal. One would expect, for example, that if a hostile dyad decided to use the NPT as a way around the PD, the two countries would join at more or less the same time. One would not expect to see one state ratify the treaty without action by the other(s).

**D3. The Force of International Law**

Game theory represents a relatively recent development in international relations, but the international law hypothesis harkens back to a much older tradition. The argument here is that states respect international law, either because they want to (e.g., they have internalized legal norms), or because they feel they have to (e.g., that do not want a reputation for breaking commitments, they depend on international law for protection in other areas). It suggests that once a legal commitment is made, states feel bound to follow their obligation. Simply put, the hypothesis stipulates that....

H15. The nonproliferation regimes prevents states from seeking nuclear weapons, because states feel compelled to uphold their legal commitments under the international treaties.

To test the hypothesis, one can look at its observable implications. Given a country that remains non-nuclear because of its legal obligations under the NPT, what other kinds of behaviors can be expected? In general, one would expect that the country treats similar commitments with a similar degree of seriousness. In particular, two predictions are deduced.

Prediction 1. Countries that abide by the NPT because of the force of international law will not violate other treaties involving non-nuclear weapons of mass destruction. Evidence for violating a treaty would consist of a) UN and Red Cross reports of alleged use of chemical or biological weapons, b) assessments by scholars and expert organizations (e.g., SIPRI and ADCA), and c) archival documents and interviews with government officials.

Prediction 2. Countries that feel obliged by international law will pay nontrivial costs to avoid legal obligations they do not want to assume. Put another way, states will not pay substantial costs worrying about legalisms they do not take seriously. As applied to nuclear decision making, one would look for evidence that a country paid or was ready to pay a cost to avoid treaties having to do with weapons of mass destruction.

# VI. Summary

In all, 15 hypotheses are under consideration, and each is the subject of multiple tests. (Table 2.3 at the end of this chapter provides a summary of the hypotheses and tests.) The hypotheses focus on four core aspects of international politics -- power, resources, ideas and institutions. The purpose of this study is to determine which, if any, of these hypotheses can account for the puzzle of limited proliferation.

Each hypothesis is individually tested, but in the end, the most important test will consist of comparing the performance of rival hypotheses. Performance can be judged in absolute terms, i.e., which ones pass the most rigorous tests, explain the most variance in outcomes, and so on.

Performance can also be judged in relative terms or "performance against expectations." Here the question is whether a hypothesis performs better or worse than expected. Across the 15 hypotheses considered here, some are more widely invoked than others. Without question, the most commonly cited explanations for nuclear decisions refer to the role of external threats. With

the exception being the regimes hypothesis, the least cited explanations are those having to do with institutions. Are the commonly cited explanations for nuclear restraint under- or over- valued? Do they get more credit or less credit than they deserve?

To answer these questions, one must consider empirical cases. We begin with Australia.

## Table 2.3 Summary of Hypotheses and Tests

| Hypothesis | Tests |
|---|---|
| **Power** | |
| **H1. Threat** | 1) Correspondence b/t level of threat and nuclear decision making (NDM).<br>2) Process tracing. |
| **H2. Bipolarity** | 1) Correspondence b/t of bipolarity and NDM. |
| **H3. Security Guarantee** | 1) Correspondence b/t guarantee and NDM.<br>2) Correspondence b/t allied troop deployments and NDM.<br>3) Process tracing. |
| **H4. Pressure** | 1) Superpower is aware of proliferator activity.<br>2) Superpower issues threat.<br>3) Proliferator perception of being pressured.<br>4) Process tracing. |
| **Resources** | |
| **H5. Financial Resources** | 1) State will have fewer resources than NWS at the time of their decision.<br>2) State will not have slack resources.<br>3) Absence of expenditures on similar but less important programs of equal cost.<br>4) Process tracing. |
| **H6. Scientists** | [See 4 tests of financial resources hypothesis above.] |
| **H7. Denied Foreign Technology** | 1) Developing state cannot acquire technology from another supplier.<br>2) Supplier state will reduce nuclear transfers to the potential proliferator.<br>3) Supplier state will lobby other states to restrict tech transfers.<br>4) Process tracing. |
| **Ideas** | |
| **H8. Norms** | 1) States will not seek, possess, or use stocks of chemical or biological weapons.<br>2) Process tracing. |
| **Institutions** | |
| **H9. Democracy** | 1) Correspondence b/t level of democratic development and NDM. |
| **H10. Electoral Politics** | 1) Correspondence b/t public opinion and NDM.<br>2) Ruling party includes nuclear stance in campaign.<br>3) Ruling party includes nuclear stance in platform.<br>4) Coalition partners include nuclear stance in platform or campaign. |
| **H11. Liberalizing Economies** | 1) Correspondence b/t level of liberalization and NDM.<br>2) States will join comparable regimes. |
| **H12. Organizational Politics** | 1) Nuclear proposals made by organizations likely to benefit.<br>2) Policy positions consistent with organizational interest.<br>3) Correspondence b/t changes in decision group or decision set and NDM.<br>4) Process tracing |
| **H13. Regimes** | 1) Correspondence b/t presence and participation in regime with NDM. |
| **H14. Prisoner's Dilemma** | 1) No state in the PD will be a NWS.<br>2) Signature and ratification of NPT among players will be reciprocal. |
| **H15. International Law** | 1) States do not violate other WMD treaties.<br>2) States will pay costs to avoid unwanted treaty obligations. |

The Canberra Commission is persuaded that immediate and determined efforts need to be made to rid the world of nuclear weapons and the threat they pose to it.

Canberra Commission
on the Elimination of Nuclear Weapons, 1996

Prime Minister Menzies remarked that... he felt that possession of some tactical nuclear weapons would be inescapable.

Discussion with Aubrey Jones,
British Minister of Supply, 1958

# Chapter 3. Australia, 1954-1996

## I. Introduction

Australia is widely considered to be a world leader in efforts to halt and reverse the spread of nuclear weapons. The Australian government created the Canberra Commission, which called for the progressive abolition of nuclear weapons.[1] It led the fight at the UN General Assembly to save the Comprehensive Test Ban Treaty (CTBT), and the year before, played a major role in efforts to renew the Nuclear Non-Proliferation Treaty (NPT). In short, Australia is a country whose nonproliferation credentials are impeccable.

But it was not always so. It turns out that the Austrlian government made repeated attempts to acquire nuclear weapons and considered a nuclear option as late as 1970. Over the course of four decades, Australia went from a country that sought nuclear weapons to one that supported their abolition.

This chapter concentrates on two phases in Australia's nuclear history: 1) the *procurement* phase (1956-1963), which includes Australia's pursuit of tactical nuclear weapons and its secret proposal to the British for nuclear weapons-on-demand, and 2) the *indigenous capability* phase (1964-1972) in which Australia made a series of initial steps towards an independent nuclear weapons capability. It also offers only a brief sketch of the last period in Australia's nuclear history, the *abstention*

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[1] That abolition was, in some sense, official Australian policy was indicated by Minister for Foreign Affairs Gareth Evans. Commenting after the first meeting of the Canberra Commission, he observed that "What's new and different about this report is that it is the product of a government initiative, government sponsored, and it will be presented by a government to the other governments of the world. ... And that makes a big difference in international relations." Transcript of Press Conference by Mr. Gareth Evens and Ambassador Richard Butler at the Conclusion of the First Meeting of the Canberra Commission, January 24, 1996; Canberra Commission Home Page, http://www.dfat.gov.au/dfat/cc/cchome.html.

phase (1973-1996). It is during this period that Australia renounced nuclear weapons and ultimately evolved into a nonproliferation advocate.

The historical reconstruction of events is made possible, in part, by newly declassified materials from the Australian National Archive and a set of unregistered documents released to the author by Australia's Department of Foreign Affairs and Trade.[2] These materials provide an unusually detailed view of the internal processes of a country wrestling with its nuclear future.

# II. Australia's Efforts to "Procure" Nuclear Weapons

From 1956 to 1963, Australia's efforts to acquire nuclear weapons focused on procurement, i.e., gaining access to nuclear weapons via a third party (Britain or the United States). Procurement is thus distinct from indigenous development. It also differs from arrangements such as NATO's dual key system, since the intent was to acquire weapons that would be under the autonomous control of the government and its armed forces. During this period, there were at least four initiatives pertaining to the procurement of nuclear weapons by elements within the Australian government. They include: a) discussions about the purchase of tactical nuclear weapons, b) the acquisition of a nuclear capable delivery system, c) a Department of Supply initiative for nuclear weapons cooperation, and d) a proposal for nuclear weapons-on-demand.

## A. Buying the Bomb, 1956-1958

### A1. A Defense Proposal

Australia formally considered the subject of "a nuclear weapons capability for Australian forces" in 1956.[3] The initial proposal to seek nuclear weapons came from the Minister for Air, Athol Townley, who wrote to the Defence Minister requesting that Australia procure nuclear bombs for the service's Canberra and Avon Sabre aircraft.[4] While Townley and his successor pushed the idea

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[2] I am deeply indebted to Australia's Department of Foreign Affairs and Trade, and in particular, to its highly professional staffs in the Nonproliferation Section and the Archives Office. The Department's commitment to openness and scholarship marks an important change from past policy. On Australia's earlier penchant for secrecy, see Desmond Ball, "Australian Defense Decision-Making: Actors and Process," in Ball, Desmond, ed., *Strategy and Defense: Australian Essays* (London: George Allen & Unwin, 1982), pp. 292-294. Ball, commenting on the "extraordinary closed nature of the decision-making process," observed that "Virtually everything pertaining to defence policy in Australia is classified..." (294). See also Russell Trood, "Australian Uranium Exports: Nuclear Issues and the Policy Process," in *Nuclear Exports and World Politics: Policy and Regimes*, Robert Boardman and James Keeley, eds. (New York: St. Martin's Press 1983), p. 121; and B. D. Beddie, "Some Internal Political Problems," in *Australia's Defense and Foreign Policy*, Australian Institute of Political Science (Proceedings of 30th Summer School), (Sydney: Angus and Roberston, 1964), p. 143.

[3] The phrase "a nuclear weapons capability for Australian forces" is the title of the file folder series and the key word descriptor used for most of the government's internal documents on this subject.

[4] Townley maintained that tactical nuclear weapons were needed for the RAAF's Canberra bombers because the Canberra had "limited conventional bomb carrying capacity and, therefore, limited

among their ministerial colleagues, Air Marshal F. R. W. "Shug" Scherger lobbied his fellow service officers in Australia and Britain. Scherger was Chief of the Air Service and Australia's most enthusiastic advocate of a nuclear weapons capability.

The RAAF was not, however, the only service that favored a nuclear capability. Indeed, there seems to have been a general belief among military officers that Australia should have access to nuclear weapons. As a memo from the Secretary of the Defence Department noted, the possession of nuclear weapons was "a question of very considerable importance to the Australian Services."[5]

In November of 1956, the Cabinet's Defence Committee concluded "that the effectiveness of all three Australian Services would be considerably increased if they were equipped with low yield KT nuclear weapons." The Defence Minute went on to recommend that "an initial approach be made to the United Kingdom for agreement to obtain such weapons to be held by Australia."[6] The decision to approach the United Kingdom was not the first time Australian leaders had expressed an interest in nuclear weapons, but it did represent the first formal finding that Australia should procure them.[7]

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hitting power. ...Hence, if conventional bombs were used, a large number of Canberra sorties would be necessary." Australian Archives (ACT): A1945/13 186-5-3; Memo from Athol Townley, Minister for Air, to Philip McBride, Minister for Defence September 12, 1956, p. 1.

5 Australian Archives (ACT): A1945/13 186-5-3; Memo from the Acting Secretary, to the Minister [of Defence], Undated, [1958], Not Submitted (Top Secret). When the Defence Ministry drafted its initial request for nuclear weapons to the United Kingdom High Commissioner in Canberra, it focused on tactical nuclear weapons for the RAAF but it also referred to nuclear weapons that might "be available for Naval and Army use." Australian Archives (ACT): A1209/23 57/4067, Draft Letter to United Kingdom High Commissioner, Canberra, Ministry of Defence, 1957 (Top Secret).

6 Australian Archives (ACT): A1209/23, 57/4067; Procurement of Nuclear Weapons from the United States, Report by the Defence Committee, Defence Minute 233/1956, November 1956, pp. 2-3 (Top Secret). The Defence Committee was Australia's most important defence policy making body, "the supreme co-ordinating committee," and its recommendations were typically endorsed by the Prime Minister and Cabinet. J. L. Richardson, "Australian Strategic and Defense Policies," in Gordon Greenwood and Norman Harper, eds., *Australia in World Affairs 1966-1970* , (Vancouver: University of British Columbia Press, 1974), p. 267; Alan Reid, *The Gorton Experiment*, (Sydney: Shakespeare Head Press, 1971), p. 191. Its membership included the Permanent Heads of the Departments of Defence (Chair), External Affairs, Treasury, Prime Minister's Department, as well as the Chairman of the Chiefs of Staff Committee, and the three Chiefs (Naval Staff, General Staff and Air Staff). On the Defence Committee, see T. B. Millar, *Australia's Defense* (New York: Melbourne University Press, 1965), p. 180.

7 Interest in both the military and civilian applications of nuclear technology was first expressed by Dr. H. Evatt, Minister for External Affairs under the Chifley government. J. L. Symonds, *A History of British Atomic Tests in Australia*, (Canberra: Australian Government Publications Service, 1985), p. 4. In 1954, the government asked the United States if Australia would be eligible to participate in the kind of "nuclear sharing" initiatives that were being discussed within NATO. Alice Cawte, *Atomic Australia: 1944-1990*, (Kensington: New South Wales University Press, 1992), pp. 106-107. Army documents from that same year indicate that the Australian army was conducting defense planning on the assumption that it would, at some point, have its own nuclear weapons and would have to fight on a nuclear battlefield. See for example, Australian Archives (ACT): A6456/3

Following the Defence Committee recommendation to seek tactical nuclear weapons, the Defence Department pressed Australian Prime Minister Robert Menzies to follow through on the recommendation.[8] In March of 1957, the Australian government met with Sir Dermot Boyle, the British Air Chief and Britain's Foreign Secretary for Commonwealth Relations. Prime Minister Menzies and the Commonwealth's Ministers for Defence and External Affairs asked the visiting delegation whether Britain could "supply" Australia with atomic weapons. Boyle was pessimistic -- "hardly a hope" he said -- but he suggested to his hosts that the Australian government "put in a formal request to see what would happen."[9]

At this point, Prime Minister Menzies and his Minister for External Affairs were probably happy to let the issue go. Menzies, Australia's longest serving Prime Minister (1939-1941, 1949-1966), had followed through on the Defence Committee's recommendation, but it is clear that he had no enthusiasm for the project. Menzies was a traditionalist, a man who had a strong affection for the status quo. He would have preferred that Australia continue as it always had, relying for its defense on its "great and powerful friends."[10]

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R79/1; The Australian Military Forces Minute Paper, AHQ Directive - Nuclear Warfare, 1954. In 1956, Australian military officials appealed to their American counterparts for information on using atomic weapons with Australia's Avon Sabre aircraft. More generally, official Australian defense policy assumed, at least in the 1950s, that defense actions under SEATO represented one contingency through which nuclear weapons could be provided to Australian troops. Australian Archives (ACT): A1945/13 186-5-3; Note on Procurement of Nuclear Weapons for Australian Forces, "Extract from Defence Committee's Report on Strategic Basis of Australian Defence Policy, October, 1957," May, 1957, p. 1 (Top Secret).

8 Australian Archives (ACT): A1209/23-57/4067; Letter from Sir Philip McBride, Defence Minister, to Prime Minister Menzies, Procurement of Nuclear Weapons for the Australian Forces, December 20, 1956 (Top Secret). Australian Archives (ACT): A1945/13 186-5-3; Letter from Mr. Casey, Minister for External Affairs to Sir Philip McBride, Minister for Defence, Procurement of Nuclear Weapons for the Australian Forces, February 21, 1957, p. 1 (Top Secret).

9 Australian Archives (ACT): A1945/13,186-5-3; Extracts from Notes of Meeting in Cabinet Room at Parliament House, Canberra at 10:30 AM on Friday, March, 15,1957 (Top Secret). See also PRO: D0 35/8287; Memo from N. Pritchard, [Deputy U. K. High Commissioner, Australia], to [J. M.] James, [Assistant Under-Secretary of State, CRO], October 29, 1957 (Top Secret and Personal). The problem, Boyle explained, was Britain's limited supply of weapons: the UK was behind on production and needed to hold on to what it had in order to meet its own military requirements.

10 On Menzies famous phrase, see Alan Watt, *The Evolution of Australian Foreign Policy 1938-1965* (Cambridge: Cambridge University Press, 1967), pp. 168-169, 245; Desmond Ball and J. O. Langtry, "The Development of the Australian Defense Force," Desmond Ball, ed. *Strategy and Defense: Australian Essays* (London: George Allen & Unwin, 1982), p. 263. Menzies' Cabinet colleague, Howard Beale, described the Prime Minister as "not himself development-minded for his mind was critical rather than creative. For instance, he was cool towards projects such as the Snowy River scheme, the Bell Bay aluminum project, and the standardization of the railways. Later he became persuaded but in the beginning it was often the ministers concerned and the devoted men in their departments who had the vision to push these programmes forward." Howard Beale, *This Inch of Time: Memoirs of Politics and Diplomacy*, (Melbourne: Melbourne University Press, 1977), p. 102. On Menzies' view of nuclear weapons see Australian Archives (ACT): A1945/13

Given Menzies' views, it is not surprising that the procurement proposal languished in the Prime Minister's Department for eight months.[11] The infatigable Air Marshal Scherger was not content to let matters languish, however. In August of 1957, he made a direct, if informal, request to the British Air Marshal regarding the purchase of tactical nuclear weapons -- a request that, in all likelihood, was made without the knowledge of the Australian Prime Minister.[12] This time, the British Air Marshal was much more optimistic about Australia's chances, and Scherger quickly reported the news to Canberra. In Scherger's version of events, however, it was Boyle who suggested the purchase of atomic weapons.

> ...Sir Dermot stated that ...[he] thought that the UK would be able and glad to make such weapons available to us. ...[H]e thought that, if the question was raised at Government level, it may be possible for us to buy the weapons straight out.[13]

A month later, in September, the British Air Marshal wrote to Scherger, promising him that the UK Chiefs of Staff would back Australia's request.

> This is to confirm what I told you on the telephone today, namely that the Chiefs of Staff have agreed that, should the Australian Government decide to build up a nuclear bomber force, the Chiefs of Staff would support the purchase of nuclear weapons from this country by the Australian Government....[14]

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186-5-3; Extract from Prime Minister's Defence Statement of 19th September, Nuclear Weapons, p. 1.

11 The Defence Department proposal to open talks with the High Commissioner for the Commonwealth languished in the Prime Minister's Department for eight months, from April, 1957 to November, 1957. Australian Archives (ACT): A1838/269, TS680/10/1; Memo from J. P. Quinn, External Affairs, to Mr. James Plimsoll, Assistant Secretary of External Affairs, Procurement of Nuclear Weapons for Australian Forces, December 20, 1957, p. 1.

12 PRO: D0 35/8287; Cabinet: Prime Minister's Commonwealth Tour, Brief by the Commonwealth Relations Office, Supply of Kiloton Bombs to Australia, January/February 1958, GEN 622/1/60, December 18, 1957, p. 1; PRO: D0 35/8287; Memo from A. W. Snelling, [Assistant Under-Secretary of State for Commonwealth Relations], to Sir G. Laithwaite, [Permanent Under-Secretary of State], CRO, September 24 1957, p. 1; PRO: D0 35/8287; Memo from F. S. Miles, CRO, to Johnson, September 16, 1958. Scherger's request led the British Chiefs of Staff to commission a study on the issue. PRO: D0 35/8287; Memo from T. W. Aston, [Principal, CRO], to A. W. Snelling, [Assistant Under-Secretary of State for Commonwealth Relations], September 9, 1957, p. 2.

13 Australian Archives (ACT): A7942/1 N78-1; Memo from F. R. W. Scherger, Air Marshal, C. A. S., to Minister of Defence (Through Secretary), September 27, 1957, p. 1 (Top Secret).

14 Australian Archives (ACT): A7942/1, N78-1; Letter from Air Chief Marshal Sir Dermot A. Boyle, Air Ministry, to Air Marshal F. R. W. Scherger, Chief of Air Staff, Royal Australian Air Force, September 10, 1957 (Top Secret). A formal finding by the British Chiefs was not made until November, when the Chiefs concluded that they were not opposed in principle to selling nuclear weapons to Australia. See PRO: D0 35/8287; Ministry of Defence, Supply of Nuclear Weapons

With the change in the British position, the Department of Defence stepped up its inter-departmental lobbying efforts. The Department's campaign was aided by the fact that British Prime Minister Macmillan was scheduled to visit Canberra in January. The impending visit provided a deadline that helped push the decision process.[15]

Both the Prime Minister's Department and External Affairs continued to have reservations about the project, but given the 1956 Defence Committee finding and the apparent change in the United Kingdom's attitude, they were reduced to arguing that the talks should be exploratory. The Secretary of the Prime Minister's Department, for example, penned a memo highly critical of the plan, and argued that, "in practice there is little difference between a Power which makes her own [nuclear weapons] and a Power which acquires them." Australia, he urged, should exhibit "caution about moving into the field of possession of atomic weapons at this point in history."[16] Despite his objections, the Secretary agreed that it would "be reasonable to get the Prime Minister to discuss the question with the United Kingdom Prime Minister outside the context of our asking for something but in the context of exploring the issues raised by the possession of weapons by Australia."[17] In the end, Menzies agreed to discuss the issue of nuclear weapons with Macmillan in "exploratory" talks.

The British leader arrived in Australia in January of 1958, and Prime Minister Menzies dutifully raised the issue of nuclear weapons for Australia. As the memorandum of the Menzies-Macmillan conversation reveals, Menzies' approach to Macmillan was soft, even by diplomatic standards.

> Mr. Menzies raised for discussion the desirability or not of countries other than the three major Powers having their own nuclear capability. He said it may be possible for Australia to develop a capacity and that there may be internal pressures in that direction, e.g., from the Atomic Energy authority [sic]. He held considerable personal doubts about the wisdom of any such action and would be interested to know how Mr. Macmillan saw the problem of the extension of the capacity to a fourth Power.[18]

The British Prime Minister replied that the United States wanted no additional nuclear powers and that the United Kingdom eventually hoped to rely on American nuclear weapons through a "key of

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to Australia, Record of a Meeting Held November 18, 1957, December 4, 1957 (Top Secret UK Eyes Only).

15 Australian Archives (ACT): A1945/13, 186-5-3; Memo from the Acting Secretary [Department of Defence], to Secretary of the Defence Committee, Procurement of Nuclear Weapons for Australian Forces, January 28, 1958 (Top Secret).

16 Australian Archives (ACT): A209/80 58/5155; Comments by A. J. Griffiths, Secretary of the Prime Minister's Department, November 11, 1957, pp. 1-2 (Top Secret).

17 Australian Archives (ACT): A209/80 58/5155; Comments by A. J. Griffiths, Secretary of the Prime Minister's Department, November 11, 1957, p. 2 (Top Secret).

18 Australian Archives (ACT): A7942/1, N78-1; Meeting between Mr. Macmillan and Mr. Menzies at Parliament House, Canberra on 29th January, 1958, Supplementary record for strictly limited circulation, Nuclear Weapons (Top Secret).

the cupboard" arrangement.[19] Instead of warheads, Macmillan offered to make more information about nuclear weapons available to the Australian military.[20]

**A2. Refusing to Take No for an Answer**

Those favoring the acqusition of nuclear weapons were apparently not discouraged by the result of the Menzies-Macmillan meeting. The Defense Committee, meeting eight days after the Prime Ministers' meeting, recommended that the matter be reopened with the British government.[21] At the meeting, the services presented a united front. They "all expressed the view that Australia should seek to acquire nuclear weapons"[22]

Menzies and Macmillan met on February 11 and again discussed nuclear weapons for Australia.[23] Macmillan responded that any transfer of nuclear weapons information or technology should be postponed until the American Congress had finished its revisions of the McMahon Act,[24] which restricted the transfer of nuclear weapons information and technology. For now, Macmillan could offer little beyond saying "that he saw no objection to an examination between the two air forces of the technical facilities side of using nuclear weapons in the South West and East Asian area."[25]

The Defense Committee met the following day on February 12, and concluded that Australia "require[s] additional information before [it] can examine the practicability or the desirability of possessing a nuclear capability...." This was a step down from the Committee's original finding

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19 Under a "key of the cupboard" arrangement, Great Britain would draw on the American stockpile of atomic weapons as the situation required.

20 Australian Archives (ACT): A7942/1, N78-1; Meeting between Mr. Macmillan and Mr. Menzies at Parliament House, Canberra on 29th January, 1958, Supplementary record for strictly limited circulation, Nuclear Weapons (Top Secret).

21 Australian Archives (ACT): A1209/80, 58/5155; Minute by Defence Committee at Meeting Held on Thursday, 6th February, 1958, No. 18/1958, Nuclear Weapons for the Australian Forces - Plutonium Production in Australia, Agendum No. 16/1958 & Supps 1 & 2 (Top Secret).
The precise sequence of events is explained in another document: Australian Archives (ACT): A1838/269, TS-680-10-1; [Hand written note], [February 14, 1958].

22 Australian Archives (ACT): A1838/269 TS680-10-1; Memo from H. D. Anderson, Defence Liaison Branch to Mr. Heydon, External Affairs, Australian Development of Nuclear Weapons and Australian Access to Information on Nuclear Weapons, July 8, 1959, p. 1 (Top Secret).

23 Australian Archives (ACT): A7942/1 N78 -1; Memo from the Secretary of the Department of [Defence], to the Minister of [Defence], Nuclear Weapons for the Australian Forces, September 3, 1958, p. 2 (Top Secret).

24 Australian Archives (ACT): A7942/1 N78 -1; Memo from the Secretary of the Department of [Defence], to the Minister of [Defence], Nuclear Weapons for the Australian Forces, September 3, 1958, p. 7 (Top Secret).

25 Australian Archives (ACT): A1945/13, 186-5-3; Minute Paper, Department of Defence, From the Secretary [Hicks] to the Minister, Overseas Visit by the Chief of the Air Staff - Discussions of Atomic Weapons, September 3, 1958 (Top Secret).

two years earlier. What once was a request for nuclear weapons was now a request for information about nuclear weapons.[26]

Despite the change in policy, senior figures in the Australian military persisted in attempts to procure nuclear weapons. Thir back channel discussions with British defense officials so infuriated Menzies that in April of 1958, he had his Defence Minister issue a rather remarkable edict instructing that "no further action is to be taken by the Defence Committee or Chiefs of Staff Committee or the individual Chiefs of Staff to initiate discussions with United Kingdom authorities concerning the possibility of nuclear weapons being made available to us until specific approval is given by me....[27]

The gag order had its intended effect. The following month, when Commonwealth Relations Office officials asked for an update on the nuclear issue from their colleagues in the British military, they were told that nothing more had been heard from Australians.[28]

In early July, the US Congress passed its amendments to the McMahon Act, which cleared the way for further discussions of UK-Australian nuclear cooperation. A month later, Menzies and other members of the Cabinet raised the issue with Aubrey Jones, Britain's visiting Minister of Supply. According to the memorandum of conversation, Menzies asked about nuclear warheads for Australia.

> Mr. Menzies inquired whether any scheme is contemplated whereby Australia might secure vehicles and warheads. Mr. Townley remarked that this was a question he proposed to take up in some detail, but suggested that Mr. Jones might like to give the meeting some idea of how the United Kingdom might respond to an Australian approach for the supply of tactical weapons.[29]

Jones answered that he thought the British "response would be very favorable," but that the McMahon Act might still be a problem.[30] Toward the end of his conversation, Menzies returned to the subject of nuclear weapons. He remarked that "he had no ambition to see Australia equipped

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26 Australian Archives (ACT): A1209/23, 57/4067; Department of Defence, Inwards Teleprinter Message, from Hicks, Secretary of the Department of Defense, to Sir Allen Brown, Prime Minister's Department, Nuclear Weapons, September, 4, 1958, p. 1 (Top Secret and Personal).
27 Australian Archives (ACT): A 7941/2, N15; Note by Defence Department, Question of Nuclear Capability for the Australian Forces, June 2, 1961, p. 1 (Top Secret).
28 PRO: D0 35/8287; Memo from [W. P.] Oliver, [Principal Staff Officer to the Secretary of State for Commonwealth Relations], to [J. M.] James, [Assistant Under-Secretary of State, CRO], May 14, 1958; PRO: D0 35/8287; Memo from Johnson, to [J. M.] James, [Assistant Under-Secretary of State, CRO], May 16, 1958.
29 Australian Archives (ACT): A1838/269, TS680-10; Record of Discussions with Mr. Aubrey Jones, Minister of Supply in the United Kingdom Government, 13th August, 1958 (Top Secret).
30 Australian Archives (ACT): A1838/269, TS680-10; Record of Discussions with Mr. Aubrey Jones, Minister of Supply in the United Kingdom Government, 13th August, 1958 (Top Secret).

with strategic nuclear weapons," but that "... he felt that possession of some tactical nuclear weapons would be inescapable. ...Mr. Jones agreed."[31]

### A3. The British Position: Keeping it a Commonwealth Affair

When the procurement of tactical nuclear weapons was first proposed, many officials in Australia doubted that Britain would share its atomic assets. The Secretary of the Department of External Affairs, for example, expressed these doubts but endorsed the proposal, "if only to get a firm statement, in place of our present conjectures...."[32] Macmillan's non-committal stance in his meetings with Menzies probably encouraged the view that the UK would not transfer nuclear weapons.

British archival documents paint a different picture, however. Indeed, the only thing more surprising than Australia's interest in nuclear weapons is Britain's willingness to provide them. In their dealings with Australians, however, British officials were cautious, preferring not to signal their interest in acceding to the Australian request until all the details had been worked out.

British officials realized that the transfer of nuclear weapons to Australia would raise a number of thorny issues, including the "4th power problem" and the UK's nuclear cooperation agreements with the Americans. Despite these potential problems, the government was disposed to helping the Australians. In part, this reflected Australia's status as a Commonwealth relation, but British sympathies were also a consequence of more parochial interests, including a desire to sell Australia the British airplanes that would deliver the a-bombs. There was also a fear that if Britain refused, Australia would turn to the US. A 1958 memo describes the rationale....

> We know however that Sir P. McBride and the Chief of Air Staff (and I believe, Mr. Casey) are quite keenly interested in starting up discussions about nuclear weapons either with us or the Americans sooner rather than later. There is certainly a risk that, if we make no move ourselves, the Australians may at some time in the not too distant future come up with a proposal at short notice that they should open up with the Americans. It is very important that we should do whatever we can to ensure that the Australians go British over any equipment connected with nuclear weapons, and we have an opportunity of getting in first if we do not hold back too long.[33]

The "bomber sales" argument was first raised by British Air Marshal Boyle when he attempted to win over his fellow Chiefs of Staff.[34] Boyle persuaded the less-than-enthusiastic-Chiefs to endorse the proposal, and when the Ministry of Defence rendered its assessment, it mentioned that providing nuclear weapons "would also be economically advantageous, since apart from the bomb

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31 Australian Archives (ACT): A1838/269, TS680-10; Record of Discussions with Mr. Aubrey Jones, Minister of Supply in the United Kingdom Government, 13th August, 1958 (Top Secret).

32 A7942/1 BN78-1, Memo from Arthur Tange, Secretary of the Department of External Affairs to the Acting Secretary, Department of Defence, Procurement of Nuclear Weapons for Australian Forces, January 22, 1958, p. 2.

33 PRO: D0 35/8287; Memo from CRO to N. Pritchard, [Deputy U. K. High Commissioner, Australia,] May 21, 1958 (s/o Top Secret).

34 PRO: D0 35/8287; Chiefs of Staff Committee, Confidential Annex to C.O.S. (57)70th Meeting Held on Tuesday, September 10, 1957, p. 1 (Top Secret, Specially Restricted Circulation).

purchase, Australia would have to purchase a bomber force and might well be disposed to obtain this from us if we supplied the bombs."[35]

The notion that nuclear weapons could be a loss leader for aircraft sales was cited by other ministries as well. The Commonwealth Relations Office (CRO), for example, in a brief for the Cabinet, also cited the benefit of bomber sales.[36] Still, the CRO's main concern was the state of British-Australian relations. The CRO did not want Britain to lose leverage with Australia, though its only competitor in this case was its ally and patron, the United States. The basic view of the CRO was laid out by Secretary of State for Commonwealth Relations in a letter to Prime Minister Macmillan. "I am sure it is right," surmised the Secretary, that "we should encourage [Australia] to look to us as their potential supplier."[37]

The Ministry of Defence and the CRO were joined by a third ministry, the Ministry of Supply. Writing to the Prime Minister, the Minister for Supply argued that "the Australians should continue to regard us as their potential supplier, and I would like to inform their Minister for Supply that we would look sympathetically at any request they might make...."[38] As in other ministries, officials in Supply worried that in the absence of a positive response, "the Australians may feel that they are being brushed off altogether and will more than ever turn their eyes eastward."[39] Following the Menzies-Jones meeting in August, 1958, the Ministry suggested that the discussions with Scherger "be on the implied understanding that we shall in due course be prepared to supply the Australians with whatever it is that we have to offer. The discussions should be in terms of complete weapons systems such as O. R. 339 with Kiloton armament and developments of Bloodhound with nuclear warhead."[40]

A particularly striking development follows in September of 1958. At this point, the *British initiate discussion of nuclear weapons* for Australia. After the August Menzies-Jones meeting, it is Macmillan who contacts the Australian Prime Minister about nuclear weapons....

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35 PRO: D0 35/8287; Ministry of Defence, Supply of Nuclear Weapons to Australia, Record of a Meeting held November 18, 1957, p. 1 (Top Secret UK Eyes Only, 12/4/57).

36 PRO: D0 35/8287; Cabinet: Prime Minister's Commonwealth Tour, Brief by the Commonwealth Relations Office, Supply of Kiloton Bombs to Australia, January/February 1958, GEN 622/1/60, December 18, 1957, p.1.

37 PRO: D0 35/8287; Draft Letter from the Secretary of State for Commonwealth Relations to Prime Minister Macmillan, [Undated] (Top Secret).

38 PRO: D0 35/8287; Memo from Aubrey Jones, Minister of Supply to Prime Minister Macmillan, September 10, 1958 (Top Secret).

39 PRO: D0 35/8287; Inward Telegram to Commonwealth Relations Office, from [Brian] Humphrey-Davies, [Air Ministry], to [L. J.] Dunnet, [Deputy Secretary of the Ministry of Supply], No. 713, August 14, 1958, pp. 1-2 (Top Secret).

40 PRO: D0 35/8287; Inward Telegram to Commonwealth Relations Office, from Humphrey-Davies, [Air Ministry] to [L. J.] Dunnet, [Deputy Secretary of the Ministry of Supply], No. 713, August 14, 1958, p. 1 (Top Secret). Emphasis not in the original.

> I hear that when Aubrey Jones met your Cabinet, the subject of nuclear weapons came up. You will remember our discussions about this last February. If you think that the time has now come to take matters further, I should be very glad to see what could be done."[41]

In March of 1957, the Australian government first raised the issue of nuclear weapons with the United Kingdom. Remarkably, a year later, it was the British who were raising the issue with the Australians.

**A4. A Temporary Retreat**

Menzies responded to Macmillan's letter three days later with a note drafted by the Minister of Defence. Reflecting both the the Defence Ministry's interest and the Prime Minister's reluctance, it declares that Australia's "interest is in the tactical weapons field and actual possession of the weapon does not arise at this stage." Still, the Australians were "anxious" for information that would enable them "to explore further the possibility of possessing a nuclear capability."[42]

Menzies and Macmillan agreed that the next step would be discussions between the two air staffs. Air Marshal Scherger, who was already scheduled to go to the UK, departed for London to discuss nuclear weapons. The Prime Minister was explicitly assured by the Minister of Air that Scherger would not discuss the transfer of nuclear weapons, and instead, only collect information about nuclear weapons.[43] These assurances were either not passed on to Scherger or they were ignored. In Scherger's meeting with G. W. Tuttle, Britain's Deputy Chief of the Air Staff, the Air Marshal explicitly raised the issue of procurement, as Tuttle'a account of the conversation makes clear...

> With regard to quantities I naturally could not disclose our stock-piles overall, nor did I discuss price although [Scherger] suggested that, if eventually the Australians requests for weapons were granted, they should pay for the weapons they used. I did, however, suggest that the build up of weapons was such that an eventual request by Australia would probably not prove impossible to meet.[44]

Despite Britain's supportive position, Scherger's trip did not produce any new initiatives. Indeed, it appears that following the trip, the drive for Australian nuclear weapons stalled.[45] In 1959, when

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41 Australian Archives (ACT): A 18338/269, TS680-10-1; Memorandum from H. D. Anderson, External Affairs, to Mr. Heydon, Australian Development of Nuclear Weapons and Australian Access to Information on Nuclear Weapons, 8th July, 1959, p. 2 (Top Secret).

42 Australian Archives (ACT): A1209/23, 57/4067; Letter from Prime Minister Menzies to Prime Minister Macmillan, 4th September, 1958.

43 See, for example, Australian Archives (ACT): A1945/13 186-5-3, Memo from F. M. Osborne, Minister of Air, to P. McBride, Minister for Defence, US and UK Arms Relations with Australia, August 26, 1958, p. 1.

44 PRO: D0 35/8287; Note of Conversation between Air Marsall Sir Geoffrey Tuttle and Air Marshal Scherger, [1958], pp. 1-2 (Top Secret).

45 Australian Archives (ACT): A 7941/2, N15; Note by Defence Department, Question of Nuclear Capability for the Australian Forces, June 2, 1961, p. 4 (Top Secret). See also Australian Archives (ACT): TS680-10-1; Australian Archives (ACT): A 18338/269; Memorandum from H. D.

Defence Minister Athol Townley -- the former Minister for Air who first proposed the procurement of nuclear weapons -- argued that nuclear weapons were potentially "essential to our national survival," the Cabinet ignored the finding. The government's reluctance to pursue nuclear weapons was evident later, in November of 1959, when the Cabinet decided against asking the British to share information from a new round of nuclear tests that were planned for an Australian test site. The decision was based on the "general policy that it is desirable to limit nuclear weapons capabilities to the few major powers." [46]

On the surface, it appeared that Australia had returned to its previous posture -- that of a conventionally armed country with conventional aspirations. The issue of nuclear weapons did not end here, however. In lieu of a political decision favoring acquisition, military advocates of nuclear weaponry shifted their focus to an area over which the Cabinet had little control or influence: the procurement of delivery systems.

## B. Bombers and Bloodhounds: The Search for Nuclear-Capable Delivery Systems, 1957-1963

Australian proponents of nuclear weapons had, from the beginning, sought not only warheads but also their means of delivery. The original idea was to retrofit the RAAF's fleet of Sabres and Canberra bombers with tactical nuclear weapons, but like any airforce, the RAAF had begun planning for future force modernization. It hoped to acquire new bombers, strike aircraft and surface-to-air guided missiles -- each with an ability to deliver nuclear weapons. Some British observers even speculated that the government was seeking nuclear capable delivery systems because their acquisition would increase the chances that the United Kingdom would transfer nuclear weapons.[47] This section recounts Australia's search for a nuclear delivery system.

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Anderson, External Affairs, to Mr. Heydon, Australian Development of Nuclear Weapons and Australian Access to Information on Nuclear Weapons, 8th July, 1959 (Top Secret). A hand written note at the bottom of page two makes the point that after Scherger's visit, "So far as we know in this Department, there has been no further development [in] our contacts with the United Kingdom on this subject."

46 Australian Archives (ACT): A 7941/2, N15; Note by Defence Department, Question of Nuclear Capability for the Australian Forces, June 2, 1961, pp. 2-3 (Top Secret). Australia had hosted British nuclear tests since 1952, but Canberra had not used the tests as a bargaining chip for obtaining information about nuclear weapons, and did not receive any substantive information from the British. Lorna Arnold, *A Very Special Relationship: British Atomic Weapon Trials in Australia*, (London: HM Stationery Office, 1987); J. L. Symonds, *A History of British Atomic Tests in Australia*; Deny Blakeway and Sue Lloyd-Roberts, *Fields of Thunder: Testing Britain's Bomb*, (London: Unwin Paperbacks, 1985); Brian Cathart, *Test of Greatness*, (London: John Murray, 1994), p. 242.

47 PRO: DO 35/8288; Inward Telegram to Commonwealth Relations Office, No. 621, 13th August, 1959 (Secret).

**B1. Bombers and Strike Aircraft**

In 1956, the RAAF approached the US Air Force for information on the using of tactical nuclear weapons with the Avon Sabre aircraft. The USAF declined to respond, but about a year later, the Americans did agree to study the nuclear potential of the Sabre and Canberra bomber.[48]

In January 1958, British Air Marshall reported to his fellow Chiefs of Staff that Australia had inquired regarding the purchase of a "V" bomber. In the 1950s, the British V bombers -- the Valiant, Victor, and Vulcan -- constituted the United Kingdom's main nuclear strike force.[49] Australia's inquiry, Boyle noted, made "no specific mention of atomic bombs", but "...was an indication of current Australian interest...."[50] Scherger again raised the issue of a V bomber in September of 1958, when visiting London on his nuclear fact-finding trip.[51] Australian interest was sufficiently serious that British officials even discussed the possibility of leasing the aircraft to the RAAF.[52]

By 1960, interest in nuclear capable aircraft shifted from the V bomber to the TSR-2.[53] The TSR-2 was supposed be Britain's most sophisticated plane, and Australian defence officials were inclined to favor it over its competitor, the American F-111. When the Australian and British Defence Ministers met in July 1961, the Australia representative made it clear that, "if Australia were to buy the T.S.R.II," it wanted "to be sure that nuclear weapons would be available" as well.[54]

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[48] The Sabre was designed as an "interceptor fighter," but the RAAF contended that it could, "without doubt, be gainfully employed in the ground attack role if they were armed with tactical atomic bombs." Australian Archives (ACT): A1945/13 186-5-3; Memo from Athol Townley, Minister for Air, to Philip McBride, Minister for Defence, September 12, 1956, p. 1. The Australian military approached American Air Force officials in order "to obtain specific information from the United States Department of the Air Force concerning detailed aspects of the possible use of tactical atomic weapons from RAAF Sabres," but the Americans turned them down. Australian Archives (ACT): A1945/13 186-5-3; Memo from Athol Townley, Minister for Air, to Philip McBride, Minister for Defence, September 12, 1956, p. 1. On the American study, see Cawte, *Atomic Australia*, p. 108.

[49] Andrew J. Pierre, *Nuclear Politics: The British Experience with an Independent Nuclear Force, 1939-1970*, (London: Oxford University Press, 1972), pp. 148-157.

[50] PRO: D0 35/8287; Chiefs of Staff Committee, Confidential Annex to C.O.S. (58) 4th Meeting Held on Monday, 13th January, 1958 (Top Secret).

[51] PRO: D0 35/8287; Memo from F. R. Carey, UK Joint Service Liaison Staff, to William S Bates, Office of High Commissioner for the United Kingdom, Canberra, October 31, 1958, p. 2; Cawte, *Atomic Australia*, p. 108.

[52] PRO: D0 35/8287; Memo from Clark, CRO, to William S Bates, Office of High Commissioner for the United Kingdom, Canberra, January 8, 1959.

[53] PRO: DO 35/8288; Committee Minutes, Ministry of Defence, Co-operation with Australia in the Development of New Weapons, (S.E. (0)C / P(60)25) July 19, 1960, pp. 1, 5 (Secret). The TSR-2 has been variously described as a bomber and a tactical strike and reconnaissance aircraft. Pierre, pp. 259, 268.

[54] PRO: D0 35/8287; Memo from N. Pritchard, [Acting Deputy Under-Secretary of State, CRO], to the Secretary of State for Commonwealth Relations, July 20, 1961. pp. 1-2.

Australia was ready to move forward with the TSR-2, but the project soon encountered technical and financial difficulties back in Britain. The UK eventually canceled the project, so the Australians opted for the F-111, signing a deal with the US in 1963. Like the TSR-2, the F-111 also could carry nuclear weapons, a fact not lost on the Australian buyers.[55]

**B2. Missiles**

Perhaps the most interesting episode in Australia's search for a nuclear-capable delivery system involves the British Bloodhound. The Bloodhound, described as a surface-to-air guided missile, was developed by the British at the Woomera test range in Australia. As originally conceived, there were to be three stages of development. The Mark I and Mark II would be carry conventional warheads, and the Mark III would carry a nuclear warhead.[56] Indeed, the Bloodhound Mark III was designed as "a weapon which is only effective with a nuclear warhead."[57]

In 1960, Australia was shopping for missiles which it could use to shore up its northern defenses. The Air and Defence Ministries narrowed the choice to two options: the American Nike and the British Bloodhound. According to British documents, the Australians were disposed to the Nike, because it was nuclear-capable and less expensive than the Bloodhound.[58]

Britain's Ministry of Defence was anxious to sell the Bloodhound to the Australians. UK officials feared that if the Australians rejected the Bloodhound, other potential customers would do likewise. After all, the weapon had been designed in Australia, although without Australian participation.[59] In London, the Ministry of Defence decided to mount a full court press to save the program.

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55 Peter Howson, *The Howson Diaries: The Life of Politics*, Don Aitkin, ed., (Ringwood, Victoria: Viking Press, 1984), p. 386. Beale is more oblique in his explanation for the F111 purchase, but a reader familiar with Beale's efforts to procure nuclear weapons can decipher his meaning. Beale, *This Inch of Time: Memoirs of Politics and Diplomacy*, pp. 170-176. By choosing the F-111 over the TSR-2, Australia hoped to avoid potential technical and cost problems, but the F-111 turned out to be a huge political headache. The F-111 suffered its own technical problems, which led to delays, rising costs, and embarrassment for a number of Air and Defence Ministers. In the end, Australia got the planes, but the experience was widely perceived as an object lesson in how not to procure foreign defense technology. On the F-111 saga, see also Gregory Pemberton, *All the Way: Australia's Road to Vietnam*, (Sydney: Allen & Unwin, 1987), pp. 207-208; Reid, *The Gorton Experiment*, pp. 283-285; Craig Skehan, "Strike Bombers Lacked Hitting Power," *Sydney Morning Herald*, January 1, 1997, http://www.smh.com.au/index.html.

56 PRO: DO 35/8288; Draft Minute from Secretary of State to Prime Minister, March 21, 1960; PRO: DO 35/8288, Outward Telegram from Commonwealth Relations Office, Canberra, No. 471, March 30, 1960, (Top Secret).

57 PRO: DO 35/8288; Outward Telegram from Commonwealth Relations Office to Canberra, No. 415, March 15, 1960 (Top Secret).

58 PRO: DO 35/8288; Memorandum from N. Pritchard, [Deputy UK High Commissioner Australia] to T. W. Keeble, [Head of Defence and Western Department, CRO], Bloodhound, June 9, 1960, p. 2; PRO: DO 35/8288; Inward Telegram to Commonwealth Relations Office, No. 601, 5th August 1959, pp. 1-2; PRO: DO 35/8288; Inward Telegram to Commonwealth Relations Office, No. 621, 13th August , 1959 (Secret).

59 The British feared that the broader perception would be that the Australians had declined to purchase Bloodhound, because they had inside knowledge of the missile's shortcomings.

Defence officials stressed to the Australians that the Bloodhound would offer a nuclear capability, and that unlike the Nike, it would be upgraded over time.[60]

The Australians were eventually persuaded, and decided to go with the Bloodhound. Within the year, however, the British Treasury put the Bloodhound on its hit list, declaring that Mark III (the nuclear version) would be terminated. British Defence officials protested vehemently. They argued that the Australians bought into Bloodhound precisely because the third stage consisted of a nuclear missile.[61] To cancel the program, they suggested, might seriously damage British-Australian relations, but Defence lost the argument, and the Mark III was canceled.

In London, Defence officials worried about the possible repercussions.[62] Australia might refuse to purchase UK defense items in the future, or worse yet, refuse to renew Britain's access to the Woomera test range.[63] To make up for the Bloodhound incident, members of the Defence Ministry's Strategic Exports Committee suggested that Australia be allowed to participate in British research and development of atomic, biological, and chemical weapons. A similar proposal had been suggested by the CRO the year before. In fact, when the chair of the exports committee visited Washington, he "sounded the Americans about Australian association with Anglo/U.S. co-operation in development, but the Americans had not reacted."[64] It is unclear what became of the proposal.

What is clear, is that the Bloodhound affair did not dissuade Australia from seeking nuclear weapons from the United Kingdom. Less than a year had passed since the Bloodhound affair when Australian officials again began canvassing British bureaucrats and political leaders for help in the nuclear field.

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60 PRO: DO 35/8288; Brief for Minister of State, Defence Committee Meeting on 9th March, 1960, D. (60)(9), Anti-aircraft Missiles, p. 1 (Top Secret). PRO: DO 35/8288; Memo from N. Pritchard, [Deputy U. K. High Commissioner, Australia], to S. Scott Hall, Head of UKMOAS, January 12, 1960, p. 1 (Secret).

61 PRO: DO 35/8288; Incoming Telegram, No. 357, April 1, 1960 (Top Secret); PRO: DO 35/8288; Memorandum from N. Pritchard, [Deputy UK High Commissioner, Australia], to T. W. Keeble, [Head of Defence and Western Department, CRO,] Bloodhound, June 9, 1960, p. 2.

62 The Bloodhound's partial termination was just the beginning of problems for the program. As the British government proceeded with the part of the contract involving the Stage I missile, it became clear that there were a number of misunderstandings between the two sides over cost and technical issues. By April of 1960, the project had created a palpable sense of resentment among Australian officials. PRO: DO 35/8288; C. Baron, G. W. Department, Report on Visit to Australia - 29th April -14th May, 1960 (Secret); PRO: DO 35/8288; Memorandum from N. Pritchard, [Deputy UK High Commissioner Australia] to T. W. Keeble, [Head of Defence and Western Department, CRO], Bloodhound, June 9, 1960, p. 1.

63 Memo from N. Pritchard, [Deputy U. K. High Commissioner, Australia], to S. Scott Hall, Head of UKMOAS, January 12, 1960, p. 1 (Secret).

64 PRO: DO 35/8288; Committee Minutes, Ministry of Defence, Co-operation with Australia in the Development of New Weapons, (S.E. (0)C / P(60)25), July 19, 1960, p. 3 (Secret). On the proposal from the CRO, see PRO: DO 35/8288; Inward Telegram to Commonwealth Relations Office, No. 621, 13th August , 1959 (Secret).

## C. Demand and "Supply," 1961

The Ministry of Air, the Ministry of Defence, and the Australian Atomic Energy Commission were active advocates of Australian nuclear weapons, but other elements within the government shared their enthusiasm, most notably the Ministry of Supply. The Ministry of Supply managed weapons development and general support activities for the Ministry of Defence. In 1954, its minister told the Cabinet that "Australia cannot ignore the long-term fact that some day we will need atom bombs for our own forces."[65] Later, in August of 1958, when Britiain's visiting Minister of Supply discussed nuclear weapons with Prime Minister Menzies and the Cabinet, Australia's Minister of Supply again raised the question of nuclear weapons in private meetings with his British counterpart.[66]

One of the stranger epsiodes involving the Ministry of Supply occured in 1961. It was then that Sir Ernest Titterton, himself a bomb advocate, visited London on behalf of the Ministry.[67] The purpose of the visit was, in part, to jump-start British-Australian cooperation on nuclear weapons. Titterton first met with Roger Makins, the head of the United Kingdom Atomic Energy Authority. As Makins reported in a memo, Titterton said that he had been "asked by the Australian Minister of Supply, Mr. Hulme, and by Mr. Knott, the Permanent Secretary at the Ministry of Supply" to explore the issue of military nuclear cooperation. Titterton told Makins that "Depending on the advice Professor Titterton received, Mr. Hulme might or might not raise matters with Mr. Townley, the Minister of Defence, and Sir Leslie Martin, the Chairman of the Australian Defence Policy Committee."[68] Titterton speculated, however, that the Minister of Supply "feels so strongly about the matter that he might in any case see Mr. Menzies and urge that the U.K. should be approached." Titterton also cited "...high ranking Australian service officers, and Defense officials [who] were extremely restless about their defence position."

The Australian emissary then put the matter directly to Makins: "Would the United Kingdom react favourably to an official but strictly confidential approach from Australia requesting information about U.K. nuclear weapons, to enable Australia to make certain military studies? Any information given would be kept to a very small committee of four or five people."[69]

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65 Cawte, *Atomic Australia: 1944-1990*, pp. 106-107.

66 PRO: DO 35/8287; Memo from Aubrey Jones, Minister of Supply, to Prime Minister Macmillan, September 10, 1958 (Top Secret)

67 Titterton had worked on the Manhattan Project and held several scientific positions within the government, including membership on the Defence Research and Development Policy Committee and the AAEC's Scientific Advisory Committee. Author, advocate, and adviser, he was an outspoken proponent of nuclear energy and a military nuclear option. See for example, E. W. Titterton, "Nuclear Energy and Bombs," *Canberra Times*, August 6, 1965; E. W. Titterton, "Australia's Nuclear Power," *Quadrant*, Vol. 12, No. 54, 1968, pp. 57-63; Cathart, *Test of Greatness*, passim; *The West Australian*, November 4, 1968, p. 9; *The Herald* , July 28, 1969, p. 4; Brian Martin, *Nuclear Knights* (Fyshwick: Union Offset Co., 1980), pp. 21-31.

68 PRO: DO 164/17; Memo from Roger Makins, Chair of the UKAEA, to [E. W.] Playfair, [Permanent Secretary, Ministry of Defence], July 19, 1961, p. 1.

69 PRO: DO 164/17; Memo from Roger Makins, Chair of the UKAEA, to [E. W.] Playfair, [Permanent Secretary, Ministry of Defence], July 19, 1961, p. 1.

Makins responded that Titterton should raise the matter with the Defence Ministry, as it was outside the purview of the UKAEA. Titterton then went on to make the same pitch to the UKAEA's head of the Atomic Weapons Research Establishment as well as to a high ranking member of the Commonwealth Relations Office.[70]

One day after Titterton met with Makins, the CRO reported that the Ministry of Defence had received a letter requesting for information about nuclear weapons.[71] It is unclear whether the letter came from Titterton and the Department of Supply or from another quarter within the Australian government.

Titterton's fishing expedition is notable, because it appears to document that the Department of Supply pursued the issue of a nuclear weapons capability *independent of other ministries.* Titterton was obviously unaware that only two weeks earlier, Prime Minister Menzies had written to Macmillan in what was Australia's most direct attempt to procure nuclear weapons.[72] The reason for the Menzies appeal had little to do with the ambitions of Defence, the AAEC, or the Ministry of Supply. Rather, the cause for Menzies' renewed interest in nuclear weapons was the prospect of a Nuclear Test Ban.

## D. The Test Ban and Nuclear Weapons-on-Demand

### D1. Getting Around the NTB

The negotiations for a Nuclear Test Ban (NTB), while ultimately unsuccessful, put the nuclear question back before the Australian Cabinet in 1961. Work on the Test Ban had begun in the late 50s, but by 1961, negotiations between the 3 nuclear powers -- the United States, the Soviet Union, and Britain -- had stalled. In an effort to revive the talks, London asked Canberra for permission to offer listening posts in Australian as part of a new round of diplomatic proposals. Earlier in the negotiations, the USSR had insisted that the treaty include listening posts in Australia, since Australia had hosted a number of British nuclear tests.[73]

The Australian Cabinet took up the issue of the NTB and listening posts in Australia at the behest of Prime Minister Menzies. Interestingly, Menzies -- who three years earlier had been reticent to raise the subject -- now argued that Australia should insist on a weapons-on-demand agreement in return for joining the Nuclear Test Ban Treaty. In his report to the Cabinet, Menzies began by

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70 PRO: DO 164/17; Memorandum from Pelly, Atomic Weapons Research Establishment, to Roger Makins, Chair of the UKAEA, July 27, 1961; PRO: DO 164/17; Memo from N. Pritchard, [Acting Deputy Under-Secretary of State], CRO, to [E. W.] Playfair, [Permanent Secretary, Ministry of Defence], July 31, 1961, p. 1.

71 PRO: DO 164/17; Memo from N. Pritchard, [Acting Deputy Under-Secretary of State], CRO, to the Secretary of State for Commonwealth Relations, July 20, 1961. pp. 1-2.

72 At the time, Makins suggests that there "is more than a suspicion of some disagreement, or ... lack of liaison, between the Australian Ministers and officials concerned with this matter." PRO: DO 164/17; Memo from Roger Makins, Chair of the UKAEA, to [E. W.] Playfair, [Permanent Secretary, Ministry of Defence], July 19, 1961, p. 2.

73 Australian Archives (ACT): A5818/2; Robert Menzies to the Cabinet, Nuclear Tests Conference: Control Posts in Australia, Submission No. 1156, V6, pp. 1-6 (Secret).

restating Australia's long held policy in favor of the test ban and other non-proliferation measures. The problem, Menzies argued, was being obliged to a treaty before knowing whether other countries (Indonesia, India, and especially China) would also participate. "It is," Menzies observed, "entirely possible -- even probable -- that China ...will refuse to accede...." The Prime Minister worried that the combined pressure of the United States, the Soviet Union, and Great Britain would make it "quite impossible to stay out" of the treaty. And having committed to the treaty, "Australia would find it almost impossible to withdraw in order to develop and test our own weapons."[74]

Menzies then suggested that the Cabinet consider a proposal to "mitigate the effects" of the treaty. One way to maintain a capacity for "indigenous manufacture" of nuclear weapons was to enter into an agreement with the United Kingdom or the United States for nuclear weapons-on-demand. Menzies recommended that Australia ...

> ...secure now from the United Kingdom recognition of an obligation to allow Australia the right of access to United Kingdom nuclear weapon "know how" (or preferably... the right to draw on the U. K. nuclear weapons stockpile) in the event of important countries in the general Pacific and India Ocean areas acquiring nuclear capability.[75]

On June 13, the Cabinet endorsed Menzies' recommendation (Decision 1383) authorizing a reply to the British request seeking "recognition now of the United Kingdom's obligation to provide Australia, if ever necessary, with a nuclear capability."[76] In his letter to Macmillan, Menzies asked for "full manufacturing data for the production of operational weapons" or "a more practical arrangement...for the supply of ready-made weapons."[77]

### D.2 "We Are Anxious to Help"

Menzies' cable elicited a sympathetic response from the British Prime Minister. That sympathy may have been motivated by a desire to improve British-Australian relations.[78] In addition,

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74 Australian Archives (ACT): A5818/2; Robert Menzies to the Cabinet, Nuclear Tests Conference: Control Posts in Australia, Submission No. 1156, V6, pp. 9-10, 13 (Secret).
75 Australian Archives (ACT): A5818/2; Robert Menzies to the Cabinet, Nuclear Tests Conference: Control Posts in Australia, Submission No. 1156, V6, p. 13 (Secret).
76 Australian Archives (ACT): A5818/2; Cabinet Minute, Canberra, 13th June, 1961, Decision No. 1383, Submission No. 1156, Nuclear Tests Conference: Control Posts in Australia, V6 (Secret). Australian Archives (ACT): A1838/269, TS852/10/4/2/3; Letter from Prime Minister Menzies to Prime Minister Macmillan, 29th June, 1961, p. 1 (Secret).
77 Australian Archives (ACT): A1838/269, TS852/10/4/2/3; Letter from Prime Minister Menzies to Prime Minister Macmillan, 29th June, 1961, p. 2 (Secret).
78 Perhaps one of the factors weighing on Macmillan's mind was, as a senior CRO official put it, "our present uneasy relations with the Australian Government and Mr. Menzies in particular...." PRO: DO 164/17; Memo from N. Pritchard, [Acting Deputy Under-Secretary of State], CRO, to G. P. Hampshire, [Assistant Under-Secretary of State], CRO, July 11, 1961.

Menzies' earlier reticence about entering the nuclear field may have actually strengthened his hand.[79] In any event, the PM was "anxious if possible to help the Australians."[80]

Macmillan's interest in complying with the Australian request also found support from other quarters within the British government. The Secretary of the Foreign Office, Lord Home, did not fancy the idea of transferring nuclear weapons know-how, but instead favored the outright provision of atomic arms.[81] The Minister of Defence, Harold Watkinson, wrote to Macmillan, declaring that "I am as anxious as you are to help the Australians and in principle I see no objection to giving them the kind of undertaking which Mr. Menzies asks for." Britain, he suggested, could approach the Americans on Australia's behalf. Like Lord Home, the Defence Minister felt that the American "reaction would probably be favourable."[82]

The Secretary of Commonwealth Relations was similarly supportive. After observing that the "Australians have frequently in the past shown themselves very keen to have this kind of information," the Secretary suggested that the UK be "forthcoming" and as "helpful as possible." In return, he contended, Australia would "earn much good-will and co-operation from the Australians."[83]

In fact, the Secretary wanted to consider some kind of arrangement even if the US objected to the Australian proposal.

> What I have in mind is that, should the Americans prove reluctant to go the whole way to meet Menzies, we should not get ourselves into a position in discussion with them where we ourselves are prevented from making a substantial offer to him. [84]

After hearing from the relevant departments, Macmillan asked the Minister of Defence to draft the government's reply.[85] On August 14, 1961, Macmillan sent Menzies his answer. He told Menzies

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[79] PRO: DO 164/17; Memo from N. Pritchard, [Acting Deputy Under-Secretary of State], CRO, to G. P. Hampshire, [Assistant Under-Secretary of State], CRO, July 11, 1961.

[80] PRO: DO 164/17; Memo from P. F. Zulueta, [Private Secretary to the Prime Minister], to C. W. R. Benwell, Ministry of Defence, July 25, 1961.

[81] PRO: DO 164/17; Memo from [unknown] to P. F. Zulueta, [Private Secretary to the Prime Minister], July 24, 1961; see also PRO: DO 164/17; Memo from Lord Home, [Secretary of State for Foreign Affairs], to Prime Minister Harold Macmillan, August 11, 1961.

[82] PRO: DO 164/17; Memo from Minister of Defence Harold Watkinson to Prime Minister Harold Macmillan, August 2, 1961.

[83] PRO: DO 164/17; Letter from the Secretary of State to Prime Minister Harold Macmillan, [August, 1961]. Among the considerations weighing on the minds of the CRO was the "very important equipment aspect affecting our hopes of selling the T.S.R. II to Australia." PRO: DO 164/17; Memo from N. Pritchard, [Acting Deputy Under-Secretary of State], CRO, to G. P. Hampshire, [Assistant Under-Secretary of State], CRO, July 11, 1961, p. 2.

[84] PRO: DO 164/17; Memo from the Secretary of State for Foreign Affairs to Prime Minister Harold Macmillan, [August, 1961], pp. 1-2.

[85] PRO: DO 164/17; Memo from Prime Minister Harold Macmillan to Harold Watkinson, Minister of Defence, August 3, 1961.

he was "anxious to help as I well understand the seriousness of the problem for Australia." Macmillan then pointed out that British agreements with the US obliged the UK to consult with the Americans. Macmillan concluded that "We think therefore that we should discuss your request with the Americans. This we would be very ready to do."[86] Macmillan suggested that in the meantime, the government could provide a briefing on nuclear strategy and tactics to General Sir Reginald Pollard, Chief of the General Staff, who was scheduled to visit London the following month. The British government was ready to engage in detailed discussions that would "produce some really substantial information of a kind not already available to the Australians." [87]

**D3. To the Edge and Back**

The Australian Cabinet received Macmillan's reply, but it is not known how it was interpreted by the Australians. On its face, the message was encouraging, but vague. In fact, the Australians may have underestimated Britain's willingness to help.[88]

After receiving Macmillan's message, the Cabinet proceeded with its plan to send the same proposal to the United States, in the person of Secretary of State Dean Rusk.[89] Before the letter could be delivered, however, outside events intervened. On the first day of September -- the very week that Rusk's letter was to be delivered -- the USSR broke the informal mortatorium and resumed above-ground nuclear testing. The US and the USSR continued to participate in test ban negotiations, but the prospect of an agreement appeared dim.[90] After the Soviet test, the Australian government immediately decided to stop delivery on the letter to the American Secretary of State.[91]

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86 PRO: DO 164/17; Letter from Prime Minister Harold Macmillan to Prime Minister Robert Menzies, August 14, 1961.

87 PRO: DO 164/17; Memorandum from G. P. Hampshire, [Assistant Under-Secretary of State], CRO, to N. Pritchard, [Acting Deputy Under-Secretary of State], August 30, 1961, p. 2.

88 Macmillan's reply was, in fact, designed to be vague. The Defence Minister had supported the idea of helping the Australians but cautioned Macmillan that he "send a friendly but temporizing reply for the moment." PRO: DO 164/17; Memo from Minister of Defence Harold Watkinson to Prime Minister Harold Macmillan, August 2, 1961. Lord Home, the Secretary of the Foreign Office, had proposed a three party agreement to transfer nuclear weapons, but added this caveat: "However, we should not, I think, even hint at this to Menzies since we shall have to probe the question very carefully with the Americans." PRO: DO 164/17; Memo from Lord Home, [Secretary of State for Foreign Affairs], to Prime Minister Harold Macmillan, August 11, 1961 (Top Secret).

89 Rusk, it might be noted, would three years later question the value of a nonproliferation treaty and suggest the possibility of giving nuclear weapons to the Japanese and the Indians in order to counter China's newly acquired nuclear capability. Glenn T. Seaborg, *Stemming the Tide*, (Lexington, MA: Lexington, 1987), pp. 132-135. Despite his personal views, Rusk acquired a reputation for faithfully carrying out nonproliferation policy.

90 Robert Gilpin, *American Scientists and Nuclear Weapons Policy*, (Princeton: Princeton University Press, 1962), p. 253.

91 Australian Archives (ACT): A1838/269, TS852/10/4/2/3; Cablegram for Despatch to AUSEMBA Washington, Department of External Affairs, For Ambassador from Minister, August 30, 1961 (Top Secret, Guard). Australian Archives (ACT): A1838/269, TS852/10/4/2/3; Note for the Minister, 8th May, 1962, Nuclear Capability for Australia (Top Secret).

On September 6th, Menzies wrote to Macmillan. Menzies declined Macmillan's offer to approach the Americans. Refering ot the recent Soviet tests, Menzies said that it was "hardly a very good time to take up our request in Washington. We would propose to raise the question of timing with you again when circumstances are more propitious."[92] Macmillan agreed.

Australia's General Pollard traveled to London where he received a briefing on nuclear strategy, but like Scherger's trip three years before, little seems to come from it.[93] Indeed, from September 1961 until after the Chinese nuclear test in 1964, it appears that the Australian government took no additional steps to acquire access to nuclear weapons or weapons information. Australia did reaffirm its right to possess nuclear weapons, however. In early 1962, for example, when a UN General Assembly Resolution called on countries to publicly renounce atomic arms, Australia demurred.[94] The best the government could offer was that it "had no plans to manufacture or acquire the weapons."[95] In 1963, the Australian delegation also objected to participating in a regional nuclear weapons free zone.[96]

# III. Moves Towards Indigenous Capability (1964-1972)

From the mid-1950s to early 1960s, government discussions centered on the procurement of nuclear weapons from Australia's allies, not indigenous manufacture. In 1958, for example, the Australians explicitly considered and rejected a proposal by Sir Philip Baxter of the AAEC to produce plutonium for the indigenous manufacture of nuclear weapons.[97]

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92 PRO: DO 164/17; Inward Telegram to Commonwealth Relations Office from Canberra, No. 808, September 6, 1961 (Top Secret).

93 PRO: DO 164/17; Note of Discussion between UK Officials and Lt. Gen. Sir Reginald Pollard, Chief of the Australian Army Staff - In London on Wednesday 6th September, 1961, September 18, 1961.

94 Australia's UN representative explained that the government could not "undertake that in no circumstances will Australian forces in the future be armed with nuclear weapons." Senator Frank McManus, "Should We Have the Bomb," *Australian*, November 15, 1967, p. 9.

95 T. B. Millar, "Australia: Recent Ratification," in Robert Lawrence and Joel Larus, eds., *Nuclear Proliferation: Phase II*, (Wichita: University Press of Kansas, 1974), p. 72. See also *Current Notes on International Affairs*, Vol. 33 (April 1962), pp. 27-28.

96 PRO: Report by the Joint Planning Committee at a Meeting Held on 17 April, 1963, No. 36/63, [with Attachment] (Secret); *Current Notes on International Affairs*, April 1962, pp. 27, 28; *Current Notes on International Affairs,* Vol. 34 (October, 1963), pp. 57-60; Sir James Plimsoll, to the First Committee of the UN General Assembly, 25 October 1965, *Current Notes on International Affairs*, October, 1965, pp. 634, 638. Millar, "Australia: Recent Ratification," p. 72-73. Australia's disapproval of a nuclear weapons free zone was shared by its chief military ally, the United States, which believed that it might inhibit the passage of American ships and submarines.

97 In 1957, in the lead up to Macmillan's visit, Sir Philip Baxter proposed to the Defence Committee that the AAEC construct a facility at Mt. Isa for the production of weapons grade plutonium. Baxter suggested that Australia propose to Macmillan that the British government collaborate in the project, thereby providing the United Kingdom with an independent source of fissile material while at the same time enabling Australia to achieve the basis for a nuclear weapons program. The Committee rejected the proposal because of the financial cost. It would be much

But then came the Chinese atomic test and Britain's first substantive steps to reduce its presence in Asia.[98] In the wake of these events, Australian decision makers revisited the question of nuclear weapons, and for the first time, seriously considered the development of an indigenous nuclear weapons capability.[99] Prime Minster Menzies' retirement and the eventual ascension of John Gorton to Prime Minister gave the policy a new momentum. Under Gorton, the government announced plans for an indigenous fuel cycle, signed a secret nuclear cooperation agreement with France, pursued a program of peaceful nuclear explosions, and publicly expressed its opposition to the Nuclear Non-Proliferation Treaty.

## A. Changing Circumstances, Changing Leadership: From Menzies to Gorton

China detonated its first nuclear device on October 16, 1964. Three years earlier, Prime Minister Menzies had explicitly identified nuclear weapons acquisition by a regional power as a condition that could trigger an Australian decision to seek nuclear weapons.[100] The official Australian response to the Chinese test was muted, but a year later, in October of 1965, the Cabinet ordered a study re-examining the nuclear option. Part of the study, a cost estimate of an indigenous weapons program, was conducted by the Department of Supply and the Australian Atomic Energy Commission. It estimated that a plutonium-based program that produced 30 fission weapons per year would cost $144 million (AUS) for development and an additional $13 million (AUS) per year in operating costs.[101]

### A.1 Menzies Moves On

When Menzies retired three months later, in January 1966, Harold Holt became Prime Minister. Menzies' retirement gave bomb advocates a new opportunity to press their cause.[102] Indeed, it was not long before the nuclear issue again imposed itself on the Cabinet's agenda. Early in 1966, the United States submitted a request to the Australian government, asking that its bilateral safeguards

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cheaper to *buy* nuclear weapons. Australian Archives (ACT): A1838/269, TS680/10/1; Memorandum Re: Plutonium Production in Australia, J. P. Baxter, Chairman, Australian Atomic Energy Commission, 16th January 1958 (Secret). Australian Archives (ACT): A1209/80, 58/5155; Minute by Defence Committee at Meeting Held on Thursday, 6th February, 1958, No. 18/1958, Nuclear Weapons for the Australian Forces - Plutonium Production in Australia, Agendum No. 16/1958 & Supps 1 & 2 (Top Secret).

98 There were signs as early as 1957 that the United Kingdom was going to have difficulty maintaining its commitments in Asia, but it was not until the mid-1960s that Britain took the first steps towards a withdrawal from the region. Regarding the early signs of British troubles, see Australian Archives Australian Archives (ACT): A1838/269, TS680/10/1; Memo from J. P. Quinn, External Affairs, to Mr. James Plimsoll, Assistant Secretary of External Affairs, Procurement of Nuclear Weapons for Australian Forces, December 20, 1957, pp. 2-3.

99 Howson, *The Life of Politics: The Peter Howson Diaries*, pp. 181-183.

100 Australian Archives (ACT): A5818/2; Robert Menzies to the Cabinet, Nuclear Tests Conference: Control Posts in Australia, Submission No. 1156, V6, pp. 7-8 (Secret).

101 Archives of the Department of Foreign Affairs and Trade: Unregistered document; Paper by Department of Supply and A.A.E.C., Costs of a Nuclear Explosives Programme, p. 3 (Top Secret). Figures are in 1964 Australian dollars.

102 Michael Carr, "Australia and the Nuclear Question: A Survey of Government Attitudes, 1945-1975," Masters thesis, University of New South Wales, 1979, p. 110.

arrangements with Australia be transferred to the IAEA. Holt's government opposed the move "for fear [that] it would compromise a future nuclear weapons program."[103] In particular, the Australians feared the prospect of IAEA inspectors roaming the country at will -- a concern that later resurfaced during the debate over the NPT.[104] Australia's opposition to the safeguards transfer was not communicated to the Americans, but it was sufficiently intense that members of the Cabinet thought it would be preferable to close the Lucas Heights reactor rather than comply with the request.[105] The government's initial strategy was one of delay. Finally in June, after having ordered a study of the issue, the Cabinet agreed to the request, but "only after being reassured by defence officials that acceptance of the IAEA safeguards 'would not directly affect a weapons program.'"[106]

About that same time, the Minister of National Development, proposed to the Cabinet that Australia construct a nuclear power reactor. The plan was opposed by the Prime Minister's Department, which was most likely joined by the Treasury.[107] On its face, the objective of the plan was to generate electricity, but according to one report, the "sub-plot of the struggle centered on the nuclear weapons possibilities of the technology."[108] In the end, the proposal was rejected by the Cabinet.

Despite the rejection of the power plant proposal, the issue of nuclear weapons would not die. In January of 1967, Glenn Seaborg visited Canberra. As his diary records, nuclear weapons were a live option...

> At dinner, Sir Leslie Martin (Australian AEC member and scientific adviser to the Department of Defense) told me that the Government of Australia was struggling with the decision of whether to produce a nuclear weapon. He added that they had not previously told the US government about this internal debate -- for example, President Johnson had not been told during a recent visit-- although both Prime Ministers Menzies and Holt had considered informing us.[109]

Later the following year, in April of 1967, the Minister of National Development announced restrictions on the export of Australian uranium. The Minister defended the restriction by saying

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103 "A-Bomb Option Was Prized by Canberra," *Daily Telegraph*, January 1, 1997, p. 16. I am indebted to John Simpson at the University of Southampton for providing me with the articles related to this episode.

104 Don Greenless, "Options Stay Open on Nuclear Arsenal," *Australian*, January 1, 1997.

105 "A-Bomb Option Was Prized by Canberra," *Daily Telegraph*, January 1, 1997, p. 16.

106 Australian archival documents quoted in Don Greenless, "Options Stay Open on Nuclear Arsenal," *Australian*, January 1, 1997.

107 Don Greenless, "Options Stay Open on Nuclear Arsenal," *Australian*, January 1, 1997.

108 Ian Henderson, "Weapons a Sub-Plot in Nuclear Power Plant Story," *Australian*, January 1, 1997.

109 Seaborg, *Stemming the Tide*, p. 252. Johnson visited Australia in October of 1966.

that Australia needed the uranium so that it could pursue a military option without interference from outside suppliers.[110]

A month later, in May of 1967, Holt and the Cabinet's Defence Committee commissioned a study to assess the possibility of an "independent nuclear capability by manufacture ... as well as possible arrangements with our allies." Two reasons were given for the study: "the possibility of the emergence of additional nuclear powers," and the probability that Australia would be asked to "subscribe to a non proliferation treaty."[111]

**A2. The Gorton Period**

How seriously Holt would have pursued the nuclear option is hard to assess. In December of 1967, five months after requesting a study on nuclear weapons "by manufacture," the Prime Minister disappeared while swimming off Port Phillip Bay near Melbourne.[112] The struggle to succeed the prematurely departed Prime Minister was primarily a battle between two mainstream Liberal Party leaders, Paul Hasluck and William McMahon. When neither minister could muster the required votes, the Liberal-Country Party coalition turned to a compromise candidate, John Gorton. Gorton was president of the Australian Senate and no stranger to politics, but he stands out as one of the more unorthodox leaders in post-war Australian history. American documents prepared for the President in advance of a Gorton visit described the Australian leader this way....

> Gorton is a distinctively Australian Prime Minister. In this he contrasts with Menzies, who said he was "British to his boot-heals," and Holt, who said he would "go all the way with LBJ." Much more than they, Gorton personifies -- and manipulates -- his countrymen's feelings of nationalism and egalitarianism.[113]

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110 CPD, HR, Vol. 54, 13 April 1967, p. 1214. (More generally, see Richard Leaver, *Australian Uranium Policy and Non-Proliferation*, Australian National University Peace Research Centre, Working Paper #45, (Australian National University, Canberra, 1988), p. 28.) The announcement drew more criticism from an angry mining industry than it did from those who might have objected to an Australian nuclear weapons capability, but one newspaper did comment that "Federal Cabinet appears to have decided in principle that Australia should edge its way into the world nuclear club, or at least insure that it is not going to be relegated to minor power status in this part of the world if Japan and India seek admission to the club. ...This is the only rational conclusion to be drawn from the remarkable statements in parliament this week by the Minister for National Development, Mr. David Fairbairn." *Australia Financial Review*, April 14, 1967, p. 6. See also *Canberra Times*, July 14, 1969, p. 9.

111 Archives of the Department of Foreign Affairs and Trade: Unregistered document; Report by the Joint Planning Committee at Meetings Concluding 2nd February, 1968, Department of Defence File No. 67/1017, Report No. 8/1968, An Independent Australian Nuclear Capability - Strategic Considerations, p. 1 (Top Secret AUSTEO).

112 *New York Times*, December 19, 1967, p. 3. The Australian leader, an avid sportsman whose first love was spear fishing, had nearly drowned at the same spot eight months earlier, but was saved by Diane Lett, a 27-year old fashion model. *New York Times*, December 17, 1967, p. 3; *New York Times*, December 23, 1967, p. 3.

113 Enclosure: Background on the Visit, p. 1, attached to Memo for the President, Subject: Your Meeting with the Prime Minister of Australia, April 29, 1969 (Secret), Memo for signature attached

Gorton is a man who is difficult to categorize. As a Prime minister, he was a maverick with a reputation for unpredictability. More popular with the voters than with his colleagues, Gorton soon made enemies within the Liberal Party.[114] He kept counsel with few of his fellow ministers, prefering instead his "kitchen cabinet." In essence, ran the government as a one-man show, and he did so with an iron hand.[115]

Gorton was Australia's most pro-nuclear Prime Minister. He exhibited a "keen interest in atomic energy matters"[116] and favored the acqusition of nuclear weapons.[117] As a senator, Gorton had given Gallois an Aussie twist, asking if Americans would be willing to trade "San Francisco for Sydney." He argued that the government should "...relieve them of that dilemma" and "...secure for this country some measure of atomic or hydrogen defense, ...inter-continental missiles, ...and our own bomber aircraft, capable of delivering our own bombs should we find it necessary."[118]

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to memo from John P. Walsh, Acting Executive Secretary, to the Secretary of State, Department of State Central Files, 1967-1969, Folder Pol 7, 3/1/69, Australia, Box 1842.

114 Gorton was not averse to hiring his friends and playing political hardball with his enemies. Reid, *The Gorton Experiment* , pp. 191, 402. Gorton's enemies within the L-CP, such as Senator St. John, attacked Gorton's alleged drinking, cronyism, and indiscreet private life. See Reid, *The Gorton Experiment*, pp. 282 and Howson, *The Life of Politics: The Peter Howson Diaries.* Neither Reid nor Howson were particularly enamored of Gorton. Howson, for example, was forced out of the Cabinet by the Prime Minister.

115 Enclosure: Background on the Visit, p. 1, attached to Memo for the President, Subject: Your Meeting with the Prime Minister of Australia, April 29, 1969 (Secret), Memo for signature attached to memo from John P. Walsh, Acting Executive Secretary, to the Secretary of State, Department of State Central Files, 1967-1969, Folder Pol 7, 3/1/69, Australia, Box 1842. A rather extreme demonstration of this fact was that when Gorton visited President Johnson in May of 1968, "he brought no advisers and requested no briefing papers from" either Defence or External Affairs. Scope Paper, Visit of John Gorton, Prime Minister of Australia, April 1, 1969, p. 3, attached to Memorandum for Mr. Henry Kissinger, the White House, Subject: Preparatory Meeting for the Visit of Prime Minister Gorton of Australia, March 14, 1969, Department of State Central Files, 1967-1969, Folder Pol 7, 3/1/69, Australia, Box 1842.

116 Telegram from the American Embassy in Canberra to the Secretary of State, Subject: Discussion of NPT and Atomic Energy Matters during Visit Australian Prime Minister Gorton, April 19, 1969, p. 2 (Secret, Limdis), Department of State Central Files, 1967-1969, Folder Pol 7, 3/1/69, Australia, Box 1842.

117 On Gorton's interest in nuclear weapons, see Alan Trengove, *John Grey Gorton, an Informal Biography* (North Melbourne: Cassel Australia LTD, 1969), pp. 204, 210; Cawte, *Atomic Australia*, p. 116.

118 Desmond Crowley, ed., "On the Nuclear Threshold," *Current Affairs Bulletin*, Vol. 45, No. 2, December 15, 1969, p. 24 citing Commonwealth Parliamentary Debates (Senate), S.10, May 8, 1957, p. 608. The phrase "San Francisco for Sydney" comes from Archives of the Department of Foreign Affairs and Trade: Unregistered document; Memo from M. R. Booker, First Assistant Secretary, Division II, External Affairs, to the Minister for External Affairs Draft Treaty on the Non-Proliferation of Nuclear Weapons, March 7, 1968, p. 2 (Secret); and Hedley Bull, "Australia and the Nuclear Problem: Some Concluding Comments," in O'Neill, Robert, ed., *The Strategic*

Gorton's doubts about American and British security guarantees had likely grown since his early days as a senator. The new Prime Minister took office at a time when Australian security appeared increasingly uncertain. A Gorton biographer describes the mood at the time....

> On the very day [Gorton] was sworn-in at Government House, he heard that Britain was to accelerate its withdrawal from east of Suez because of economic reasons. Less that three months later, on 31 March 1968, President Johnson announced a de-escalation of the bombing of North Vietnam and his decision to not seek reelection. The Australian Government received only the briefest notice of the changed approach to the war. Dramatically, the whole situation in South-East Asia had changed. The American resolve to fight through to victory in Vietnam seemed clearly weakened and the long-term security of the whole region appeared in danger of being undermined.[119]

As fate would have it, Gorton's ascent and Australia's worsening security position coincided with a new development in international nuclear affairs. Soon after Gorton took power, Australia was asked to sign the NPT and thus renounce nuclear weapons.

## B. The NPT and an Expanding Nuclear Program

Like the earlier Nuclear Test Ban Treaty, the NPT was negotiated by the superpowers and asked the non-nuclear countries to restrict their nuclear options. And once again, it appeared that China, India and other key regional actors would not join the treaty.

Gorton asked the Defence Committee to convene a special "senior level Working Group" to recommend Australia's response.[120] Interestingly, as consideration of the NPT made its way up the organizational ladder, it met ever greater resistance. The 1967 study requested by Holt and conducted by the Department of Defence's Joint Planning Committee (JPC) was completed in February 1968 and thus available to the Working Group. The JPC study concluded that "Australia should be prepared to sign such a treaty."[121]

The Working Group report, which was completed a month later, was more cautious. It recommended that Australia should indicate, "a willingness to sign the treaty subject to

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*Nuclear Balance: An Australian Perspective* , (Canberra: Strategic and Defense Studies Center, Australian National University, 1975), p. 141.

119 Trengove, *John Grey Gorton, an Informal Biography* , p. 202.

120 Archives of the Department of Foreign Affairs and Trade: Unregistered document; Defence Committee, Agendum No. 9/1968, Non-Proliferation Treaty, G. L. Prentiss, Secretary Defence Committee, 18th March, 1968 (Top Secret). The working group was established under Minute No. 19/1968.

121 Archives of the Department of Foreign Affairs and Trade: Unregistered document; Report by the Joint Planning Committee at Meetings Concluding 2nd February, 1968, Department of Defence File No. 67/1017, Report No. 8/1968, An Independent Australian Nuclear Capability - Strategic Considerations, Annex, p. 21 (Top Secret AUSTEO).

understandings, qualifications and possible amendments."[122] When the decision reached the Cabinet's Defence Committee, the issue was anything but settled. Sir Henry Bland represented the Department of Defence and chaired the Committee's deliberations. Bland took a position very different from his own Joint Planning Committee. According to notes taken at the meeting,

> ...it became clear that [Sir Henry] Bland was against Australia becoming party to the Treaty, and was trying to steer the discussion accordingly. There was also a disturbing tone from Bland that we ought to stand up to the Americans more. Baxter, [head of the AAEC], took much the same line.[123]

As the Australian government's attitude evolved, it appears that the focus increasingly became one of how to get around the Treaty. A classified American study from 1968 reports, for example, that....

> Australia was reluctant to give up her nuclear option, and Prime Minister Gorton expressed concern about the treaty during Rusk's April visit to Canberra. A group of ACDA and AEC officials was sent out, and they found the Australians very interested in just how far they could go under the treaty toward developing a nuclear-weapons capability so that they would not be behind India and Japan if either of those countries suddenly withdrew from the treaty."[124]

For the next two years, from March 1968 to February 1970, divisions over the treaty prevented the Cabinet from taking any action.[125] On one side were the Prime Minister, the Minister of Supply, the Minister of National Development (including the AAEC), and the Minister of Defence. They favored 1) not signing the NPT and 2) building an indigenous fuel cycle that would permit -- at some point -- the manufacture of nuclear weapons. Their efforts were opposed by the Minister of External Affairs, the Minister of Treasury, as well as dissident elements within the Department of

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122 Archives of the Department of Foreign Affairs and Trade: Unregistered document; Consolidated paper prepared for the Defence Committee, Non-Proliferation Treaty, March 1968, p. 35 (Top Secret), attached to Defence Committee Agendum No. 9/1968, Non-Proliferation Treaty, G. L. Prentiss, Secretary Defence Committee, 18th March, 1968 (Top Secret).

123 Archives of the Department of Foreign Affairs and Trade: Unregistered document; Memo from James Plimsoll to Minister of External Affairs, Non-Proliferation Treaty, 21 March 1968, [cover page] (Top Secret).

124 The U.S. Arms Control and Disarmament Agency During the Johnson Administration (U), Volume I, Summary and Analysis of Principal Developments, [1968], pp. 90-91, Lyndon Baines Johnson Presidential Library, Administrative History of US ACDA, Box 1-2.

125 Australia's public statements at the UN were pointedly critical of the Treaty. See *Current Notes on International Affairs*,, Vol. 39, May 1968, pp. 206-210.

Defence.[126] By mid-1969, a majority in the Cabinet opposed the treaty, but the apparent strategy of the NPT opponents was simply not to sign the treaty rather than openly reject it.[127]

As various ministries continued to debate the NPT, the government moved forward with plans to expand Australia's nuclear infrastructure. The cornerstone of this effort was a planned 500 MW nuclear power reactor at Jervis Bay.[128] In putting the project out for bid, government officials insisted that the reactor use natural uranium or alternatively, that it be packaged with an enrichment facility, so that Australia would not have to depend on foreign supplies of nuclear fuel.[129] During this same period, Australia signed a secret nuclear cooperation agreement with France.[130] It also

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126 Ian Fitchett, "Government Split on Signing of Nuclear Agreement," *Sydney Morning Herald*, March 3, 1969 p.1; Jonathan Gaul, "Australia Holds Back on Nuclear Treaty," *Canberra Times*, March 4, 1969, p. 2; *The Bulletin* (Sydney), "Australia (At Last) Goes Nuclear," August 2, 1969, p. 23.

127 *The Bulletin*(Sydney), August 2, 1969, p. 23; "About Turn, Nuclear Quick March," The *Bulletin*(Sydney), February 28, 1970, pp. 21-22.

128 On the Jervis Bay reactor, see Jonathan Gaul, "Cabinet Considers $100m Nuclear Station," *Canberra Times*, October 12, 1968, p. 1. Several people have contended that interest in the reactor was motivated, in large measure, because of the desire to develop a nuclear weapons option. Carr, "Australia and the Nuclear Question: A Survey of Government Attitudes, 1945-1975," p. 128; S. Encel and Allan McKnight, "Bombs, Power Stations, and Proliferation," Australian *Quarterly,* Vol. 42, No.1 (March 1970), p. 16; Ian Bellany, *Australia in the Nuclear Age: National Defense and National Development* , (Sydney: Sydney University Press, 1972), pp. 81-2, 110. One newspaper maintained that "Defence was, in fact, the basic justification for the project at the time, and received Cabinet support for this reason." Robert Sorby, "Jervis Bay's A-Day Deferred Again," *Australian Financial Review*, June 23, 1972, p. 1. Millar points out, however, that the bids for Jervis Bay all presumed that it would fall under IAEA inspection, thus complicating its direct use for military applications. Millar, "Australia: Recent Ratification," p. 77. In any event, the Defence Department generally supported the building of a atomic reactor, because it would lessen the lead time required for developing nuclear weapons. The Minister of Defence declared in 1968, for example, that he was "interested in the possibilities of atomic reactors to provide [energy and]... fissionable products on which the future security of this country might depend." Jonathan Gaul, "Cabinet Considers $100m Nuclear Station," *Canberra Times*, October 12, 1968, p. 1.

129 On the desire for an independent fuel cycle, see Alan Wood, "Nuclear Differences in Canberra," *Australian Financial Review*, July 15, 1969, pp. 1, 4; Alan Wood, *Australian Financial Review*, July 18, 1969, p. 21; *Canberra Times*, December 3, 1969, p. 15. On the link between an interest in an independent fuel cycle and an interest in nuclear weapons, see Michael Symons, "Who Will Get our Nuclear Contract?," *Sydney Morning Herald*, January 2, 1970, p. 2; Crowley, ed., "On the Nuclear Threshold," p. 26; "Atom Body 'Pressure' Allegation," *Sydney Morning Herald*, July 16, 1969, p. 10. Arguing that natural uranium reactors were obviously uneconomical compared with the alternative reactor types, Richardson maintained that "There is little room for doubt that the real reasoning behind the demand for natural uranium reactors is not economic, but the unstated desire for a 'bomb option.'" J. L. Richardson, "Nuclear Follies," *Quadrant*, 13 (May-June 1969), pp. 69-70.

130 The AAEC described the agreement as involving cooperation on the "production of electricity by nuclear means, fuel cycles, uses of radioisotopes, nuclear propulsion of merchant ships, peaceful uses of nuclear explosives, nuclear materials and equipment." AAEC, *17th Annual Report 1968-*

officially embarked on a project to use peaceful nuclear explosions for the construction of a harbor at Cape Keraudren.

Gorton's public skepticism about NPT and the government's plans for nuclear expansion led some observers to speculate that Australia had made a decision in favor of the bomb.[131] That conclusion seems too strong, but it is fair to say that 1969 represented a peak point in efforts to pursue an indigenous nuclear weapons capability.[132]

## C. Reversing Course

On October 9, 1969, Prime Minister Gorton officially kicked off his election campaign. In the speech announcing his candidacy, Gorton declared his opposition to the NPT and promised that, in the absence of major changes, his government would refuse to sign.[133] Four months later,

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*1969*, p. 82. The Sydney Morning Herald also reported that the agreement covered cooperation on in the field of fast breeder reactors, and interpreted the move as an effort by the government to secure access to nuclear technology in the event that it did not sign the NPT. *Sydney Morning Herald*, June 18, 1969, p. 5. Others saw a more direct link between the agreement and Australian military aspirations. "Heading for the Bomb?," *Nation* , July 12, 1969, p. 14. Alan McKnight, a former Assistant Secretary of the Department of the Prime Minister and Executive Member of the AAEC, and a Baxter critic, later speculated that "in the absence of other evidence, it is probable that the explanation [for the agreement] lies in the continuing desire of the present Australian Government to manufacture nuclear weapons and the willingness of the French to connive at this." Carr, "Australia and the Nuclear Question: A Survey of Government Attitudes, 1945-1975," p. 169. The contents of the French-Australian agreement remain secret today.

131 On the government's objections to NPT as a cover for its nuclear ambitions, see Bull, "In Support of the Non-Proliferation Treaty" p. 27; Richardson, "Australian Strategic and Defense Policies," pp. 251-2; *Sydney Morning Herald,* April 22, 1968, p. 9; Bellany, *Australia in the Nuclear Age: National Defense and National Development* , p. 109; David Solomon, "N-treaty: Now Is the Time to Sign," *Australian*, February 10, 1970, p. 9. Skeptics pointed out that Australia's objections concerning, for example, the threat of industrial espionage and potential encumbrances on civilian nuclear technology seemed strange from a country that did not possess a single power reactor. On the agreement with France and speculation that it had a military significance, see the *Sydney Morning Herald*, "France-Australia in Nuclear Energy Pact," June 18, 1969, p. 5. On suspicion stemming from Australia's multiple nuclear initiatives, see "Heading for the Bomb?," *Nation*, July 12, 1969, pp. 12-14; S. Encel, "To Sign or Not to Sign," *Australian*, July 17, 1969, p. 11; A. L. Burns, "Australia and the Nuclear Balance," in H.G. Gelber, ed., *Problems of Australian Defense* , (Melbourne: Oxford University Press, 1970), p. 146; Bellany, *Australia in the Nuclear Age: National Defense and National Development* , pp. 109-110.

132 Bull, "Australia and the Nuclear Problem: Some Concluding Comments," p. 139; Burns, "Australia and the Nuclear Balance," p. 147; Desmond Ball, "Australia and Nuclear Policy," in Desmond Ball, ed., *Strategy and Defense: Australian Essays* , (London: George Allen & Unwin, 1982), p. 321.

133 Geoffrey Hutton, "Nuclear Pact's Odd Man Out," *The Age*, February 13, 1970, p. 2; Richardson, "Australian Strategic and Defense Policies," p. 251, citing *Sydney Morning Herald* , October 9, 1969.

however, on February 19, 1970, the Prime Minister announced that Australia would sign the NPT.[134]

His announcement, and the subsequent signature a month later, emphasized his reservations about the treaty and called attention to the withdrawal provision. Gorton went on to explain that...

> ...[W]e wish to make it plain that our decision to sign is not to be taken in any way as a decision to ratify the treaty, and of course the treaty is not binding on us until it is ratified."[135]

Gough Whitlam, leader of the opposition Australia Labor Party, ridiculed Gorton for making the announcement in "the most grudging and graceless manner possible."[136] As it was, Australia was the second to last country to sign the treaty before it came into force.[137]

At the time, it was considered a conspicuous reversal of policy.[138] This was not the first time Gorton had switched his public position on a major defense and foreign policy issue, but it was unexpected, nonetheless.[139] Several explanations have been offered, all of which are based on limited evidence. Some jounalists and NPT opponents suggested that it was US pressure that compelled Australia to sign.[140] Others point to a change of heart within the AAEC, the leading opponent to the treaty. According to this view, Gorton's newly announced plan to build a power reactor gave the AAEC the project it most wanted, and that failure to sign the NPT might jeopardize the project if foreign suppliers shunned Australia.[141] A third explanation maintains that Gorton's

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134 *Current Notes on International Affairs*, Vol. 41, February, 1970, pp. 70-72.
135 Stan Hutchinson, "Australia to Sign Atom Pact," Sydney *Morning Herald*, February 19, 1970, pp. 1, 6.
136 Stan Hutchinson, "Australia to Sign Atom Pact," Sydney *Morning Herald*, February 19, 1970, pp. 1, 6.
137 W. J. Hudson, "The United Nations," in Gordon Greenwood and Norman Harper, eds., *Australia in World Affairs 1966-1970,* (Vancouver: University of British Columbia Press, 1974), p. 212.
138 Robert Howard, "Foreign Policy Review," *Australian Quarterly*, Vol. 42, No. 3, September, 1970, p. 115.
139 Gorton had, for example, reversed himself in the Forward Defence versus Fortress Australia debate. Reid, *The Gorton Experiment* , p. 181.
140 On US pressure, see Chapter 4.
141 Allan Barnes, "Scientists Had a Change of Heart," *The Age*, February 23, 1970, p. 7; Carr, "Australia and the Nuclear Question: A Survey of Government Attitudes, 1945-1975," p. 143; "Signing the Treaty," *Sydney Morning Herald*, February 20, 1970, p. 2; "About Turn, Nuclear Quick March," *The Bulletin* (Sydney), February 28, 1970, pp. 21-22; Richardson, "Australian Strategic and Defense Policies," p. 251. Some members of the Commission, or lower level scientists may have shifted positions, but Baxter, the predominant force at the AAEC continued to oppose the NPT, and maintained this position even after resigning from the Commission in 1972. See Martin, *Nuclear Knights*, p. 50, which cites Baxter's opposition to the NPT as late as 1976. Quester reports that the AAEC remained opposed to the Treaty even as it was ratified by a Labor

decision to sign was a matter of intra-party politics, i.e., a consequence of changes within the ruling Liberal-Country Party coalition after the Australian elections of 1969.[142]

More persuasive are explanations that point to two other factors. One is the momentum effect of late NPT signatures by Switzerland, Italy, Japan and West Germany. These "near-nuclear" states had been highly critical of the treaty and were reluctant to renounce their nuclear option.[143] Of

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government in 1973. George Quester, *Politics of Nuclear Proliferation*, (Baltimore: Johns Hopkins University Press, 1973), p. 165.

142 Gorton's L-CP coalition had won the 1969 elections, but not by much. In the House elections, the Liberal Party's share of the vote dropped almost 6.5 points, down to a paltry 34.77%. Labor, by contrast, had upped its share to 47%. Moreover, key Gorton supporters, like Gordon Freeth, lost their district elections. In the aftermath of the election debacle, Gorton barely survived a vote of no confidence. Given these events, Cawte (*Atomic Australia*, p. 128) has argued that Gorton's NPT reversal reflects the fact that Gorton found himself weakened politically and surrounded by a new set of ministers whose collective center had shifted towards the traditional wing of the L-CP, and in particular, to the advantage of William McMahon, the new Minister of External Affairs. McMahon favored signing the NPT. There is no contesting that Gorton entered his new term a weakened leader, but the relationship between intra-party politics and the NPT is not so clear. Cabinet changes after 1969 included the loss of Freeth (a Gorton supporter), but also Hasluck, Fairbairn, and Fairhall -- all three of whom were Gorton opponents. (Cawte, *Atomic Australia*, p. 128; Reid, *The Gorton Experiment*, pp. 143, 191,194, 286) Moreover, despite their differences with Gorton, both Fairbairn and Fairhall were strong proponents of Australian nuclear weapons. See "Anti-nuclear Treaty Impossible–Minister," *Canberra Times*, July 14, 1969, p. 9; "Don't Close Door to A-Weapons: Minister," *The Bulletin* (Sydney), June 29, 1968, p. 18; *The Bulletin* (Sydney), August 2, 1969, p. 23; "Don't Close Door to A-Weapons: Minister," *Sydney Morning Herald*, July 14, 1969, p. 1; *Sydney Morning Herald*, July 15, 1969 p. 1; Alan Wood, *Australian Financial Review*, July 15, 1969, pp. 1, 4; *Canberra Times*, September 12, 1968, p. 1; Robert Sorby, "Jervis Bay's A-Day Deferred Again," *Australian Financial Review*, June 23, 1972, p.1. The new Cabinet brought in Bury, Swartz, Sneeden, Bowen and Nixon. Bury, as Treasurer, would have likely supported the NPT, but Snedden opposed it. Allan Barnes, "Scientists Had a Change of Heart," *The Age*, February 23, 1970, p. 7; "About Turn, Nuclear Quick March," *The Bulletin*(Sydney), February 28, 1970, pp. 21-22. Swartz was the new Minister of Supply, a Ministry that had long opposed the NPT. Bowen and Nixon's view of the Treaty is not clear. In sum, the relationship between intra-party politics and the NPT decision is not a simple one, though Cawte is certainly right that Gorton was weaker after the elections.

143 Stan Hutchinson, "Australia to Sign Atom Treaty," *Sydney Morning Herald*, February 19, 1970, p. 1; Robert Howard, "Foreign Policy Review," *Australian Quarterly*, Vol. 42, No. 3, September, 1970, pp. 115; John Bennetts, "Australia to Sign Nuclear Treaty," Canberra *Times*, February 19, 1970, p. 1; . These four signatures came after Gorton's October election speech opposing the NPT but before the Australian announcement. More generally, on the importance that the Australian government attached to the decisions by other governments regarding the NPT, see *Sydney Morning Herald*, July, 17, 1968, p. 10; Archives of the Department of Foreign Affairs and Trade: Unregistered document; Working Group on the Non-Proliferation Treaty, Defence Committee, Consolidated Paper, Non-Proliferation Treaty, Attached to Agendum No 9/1968, Defence Committee, Non-Proliferation Treaty, 3/18/1968, pp. 1-2 (Top Secret); Archives of the Department of Foreign Affairs and Trade: Unregistered document; Draft Treaty on the Non-Proliferation of Nuclear Weapons, Commentary on Operational Articles, 2/19/68, Attachment to

particular significance was the Japanese decision: Australia's announcement that it would sign came a week after the Japanese signature.[144] The West German and Japanese signatures no doubt strengthened the hand of treaty proponents within the Cabinet, particularly the Ministry of External Affairs, who could argue that Australia was becoming isolated on the issue.[145] When Japan and West Germany signed the NPT, they verbally reiterated their concerns about the treaty and attached a formal set of reservations with their signature. When Gorton announced that Australia would sign the treaty, he cited the Japanese and German examples, declared that the treaty was non-binding until ratification, and included a set of reservations with Australia's signature.[146]

A second factor contributing to the reversal may have been the particular provisions of the NPT. Language in the treaty may have given Gorton a reason to sign in order to *maintain* his nuclear options. According to the provisions of the NPT, those countries that signed the treaty before it went into force were not bound by the treaty until ratification, while those who signed the treaty after it came into force were bound from the point of signature.[147] Understood from this vantage

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Memo from M. R. Booker, First Assistant Secretary, Div II, External Affairs, for the Minister of External Affairs, Non-Proliferation of Nuclear Weapons, 919/10/5, 2/21/68, p.1 (Top Secret). Outside the government, a number of analysts drew up their own lists of the countries that would have to join the NPT before an Australian signature. See J. L. Richardson, "Australia and the Non-Proliferation Treaty," (Canberra: Australian National University Press, 1968), pp. 5, 23; Richardson, "Nuclear Follies," p. 72; Bull, "In Support of the Non-Proliferation Treaty," p. 29; X. "Australian Doubts on the Treaty." *Quadrant* Vol. 12, No. 53 (May-June 1968), p. 33.

144 *Sydney Morning Herald,* May 12, 1969, p. 2; Crowley, ed., "On the Nuclear Threshold," p. 30. West Germany's signature came after a change in government following elections in 1969. Crowley, ed., "On the Nuclear Threshold," p. 24. Before the election, West Germany's position was such that one Australian newspaper could say that "When Federal Ministers drink together these days the toast should really be to Dr. Kiesinger, the Chancellor of the West German Republic, for Dr. Kiesinger is fighting for all those countries, such as Japan, India, Israel and Australia, who do not want to sign the Nuclear Non-proliferation Treaty, but who do not want to say so too loudly for fear of offending the United States." *Sydney Morning Herald,* May 12, 1969, p. 2.

145 Geoffrey Hutton, "Nuclear Pact's Odd Man Out," *The Age*, February 13, 1970, p. 2; "About Turn, Nuclear Quick March," *The Bulletin* (Sydney), February 28, 1970, pp. 21-22; Baxter, in an interview with Carr, says as much: "the fear of conspicuous isolation was the factor which most prompted the interdepartmental committee to eventually recommend signature." Carr, "Australia and the Nuclear Question: A Survey of Government Attitudes, 1945-1975," p. 140.

146 John Bennetts, "Australia to Sign Nuclear Treaty," Canberra *Times*, February 19, 1970, p. 1; *Current Notes on International Affairs*, Vol. 41, February, 1970, pp. 70-72.

147 One interesting aspect of the NPT episode is the role of "deadlines," which focus the policy process and push political leaders towards decisions. In 1957, Macmillan's impending visit to Australia created an artificial deadline, the consequence of which was a decision to have Menzies raise the issue of nuclear weapons procurement. In 1970, the imminent entry into force of the NPT created another artificial deadline that forced a governmental response. Indeed, the newspapers of the day as well as Treaty advocates explicitly talked about "the coming deadline" and the need for Gorton to take action. See, for example, Geoffrey Hutton, "Nuclear Pact's Odd Man Out," *The Age*, February 13, 1970, p. 2; David Solomon, "N-treaty: Now Is the Time to Sign," *The Australian*, February 10, 1970, p. 9; "Treaty Signature Now Urgent Issue," *Canberra Times*, February 9, 1970, p. 3.

point, Gorton's signature less than a month before the treaty came into force, was a way to preserve the country's nuclear options.[148] Australia could sign without being bound by the treaty, and be in a better position to pursue a nuclear capability.[149] External Affairs had , in fact argued that it was "...possible for a non-nuclear signatory of the treaty to carry its nuclear technology to the brink of making a nuclear explosive device" and still not contravene the treaty.[150]

In any case, it is clear that Gorton had no intention of bringing the treaty up for ratification, and he continued with plans for building a new reactor.[151] Within the year, however, he was ousted from

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148 Cawte, *Atomic Australia*, p. 129. The government had previously considered the sign-and-pursue-the-bomb strategy, but rightly feared that signing might be the first step on a slippery slope. According to one newspaper, "Some of the Government's advisers believe that this would give us sufficient protection so that we could sign the treaty and retain our option. But the majority believe that to sign the treaty would certainly make this more difficult." *Sydney Morning Herald*, May 12, 1969, p. 2. Australia's interest in the sign-and-pursue option is reflected in the government's focus on the meaning of the word "manufacture." See "The U.S. Arms Control and Disarmament Agency During the Johnson Administration (U)," Volume I, Summary and Analysis of Principal Developments, [1968], pp. 90-91, Lyndon Baines Johnson Presidential Library, Administrative History of US ACDA, Box 1-2; Archives of the Department of Foreign Affairs and Trade: Unregistered document; Outward Telegram, Department of External Affairs, 219, March 15, 1968, Non-Proliferation Treaty, p. 2 (Confidential).

149 The hedging strategy was widely discussed in leading newspapers and endorsed by a number of nonproliferation advocates including J. L. Richardson, Hedley Bull, and Ian Bellany. Bull explained that one "reason why Australia has an interest in the treaty is that it permits us to get closer than we are now to being able to manufacture a nuclear weapon." Bellany maintained that ".....however cynical it may seem to say so, that Australian expertise in nuclear matters civil and military will be ... on a far firmer foundation than if the country had chosen to pursue a course of nuclear self-sufficiency outside the treaty..." See also Australian *Financial Review*, July 15, 1969, pp. 1, 4; *Australian Financial Review*, July 18, 1969, p. 21; "Road to the Bomb," *Canberra Times*, July 15, 1969, p. 2; "Treaty Signature Now Urgent Issue," *Canberra Times*, February 9, 1970, p. 2; *Sydney Morning Herald*, October 9, 1968; Richardson, "Australia and the Non-Proliferation Treaty," p. 22; Hedley Bull, "The Nonproliferation Treaty and Its Implications for Australia," *Australian Outlook*, Vol. 22, August 1968, p. 173; Bellany, *Australia in the Nuclear Age: National Defense and National Development* , p. 110; Gelber, "Australia and Nuclear Weapons," pp. 105, 117.

150 Archives of the Department of Foreign Affairs and Trade: Unregistered document; Memo from M. R. Booker, First Assistant Secretary, Division II, External Affairs, to the Minister for External Affairs, Draft Treaty on the Non-Proliferation of Nuclear Weapons, March 7, 1968, pp. 2-3 (Secret). See also Archives of the Department of Foreign Affairs and Trade: Unregistered document; Submission to the Cabinet from Paul Hasluck, Minister of External Affairs, Draft Treaty on the Non-Proliferation of Nuclear Weapons, [March-April], 1968, p. 9 (Top Secret).

151 On Gorton's disinterest in ratification, see John Bennetts, "Australia to Sign Nuclear Treaty," *Canberra Times*, February 19, 1970, p. 1. Interestingly, the American position at the time was that Australia could take its time with regard to ratification. A White House briefing book recommended that "If Gorton raises the matter of signature implying speedy ratification, say that the US would not read such an implication into Australian signature. We ourselves will have had a considerable lapse of time between our signature and the deposit of our ratification instrument."

the Prime Ministership by forces within his own party. He continued in the government as Minister of Defence, but was succeeded in the Prime Ministership by McMahon, the former Minister of the Treasury and Minister of External Affairs. McMahon had supported the NPT and was skeptical of plans to expand the nuclear infrastructure. McMahon did not act on NPT ratification, but he effectively killed the plans for the Jervis Bay reactor, citing the NPT and financial cost as reasons for suspending the project.[152]

# IV. From Option to Abstinence

McMahon's tenure as Prime Minister was short-lived. In a year's time, McMahon and the Liberal-Country Party were out of office, defeated by Labor in the 1972 elections.[153] The Labor Party entered office "with a well-developed and unequivocal policy on nuclear proliferation," and he new Prime Minister wasted no time, moving almost immediately to ratify the treaty.[154] In a four year period from Gorton to Whitlam, Australian nuclear policy had shifted from one of indigenous option to one of renunciation.

The year following the formation of a Labor government, India detonated a nuclear device. The test sent political shock waves throughout the world's capitals. Australia considered India a key regional power, and India's entry into the nuclear club -- like China's a decade earlier -- was unsettling to Australian officials.[155] The policy consequences, however, were quite different. The government, led by Labor, did not alter Australia's nuclear posture, and if anything, moved in the opposite direction by publicly recommitting itself to the goal of nonproliferation.

Following a Labor scandal, the Liberal Party came back into government in 1975. Some Liberal leaders had publicly raised the issue of a nuclear option, but the change in government did not produce a change in policy.[156] Despite the Indian test, the new government led by Malcolm Fraser, a former Minister of Defence, maintained Australia's commitment to abstain from nuclear weapons.

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Background paper, Peaceful Nuclear Explosion Projects, Attachment to Memo for Mr. Henry Kissinger, The White House, May 1, 1969, p. 2 (Secret/Exdis), p. 4 Department of State Central Files, 1967-1969, Folder Pol 7, 5/1/69, Australia, Box 1842.

152 Letter to the editor from William McMahon, *Sydney Morning Herald*, September 3, 1975, p. 6.

153 On McMahon's opposition to Gorton nuclear initiatives, see Ball, "Australia and Nuclear Policy," p. 322.

154 On Labor's support of NPT, see *Sydney Morning Herald*, March 11, 1969, p. 12; *Sydney Morning Herald, March* 27, 1969, p. 9; *Sydney Morning Herald*, April 5, 1969, p. 11; *Sydney Morning Herald*, July 15, 1969, p. 1. Ball, "Australia and Nuclear Policy," p. 322.

155 Draft Cabinet Submission from Paul Hasluck, Minister of External Affairs, Draft Treaty on the Non-Proliferation of Nuclear Weapons, February 19, 1968, Attachment to memorandum from M.R. Booker, First Assistant Secretary, Div II, External Affairs, to Paul Hasluck, Minister of External Affairs, Non-Proliferation of Nuclear Weapons, 919/10/5, February 21, 1968, p. 13 (Top Secret).

156 Henry Albinski, *Australian External Policy under Labor*, (St. Lucia: Queensland Ress, 1977), p. 251, footnote 71. The Indian test did lead some Australians to re-examine the issue of nuclear weapons. The United Services Institute, for example, commissioned a study in 1975 on the concept of an Australian nuclear force. The study group recommended against development of nuclear weapons. Ball et al, *An Australian Nuclear Weapons Capability* , p. 1-32.

By this point in time, Sir Philip Baxter had left the AAEC. With his departure and the demise of the Jervis Bay reactor, the AAEC shifted its focus from reactors to uranium mining.[157] Within the Ministry of Defence, enthusiasm for nuclear weapons waned. When Australia ratified the NPT in 1973, there were still elements within Defence that wanted to establish a nuclear capability, but by the 1980s, Desmond Ball could declare that, "the 'option' of developing nuclear weapons as the 'absolute deterrent' has virtually no support within the Australian defence."[158]

Oddly enough, the only known post-NPT instance of a government official advocating nuclear weapons was a Labor Foreign Minister, Bill Hayden. In 1984, Hayden attempted, without success, to get some of his cabinet colleagues to consider the idea of a nuclear weapons capability.[159]

In the 1990s, Australia increasingly took a leadership role in efforts to promote nonproliferation. It sponsored IAEA demonstration projects, supported the indefinite extension of the NPT, and was instrumental in producing the Comprehensive Test Ban Treaty. Australia also sponsored the Canberra Commission, whose purpose was to promote nuclear abolition.

In a forty year period, Australia went from evading IAEA programs to sponsoring them, from resisting the NPT to supporting its indefinite extension. The country that attempted to circumvent the Test Ban by getting an agreement for weapons-on-demand later led the fight for the Comprehensive Test Ban on the floor of the General Assembly. The nation that wanted to buy nuclear weapons from the British, later preferred that they be abolished.

In the next two, chapters, we look at why. Why did Australia behave this way? What accounts for its nuclear choices? The search for answers begins with a look at the role of power and resources.

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[157] On the post-NPT AAEC, see Cawte, *Atomic Australia: 1944-1990*; Leaver, "Australian Uranium Policy and Non-Proliferation;" Ann M. Moyal, "The Australian Atomic Energy Commission: A Case Study in Australian Science and Government," *Search*, Vol. 6, No. 9 (September, 1975), pp. 365-383.

[158] Michael Pugh, *The ANZUS Crisis, Nuclear Visiting and Deterrence*, (Cambridge: Cambridge University Press, 1989), pp. 28-32; Ball and Langtry, "The Development of the Australian Defense Force," p. 264.

[159] Bill Hayden, Hayden, *An Autobiography*, (Sydney: Angus and Robertson, 1996), pp. 422-423.

# Chapter 4. Explaining Australian Nuclear Behavior: Hypotheses on Power and Resources

## I. Introduction

The previous chapter established the facts of the Australian case -- the actors, events, and results of Australia's twenty year flirtation with the bomb. In this chapter, those facts provide the empirical basis for testing hypotheses on relationship between power, resources, and nuclear decision making.

### Defining a Pool of Observations

To test the hypotheses, one needs a pool of observations. For many of the tests used in this study, a pool of observations can be constructed by parsing Australia's nuclear history into individual decisions or decision sequences. In all, some 39 separate decision sequences are identified. Each decision sequence can be thought as having three parts: a proposal, a decision/action, and an outcome. The *proposal* consists of a recommendation by a political actor on the issue of nuclear weapons, e.g., proposals to buy nuclear weapons from the British, proposals to renounce nuclear weapons by ratifying the NPT, etc. A *decision/action* is a formal or de facto response to the proposal, together with subsequent actions intended to carry out the decision. The *outcome* consists of the final result.

Box 4.1. lists the decision sequences for the Australian case. The proposals come in two flavors: 1) those intended to support the acquisition of nuclear weapons or a nuclear weapons capability and 2) arms control proposals whose objective is to constrain or foreclose the nuclear option. Decisions in **bold** represent anti-nuclear decisions.

## Box 4.1. Australian Decision Sequences, 1954-1996

| # | Date | Proposal | Decision | Outcome |
|---|---|---|---|---|
| 1 | 54 | Pursue nuclear sharing with US. | Accepted. | No nuclear sharing with the US. |
| 2 | 56 | Acquire US NW info for Aus planes. | Accepted. | Not acquire information. |
| 3 | 8/56 | Acquire NW information. | Accepted. | Signs agreement; gets limited US info. |
| 4 | 11/56 | Acquire NW from the US or UK. | Accepted. | Not acquire NW from US or UK. |
| 5 | 1/58 | Acquire V bomber for NW. | Accepted. | Not acquire V bomber. |
| **6** | **2/58** | **Build PU reactor for NW.** | **Rejected.** | **Not build PU reactor.** |
| 7 | 2/58 | Acquire NW from the US or UK. | Accepted. | Not acquire NW. |
| 8 | 2/58 | Acquire NW information from UK. | Accepted. | Not acquire NW. |
| 9 | 4/58 | Ban discussion of NW with UK. | Accepted. | Discussion with UK officials ceases. |
| 10 | 8/58 | Acquire NW from the US or UK. | Accepted. | Not acquire NW. |
| 11 | 59 | Establish Defence Nuclear Scientist. | Accepted. | DNS position created. |
| **12** | **11/59** | **Acquire UK NW info.** | **Rejected.** | **No info from UK tests.** |
| 13 | 60 | Acquire Bloodhound missile. | Accepted. | Bloodhound not acquired. |
| 14 | 60 | Acquire nuclear capable TSR-2. | Accepted. | TSR not acquired. |
| 15 | 61 | Acquire NW-on-demand from UK/US. | Accepted. | NW not acquired. |
| 16 | 7/61 | Acquire NW information from UK. | Accepted. | Information not acquired. |
| **17** | **9/61** | **Let UK ask US re: NW to Aus.** | **Rejected.** | **No British inquiry made.** |
| 18 | 12/61 | Sign UN pledge not to acquire NW. | Rejected. | Pledge not signed. |
| 19 | 63 | Acquire nuclear capable F111. | Accepted. | F-111s received. |
| 20 | 5/63 | Form NW group. | [NK] | [NK] |
| 21 | 65 | Conduct study on developing NW. | Accepted. | Study conducted. |
| 22 | 66 | Transfer US safeguards to IAEA | Rejected. | Seeks delay. |
| **23** | **66** | **Transfer US safeguards to IAEA** | **Accepted.** | **Safeguards transferred.** |
| **24** | **66** | **Build nuclear power reactor.** | **Rejected.** | **No reactor built.** |
| 25 | 67 | Impose uranium export restrictions. | Accepted. | Restrictions imposed. |
| 26 | 67 | Conduct study on developing NW. | Accepted. | Study conducted. |
| 27 | 68 | Sign NPT. | Rejected. | Treaty not signed. |
| 28 | 69 | Sign nuclear agreement w/ France. | Accepted. | Agreement signed. |
| 29 | 69 | Conduct PNEs. | Accepted. | No PNEs conducted. |
| 30 | 69 | Build nuclear power reactor. | Accepted. | Begins site selection. |
| **31** | **70** | **Sign NPT.** | **Accepted.** | **NPT signed.** |
| 32 | 70 | Ratify NPT. | Rejected. | NPT not ratified. |
| **33** | **71** | **Build nuclear power reactor.** | **Rejected.** | **No reactor built.** |
| **35** | **73** | **Ratify NPT.** | **Accepted.** | **NPT ratified.** |
| **36** | **84** | **Pursue nuclear capability** | **Rejected.** | **NW not pursued.** |
| **37** | **94** | **Endorse abolition of NW.** | **Accepted.** | **Canberra Commission created.** |
| **38** | **95** | **Support extension of NPT.** | **Accepted.** | **Votes to extend NPT.** |
| **39** | **96** | **Sign and ratify CTBT** | **Accepted.** | **CTBT signed and ratified.** |

NW = nuclear weapons NK = not know

In the contest between pro- and anti- nuclear proposals, success for one side typically means defeat for the other side. Thus, proponents of nuclear weapons would include among their successes the endorsement of proposals that support the acquisition of nuclear weapons and the defeat of proposals restricting or eliminating the nuclear option. Similarly, supporters of arms control proposals would include among their successes the endorsement of disarmament proposals and the defeat of proposals favoring nuclear weapons. Of course proposals of either kind can be approved and still fail. Based on these principles, one can code Australia's 39 decisions on the basis of whether they favored acquisition or renunciation. The possibilities are summarized in the Box 4.2

**Box 4.2. Classification of Decision Events**

| Events Favoring Acquisition | Events Favoring Renunciation |
|---|---|
| Pro-nuclear proposals that are accepted. | Anti-nuclear proposals that are accepted. |
| Anti-nuclear proposals that are rejected.<br>Anti-nuclear proposals that are accepted but fail. | Pro-nuclear proposals that are rejected.<br>Pro-nuclear proposals that are accepted but fail. |

In sum, the Australian case generates 39 different decision sequences, most of which can be further disaggregated into separate proposals, decisions and outcomes that can be coded as favoring either acquisition or renunciation.[1] With this pool of observations in hand, one can construct many of the congruence tests described in Chapter 2.

# II. Hypotheses on Power

The first four hypotheses discussed in Chapter 2 focus on power. One hypothesis stresses security threats -- or rather the absence of security threats -- in accounting for nuclear decisions. Another points to the general effects of bipolarity, and the remaining two highlight particular aspects of bipolarity, i.e. superpower security guarantees and superpower pressure. Each is considered separately.

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[1] Some issues are the focus of more than one decision sequence. In 1966, for example, the Australian government rejected a proposal to build a nuclear power reactor. In 1969, it approved a proposal for a reactor, only to reverse the decision two years later. These actions are defined as three separate decision sequences, in part, because the decision group was different at each point. An issue can involve the same decision group but still yield more than one decision sequence, however. In February of 1958, for example, the Defense Committee recommended that Prime Minister Menzies seek nuclear weapons from the British. Prime Minister Menzies made a half-hearted and unsuccessful attempt to raise the issue in his first meeting with the British Prime Minister. The Defence Committee met soon after that meeting and voted a second time in support of seeking nuclear weapons. This second vote is treated as a separate observation, because it constituted a second, formal consideration of the issue. Indeed, in this case, the need for a new decision was a consequence of events that had transpired since the first vote. In sum, this list of observations distinguishes separate decision sequences on the basis of differences in the decision group and/or the presence of a formal decision finding.

## H1. Threat

This hypothesis suggests that a state's nuclear behavior is a function of its threat environment. States that face particular kinds of threats -- an adversary that possesses nuclear weapons, the ability to develop nuclear weapons, or an overwhelming advantage in conventional weaponry -- the weaker party will compensate for its deficiency with an atomic equalizer. According to the hypothesis, the absence of such threats explains why states do not pursue nuclear weapons.

To assess the explanatory power of the threat hypothesis, two different kinds if tests are employed: 1) a congruence test that compares threat levels with nuclear behavior and 2) a process tracing test. The analysis begins, however, with a brief overview of Australia's security context.

### Australian Security: an Overview

Australia's rather unusual security situation can be summarized on the basis of three attributes: 1) geography, 2) prospective threats, and 3) war fighting experience. The first two attributes are constitutive elements of security, while the third might be considered a gross measure.

Geography

In the minds of most Americans, Europeans, and indeed, most Australians today, the land down under represents something of a security ideal. Located on the edge of the world, far from the tribal and territorial conflicts of Europe and mainland Asia, it is a country surrounded by water rather than borders. Australia has few if any territorial ambitions and would appear to be an unlikely target for more rapacious countries, if only because of the difficulties inherent in large-scale amphibious assault. Its security is, it would seem, an indisputable fact of geography.

Among the Australians themselves, however, there has been a different view. In the three and a half decades following the end of the Second World War, many Australians saw their homeland as a vulnerable outpost of western civilization. Those who worried about external threats also pointed to indisputable facts of geography.[2] First and foremost is the fact that Australia's borders are all but indefensible. Its extremely large size (almost three million square miles with over twelve thousand miles of coastline) and comparatively small population make it unlikely that its citizens could repel a large scale attack. In addition, the oceans that provided a buffer are the same oceans that could inhibit the arrival of allies. And being an island, its survival depends on open sea lanes.

Potential Threats

Whether physical location adds or detracts from a country's security usually depends on whether the nations nearby are enemies or allies. In the decades following WWII, when Australians looked out across the sea, many saw more of the former and not enough of the latter. This small, Christian country known for its "whites only" immigration policy, saw itself in a region dominated by much

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[2] It is often pointed out by Australians, for example, that the distance between the Australian cities of Sydney and Perth is 2,100 miles -- the same as separates Darwin and Singapore. Darwin to Canton is only slightly greater, some 2,700 miles. The distance between Darwin and Djakarta is shorter (1,700 miles). From Port Moresby in Papua New Guinea -- which the Japanese occupied during WWII -- to the Australian port of Townsville is 700 miles. T. B. Millar, *Australia's Defense* (New York: Melbourne University Press, 1965), pp. 28-31. Of course, the classic scholarly work on Australia's geography and its impact on the country's history and psyche comes from Geoffrey Blainey. Geoffrey Blainey, *The Tyranny of Distance : How Distance Shaped Australia's History*, (Melbourne: Macmillan, 1975).

larger countries whose culture, religion, and skin color differed from their own. Four countries in particular occupied Australia's attention: Japan, the USSR, China, and Indonesia. Other countries were sometimes included within its field of concern, including India, Malaya (later Malaysia), and Vietnam, but the big four were the central preoccupation of policy makers.

*Japan*

The only nation to have attacked Australian territory is Japan. As Imperial Japanese forces cut a swath through the southern Pacific, occupied Port Morsby off Australia's northern coast, and bombed Australia's port city of Darwin. Not long afterwards, Japan was defeated in the Battle of the Coral Sea, and its forces began backtracking to the Japanese homeland. Nevertheless, the experience left its mark on the Australian mind.[3] Indeed, Australia's push for the ANZUS treaty in 1951 was motivated not by a fear of Communism, but by concern about a reconstituted Japan.[4] Anxiesty about Japanese military ambitions persisted well into the 1960s.[5]

*The Soviet Union*

The Soviet Union -- or more precisely, World Communism directed by the Soviet Union -- constituted another prospective threat.[6] Few Australians thought that the Soviets would march down and take Australia by invasion, but they did fear that Soviet influence would work its way south, taking hold of governments in Southeast Asia and that Australia might represent the last lonely domino.[7] According to one scenario, the Soviet Union might even use Indonesia as a stage

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3 T. B. Millar, "Australia: Recent Ratification," in Robert Lawrence and Joel Larus, eds., *Nuclear Proliferation: Phase II*, (Wichita: University Press of Kansas, 1974), p. 69.

4 Coral Bell, *Dependent Ally: A Study in Australian Foreign Policy* (Melbourne: Oxford University Press, 1988), p. 47; Alan Watt, [Comments in] "Commentary I," in *Australia's Defence and Foreign Policy*, Australian Institute of Political Science (Proceedings of 30th Summer School, 1964), pp. 32-33.

5 Hedley Bull, "Australia and the Great Powers in Asia," in *Australia in World Affairs 1966-1970* , Gordon Greenwood and Norman Harper, eds., (Vancouver: University of British Columbia Press)1974, p. 338.

6 Alan Dupont, *Australia's Threat Perceptions: A Search for Security* (Canberra: Strategic and Defense Studies Center, The Australian National University, 1991), p. 66; Dennis Warner, "An Assessment of Potential Threats to Australia's Essential Interests Over the Next Ten Years," in T. B. Millar, ed., *Britain's Withdrawal from Asia: It's Implications for Australia* (Proceedings of a Seminar conducted by the Strategic and Defense Studies Centre, The Australian National University), September 29-30, 1967, p. 21; Bell, *Dependent Ally: A Study in Australian Foreign Policy* , p. 64; Peter Hastings, "Fear Came Seeping Down from the North," *Sydney Morning Herald*, January 18, 1986, p. 27; Millar, "Australia: Recent Ratification," p. 69; A. L. Burns, "Australia's World of the Seventies," in Greenwood, Gordon, and Norman Harper, eds. *Australia in World Affairs 1966-1970* (Vancouver: University of British Columbia Press, 1974), p. 452.

7 T. B. Millar, *Australia's Defence*, p. 166; Burns, "Australia's World of the Seventies," p. 452; Gregory Clark, *In Fear of China*, (London: Barrie & Rockliff, The Crest Press, 1967), p. 168; Malcolm Fraser, "Australian Government Policy", in Teichmann, Max, ed. *Aspects of Australia's Defense* (Melbourne: The Political Studies Association, Monash University, 1966), pp. 27-8.

for guerrilla attacks against Australian territory.[8] A more direct challenge from the Soviet Union came in the late 1960s, when for the first time, Soviet ships gained entree to the Indian Ocean.[9] More generally, the Soviet Union was understood as the chief threat to the Western alliance and Australia's chief protector, the United States.

*China*

Australians saw the Soviet Union as a threat, but in many ways, it was a fear of the People's Republic of China that animated Australian thinking. Australia considered China the most alien and potentially menacing of the area's regional players.[10] As one scholar of Australian foreign policy observed, "even at height of the Cold War, the fear of Soviet expansionism had never quite captured the Australian imagination to the same degree as the notion of the 'yellow peril' and its association with Asian communism."[11]

The Korean War, the Sino-Soviet split, and communist insurgencies throughout Asia convinced many Australians that "Red China" posed its own threat to Australian security. These anxieties only increased after China's entry into the nuclear club. Some analysts warned about the inevitable day when China would develop a secure second strike and achieve nuclear parity with the United States.[12] A few warned that Australia might be held as a nuclear hostage.[13] Still others feared the

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8 On the fear of a Soviet-Indonesian alliance, see A. L. Burns, [Comments in] "Commentary," in *Australia's Defence and Foreign Policy*, Australian Institute of Political Science (Proceedings of 30th Summer School, 1964), p. 60.

9 Bull, "Australia and the Great Powers in Asia," pp. 329, 344; H. G. Gelber, "Appendix," in *Problems of Australian Defense*, H. G. Gelber, ed., (Melbourne: Oxford University Press, 1970), p. 298; Millar, "Australia: Recent Ratification," p. 83; Gordon Greenwood, "The Political Debate in Australia," in *Australia in World Affairs 1966-1970,* Gordon Greenwood and Norman Harper, eds., (Vancouver: University of British Columbia Press, 1974), p. 75; Alan Trengove, *John Grey Gorton, an Informal Biography*, (North Melbourne: Cassel Australia LTD, 1969), p. 203; J. D. B. Miller, "Conclusions", in *Australia and the World: Prologue and Prospects* , Desmond Ball, ed., (Canberra: Strategic and Defense Studies Centre, The Australian National University,) 1990, p. 422; Joseph Camilleri, "Foreign Policy," in *From Whitlam to Fraser: Reform and Reaction in Australian Politics*, Allan Patience and Brian Head, eds., (Melbourne: Oxford University Press, 1979), pp. 266-267.

10 On Australia's fear of China, see Alan Watt, *The Evolution of Australian Foreign Policy, 1938-1965*, (Cambridge: Cambridge University Press, 1967), pp. 247-248; Clark, *In Fear of China*, pp. 161-206; Dupont, *Australia's Threat Perceptions: A Search for Security*, pp. 58-59; Bull, "Australia and the Great Powers in Asia," p. 335; T. B. Millar, *Australia's Defence*, p. 49; Sir Garfield Barwick, "Australia's Foreign Relations," in *Australia's Defense and Foreign Policy*, Australian Institute of Political Science (Proceedings of 30th Summer School), (Sydney: Angus and Roberston, 1964), p. 22; Lt. Col. F. L. Skinner, "An Alternative Defense and Foreign Policy," in *Aspects of Australia's Defense*, Max Teichmann, ed., (Melbourne: The Political Studies Association, Monash University, 1966), p. 42.

11 Camilleri, "Foreign Policy," p. 265.

12 On nuclear parity and its implications for the Australian alliance, see T. B. Millar, *Australia's Defence*, p. 166.

13 On the hostage thesis, see J. L. Richardson, "Australia and the Non-Proliferation Treaty," (Canberra: Australian National University Press, 1968), p. 19; J. D. B. Miller, "Possibilities for

emergence of the so-called the Peking-Jakarta axis, one that could conceivably lead to nuclear cooperation with Indonesia.[14] Indeed, Sukarno, himself, spoke of a "Djakarta-Phnom Penh-Hanoi-Peking-Pyongyang" axis.[15]

*Indonesia*

Indonesia had a population ten times the size of Australia, and during the first half of the 1960s, Australian officials worried both about Indonesia's allies and its own intentions.[16] The Peking-Jakarta axis represented one potential problem, but there was also the issue Soviet-Indonesian relations.[17] In 1960, Indonesia received millions of dollars in Soviet arms.[18] More generally, the Sukarno government, before being toppled in 1965, was perceived as an erratic, anti-imperialist (i.e.,

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Supplementary or Alternative Arrangements to the United States Alliance," in *Britain's Withdrawal from Asia: It's Implications for Australia,* T. B. Millar, ed., (Proceedings of a Seminar conducted by the Strategic and Defense Studies Centre, The Australian National University), September 29-30, 1967, p. 106; Anthony Clunies Ross, *Australia and Nuclear Weapons: The Case for a Non-Nuclear Region in South East Asia,* (Sydney: Sydney University Press) 1966, pp. 58-60; T. B. Millar, *Australia's Foreign Policy*, (Sydney: Angus and Roberston, 1968), p. 95; A. L. Burns, *An Estimate of Nuclear Dangers to Australians, and a Proposal to Reappraise Evacuation*, (Canberra: The Australian National University, Department of Political Science, I.A.S., 1969), p. 3.

14 On Peking-Jakarta axis, see Clark, *In Fear of China*, p. 168; Dupont, *Australia's Threat Perceptions: A Search for Security* p. 53; Paul Hasluck, "Australia and Southeast Asia," *Foreign Affairs*, Vol. 43 (October, 1964), pp. 58-62, reprinted in Neville Meaney, ed., *Australia and the World: A Documentary History from the 1870's to the 1970's* (Melbourne: Longman Cheshire),1985, p. 667; Bell, *Dependent Ally: A Study in Australian Foreign Policy*, pp. 73, 80; Warner, "An Assessment of Potential Threats to Australia's Essential Interests Over the Next Ten Years," p. 21; Millar, "Australia: Recent Ratification," p. 81; Clark, *In Fear of China*, p. 168.

15 On Sukarno's statement, see James Angel, "Australia and Indonesia, 1961-1970," in Gordon Greenwood and Norman Harper, eds., *Australia in World Affairs 1966-1970*, (Vancouver: University of British Columbia Press, 1974), pp. 372, 377; Bell, *Dependent Ally: A Study in Australian Foreign Policy*, p. 73.

16 T. B. Millar, "Australia's Defense Needs," in *Australia's Defense and Foreign Policy,* Australian Institute of Political Science (Proceedings of 30th Summer School), (Sydney: Angus and Roberston, 1964), pp. 70-71; Dupont, *Australia's Threat Perceptions: A Search for Security*, p. 51. On the perceived unpredictability of Sukarno regime, see Greenwood, "The Political Debate in Australia," pp. 61-65; Dupont, *Australia's Threat Perceptions: A Search for Security* , pp. 51-54; Ian Bellany, "Nuclear Arms for Australia?," *Current Affairs Bulletin*, Vol. 46, No. 1 (June, 1970), p. 4.

17 Millar, *Australia's Defence*, pp. 59, 166; Ross, *Australia and Nuclear Weapons: The Case for a Non-Nuclear Region in South East Asia,* p. 3; Bell, *Dependent Ally: A Study in Australian Foreign Policy*, pp. 65, 80; T. B. Millar, "Australia's Defense Needs," pp. 70-71; Bellany, "Nuclear Arms for Australia?," p. 4; Millar, "Australia: Recent Ratification," p. 81.

18 Dupont, *Australia's Threat Perceptions: A Search for Security*, pp. 51-52. One analyst even contemplated the possibility that the USSR might attempt to locate a nuclear base in Indonesia, as had been tried in Cuba. Burns, [Comments in] "Commentary," p. 60.

anti-UK), and anti-status quo.[19] Along with Sukarno and the army, Indonesia's communist party -- the PKI -- was among the most powerful political forces in the country. Equally troubling for Australia was Indonesia's record in the region. It had used force in its successful attempt to compel the Dutch to cede control of West Irian (1962); it initiated a low-intensity "confrontation" with the British over the formation of Malaysia (1964),[20] and soon after, it claimed that it would acquire nuclear weapons (1964-1965).[21] Of all these events, perhaps the most troubling for Australia was Indonesia's absorption of West Irian, part of an island that is today known as Irian Jaya. Since the eastern half of the island, Papua New Guinea, was an Australian protectorate, the new arrangement meant that Indonesia and Australia now shared a land border, separated only "by the thickness of a line."[22]

War fighting Experience

One crude measure of country's security is the amount of fighting it does: countries that fight more frequently or with greater intensity might rightly conclude that they face more security threats. Small and Singer rank Australia 29th out of 82 countries for the number of battlefield deaths experienced during interstate war -- roughly thirty-four thousand in all.[23] By this measure, it's wartime losses outnumbered those of Egypt, India, Syria, Israel, and Pakistan. Australia's sacrifices are all the more notable given its comparatively small population. Indeed, the vast majority of countries with a higher ranking also have a much larger population. As might be expected, most of Australia's war-related deaths were the result of fighting on behalf of allies in WWII, in Korea, and in Vietnam.

With this brief introduction to the players and general context, we can now proceed with testing the hypothesis.

**Test 1: Correspondence Between Threats and Nuclear Decision Making**

The purpose of this test is to determine whether there is a correlation or covariation between the level of threat and Australia's nuclear choices. Three measures of threat are used. The first is the

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19 Ross, *Australia and Nuclear Weapons: The Case for a Non-Nuclear Region in South East Asia,* p. 51; Bell, *Dependent Ally: A Study in Australian Foreign Policy* , p. 80.

20 Greenwood, "The Political Debate in Australia," p. 87.

21 George Quester, *Politics of Nuclear Proliferation*, (Baltimore: Johns Hopkins University Press, 1973), p. 164; Ross, *Australia and Nuclear Weapons: The Case for a Non-Nuclear Region in South East Asia,* p. 80; Norman Harper, "A Great and Powerful Friend: A Study of Australian American Relations between 1900 and 1975," p. 295.

22 On the impact of a new land border with Indonesia, see Millar, *Australia's Defence*, p. 59; Barwick, "Australia's Foreign Relations," p. 6

23 Singer and Small analyze interstate wars between 1816 and 1980. As regards Australia, one could argue that the data actually understate the number of battlefield deaths since they do not include the more than sixty one thousand service personnel who died in WWI. As a percentage of population, only Germany suffered greater losses during the First World War. Singer and Small exclude WWI, because they correctly date the beginning of the Australian state as 1920. Inclusion of the WWI numbers would put Australia 20th on the list, surpassing Yugoslavia among others. Melvin Small and J. David Singer, *Resort to Arms*, (Beverly Hills: Sage Publications, 1982), pp. 165-180.

number of potential adversaries armed with nuclear weapons.[24] The second is the number of potential adversaries that possess a latent capability for developing nuclear weapons. The third is the number of countries that pose an overwhelming conventional threat. Overwhelming conventional threat is defined as at least a two-to-one advantage in the level of defense expenditure and the size of the population. In general, one would expect that the presence of a single adversary with any of these three attributes would be a sufficient motivation for acquiring nuclear weapons, though possession of nuclear weapons by an enemy is assumed to provide the strongest motivation.

To test the hypothesis, 39 decisions are coded for the three measures. (Box 4.3 at the end of this chapter reports the findings.) The observations are such that one can assess nuclear decision making on two dimensions: 1) the number and direction of nuclear decisions and 2) the type of nuclear decision. So, for example, on the first dimension, high levels of threat should be associated with a higher number of proposals and decisions favoring acquisition, while low levels of threat should exhibit a lower number of acquisition decisions and a higher number of renunciation-related decision sequences. The "type of decision" refers to where on the renunciation/acquisition continuum a decision is located. How close does the decision bring the country to either pole of renunciation or acquisition? Buying or building nuclear weapons are actions that lead directly to possession. Developing a nuclear weapons *capability*, on the other hand, represents a less committed posture. Likewise, a decision to renounce nuclear weapons for all time reflects a higher commitment than a decision to reject nuclear weapons in a particular instance.

If one plots the number and direction of Australia's nuclear decisions against the level of threat, the result is something like Box 4.4. In this graph, threat is represented by a composite score that combines the two measures for threat, i.e., the number of enemies with nuclear weapons plus the number with a latent nuclear capability.[25]

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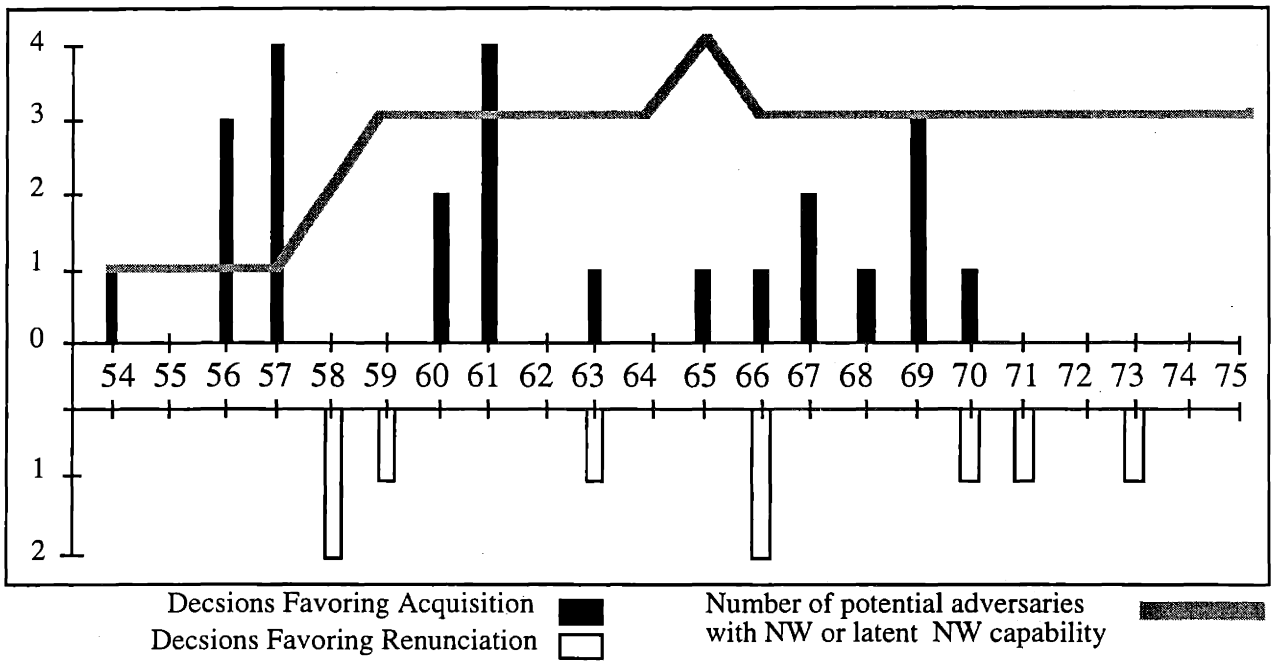
[24] A country is coded as an potential adversary if one of the following conditions is met: 1) the country has a history of armed conflict with Australia, 2) the country is a member of an alliance that is hostile to Australia or hostile to an alliance to which Australia belongs, 3) there is process tracing evidence that the country is considered a potential threat.

[25] Including conventional threats, either on its own or in some combination with nuclear threats, generates similar results.

**Box 4.4 Threat Level and Nuclear Decision Making, 1954-1975**




The graph *appears* to show a rough correspondence between increasing threats and increasing numbers of decisions favoring nuclear weapons. Increases in the level of threat in 1958 and 1965 are followed by a wave of nuclear weapons decisions. By the 1990s (not in the graph), the number of threats had decline, and Australia's efforts on behalf of non-proliferation increase.

Other aspects of the graph do not fit the threat hypothesis, however. Australia engaged in some of its most persistent attempts to join the nuclear club during the period when it enjoyed its highest level of security, that is, from 1954-1957. Later, in the 1970s, when the threat level was consistently higher than at any point in the 1950s, Australian nuclear activity goes to zero. Also problematic are the two "trough" periods between 1958 and 1960 and again from 1962 to 1966, when nuclear activity dropped substantially even as the level of threat stayed constant or increased.

These anomalies are even more striking when one considers the type of decisions being made. In the 1950s and early 1960s, when threats were at their lowest, Australia's efforts focused on the procurement of actual weapons. By 1965, the objective had shifted from possession to the more modest aim of a weapons capability. This shift occurred despite the fact that the threat level had increased substantially in relative terms. Additionally, the decision to renounce nuclear weapons -- a decision representing a polar extreme in the renunciation-acquisition continuum -- came at a time when the threat level was higher than in the 1950s.

### Test 2. Process Tracing

A review of Australian archival documents supports three conclusions. First, they suggest that Australia's the desire for nuclear weapons in the late 1950s was not the result of a perceived threat to Australian security. The Defense Committee's Strategic Basis Papers are *explicit* in their claim

that Australia faced no immediate nuclear threat or overwhelming conventional threat.[26] Nevertheless, Australian officials pressed for nuclear weapons, the Defence Committee rationale being that nuclear weapons would increase "the effectiveness" of Australian forces.

Second, there is strong evidence that in the 1960s, Australian moves towards nuclear weapons were at least partly predicated on concerns about China's status as a nuclear weapons state and the prospect that nuclear weapons would further proliferate. The prospective Chinese threat was cited during the weapons-on-demand episode in 1961. In 1967, when the government authorized a feasibility study on the indigenous manufacture of nuclear weapons, official documents cited the possible "emergence of additional nuclear powers" as a principal reason for the project.[27] The Chinese threat was also cited during internal deliberations over the NPT.[28] At the UN, Sir James Plimsoll explained Australia's reservations about the treaty by noting that "The authorities in Peking show no repugnance for nuclear war and, in fact flaunt before other countries of the region the willingness to contemplate nuclear war."[29] Indeed, at the level of the formal decision making, it was the Chinese nuclear capability that became *the* entry point or reference point for discussing an Australian nuclear option.

Third, Australia's renunciation of nuclear weapons and ratification of the NPT under Whitlam's Labor government appears to have been made irrespective of considerations of threat. Evidence for this last point is thin, given the absence of archival material. Still, the accounts that do exist, together with the manner in which the decision was made, strongly suggest that Whitlam committed Australia to a non-nuclear future on ideological grounds. His announcement came in the first week of taking office, was made without consulting the Defence Department, and was decided without the benefit of any official study by the new government.

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26 See, for example, R. G. Menzies to the Cabinet, Question of Nuclear Capability for the Australian Forces Memorandum by Defence Department, A55818/2 V6, 6/7/61, p. 19; Department of Defence, Question of Nuclear Capability for the Australian Forces, A4940/1 C3380, 6/7/61, p. 2; See, for example, Archives of the Department of Foreign Affairs and Trade: Unregistered document, Working Group on the Non-Proliferation Treaty, Defence Committee, Consolidated Paper, Non-Proliferation Treaty, Attached to Agendum No 9/1968, Defence Committee, Non-Proliferation Treaty, March 18, 1968, pp. 1-2 (Top Secret); Report by Defence Committee, Strategic Basis of Australian Defence, 1968, para 227-229.

27 Australian Archives (ACT): A5818/2; Robert Menzies to the Cabinet, Nuclear Tests Conference: Control Posts in Australia, Submission No. 1156, V6, (Secret); Archives of the Department of Foreign Affairs and Trade: Unregistered document; Report by the Joint Planning Committee at Meetings Concluding 2nd February, 1968, Department of Defence File No. 67/1017, Report No. 8/1968, An Independent Australian Nuclear Capability - Strategic Considerations, p. 1 (Top Secret AUSTEO).

28 See, for example, Archives of the Department of Foreign Affairs and Trade: Unregistered document, Working Group on the Non-Proliferation Treaty, Defence Committee, Consolidated Paper, Non-Proliferation Treaty, Attached to Agendum No 9/1968, Defence Committee, Non-Proliferation Treaty, March 18, 1968, pp. 1-2 (Top Secret).

29 Sir James Plimsoll, First Committee of the UNGA on March 25, 1965; *Current Notes on International Affairs*, Vol. 36, October, 1965, p. 636.

**Assessment of the Threat Hypothesis**
In general, the threat hypothesis performs poorly. While increases in threat may encourage pro-nuclear decisions, 1) pro-nuclear decisions can also take place without the presence of substantial threats and more importantly, 2) decisions favoring the rejection or renunciation of nuclear weapons can occur even in the face of continued nuclear threats. The process tracing evidence generally corroborates the results of the correspondence test.

## H2. Bipolarity

The bipolarity hypothesis suggests that states are less likely to pursue nuclear weapons under conditions of bipolarity. To test this hypothesis, one can compare nuclear decision making under bipolarity with nuclear decision making in the absence of bipolarity. The hypothesis predicts that states will be less inclined to seek nuclear weapons during periods of bipolarity. With the absence of bipolarity, states should make more efforts in the direction of acquisition and fewer, less committed actions favoring renunciation.

In the Australian case, the period of bipolarity was marked by extremes in nuclear behavior. Australia both sought and renounced nuclear weapons under bipolarity. The collapse of bipolarity at the end of the 1980s did not, however, lead Australia to hedge or move closer to a nuclear option. Despite talk in the early 1990s of a return to American isolationism, a putative Asian arms race, a series of Chinese atomic tests, and more general efforts by the PRC to modernize its military, Australia did not entertain a single proposal to explore the nuclear option.[30]

If anything, Australian nuclear policy moved in the opposite direction, towards an ever more aggressive and committed policy of nonproliferation. Australia sponsored IAEA field trials of new, more intrusive safeguards procedures; it took a leadership role on behalf of the Comprehensive Test Ban Treaty; and it publicly endorsed a policy of nuclear abolition through its Canberra Commission. Indeed, one could argue that Australian made its strongest efforts to acquire nuclear weapons at the height of bipolarity (the 1950s and early 1960s) and its most determined efforts to oppose nuclear weapons after the end of bipolarity (the 1990s).

## H3. Security Guarantees

The security guarantee hypothesis suggests that states with security guarantees do not seek or are less likely to seek nuclear weapons; states that lack such guarantees do seek or are more likely to seek such weapons. Security guarantees work their nonproliferation magic by removing or reducing the security motivation of states. In short, external balancing substitutes for internal balancing.

One way to test the security guarantee hypothesis is to compare nuclear decision making in periods when a security guarantee is present or strong with periods in which a security guarantee is absent

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30 Regarding an Asian arms race, see Michael T. Klare, "The Next Great Arms Race," *Foreign Affairs*, Vol. 72, No. 3 (Summer, 1993), pp. 136-152; B. Singh, "ASEAN's Arms Procurements - Challenge of the Security Dilemma in the Post-Cold-War Era," *Comparative Strategy*, Vol. 12, No. 2 (April-June, 1993), pp. 199-223; R. C. DeCastro, "Is There a Northeast Asian Naval Arms Race? Some Preliminary Findings," *Issues and Studies*, Vol. 33, No. 4 (April, 1997), pp. 113-134.

or weak. In this study, two measures of security guarantee are used: 1) the presence or absence of a defense treaty with a bipolar superpower and 2) conventional troop deployments by a nuclear ally.

**Test 1. Defence Treaties and Nuclear Decision Making**
By this measure, Australia enjoyed a security guarantee for the entire period under review. Its chief protection was the ANZUS Treaty, but it was also a member of SEATO and enjoyed protection from the UK as a member of the commonwealth. As a constant feature of the environment in which nuclear decisions were made, security guarantees cannot be expected to explain variations in outcomes. Still, the results are not generally supportive of the security guarantee hypothesis. Australia made numerous decisions favoring nuclear weapons, *despite* the fact that it had a security guarantee. Indeed, as with the level of threat, Australia's most vigorous pursuit of nuclear weapons came in the 1950s, when the guarantees were perceived as being at their strongest. Australia later renounced nuclear weapons at a time when the British had all but vanished and confidence in the US guarantee was at an all time low, i.e., at the end of the Vietnam War. The contradiction becomes especially apparent when one looks at the relationship between allied troop deployments and nuclear decision making.

**Test 2. Troop Deployments and Nuclear Decision Making**
Allied troop deployments are used here as a proxy for the level of commitment or credibility of a security guarantee. Presumably, the greater the number of troops a guarantor has stationed on a ally's territory or close at hand, the more robust the guarantee, both in terms of capability and in the way the ally perceives the commitment of the guarantor.

Both the United Kingdom and the United States stationed troops in Asia and the Pacific. The troops closest to Australian soil were British troops billeted in Singapore and Malaysia. By the 1960s, however, the UK decided it could not afford its overseas bases, and later announced that British troops would no longer be posted "East of the Suez."[31] The directive also meant that British tactical nuclear weapons would no longer be stored in the area.

The British withdrawal was a blow psychologically, and it also represented a step backwards for Australian security. It meant one less ally, and it meant that friendly troops would be stationed even farther from Australian territory. The Australians found some consolation, however, in the fact that it still had a very powerful ally in the region -- the US. Though the US had declined the opportunity to take over the British facilities in Singapore and Malaysia, it was ramping up its presence in another country just north of Malaysia. Vietnam. Between 1963 and 1970, the American troop deployments climbed steeply, reaching a peak level of approximately 480,000. After 1970, the levels dropped precipitously -- down to nearly zero in three years. Figure 4.2 maps these changes in troop deployments over the record of nuclear decision making.

The results summarized in Box 4.5 do not fit comfortably with the security guarantee hypothesis. Contrary to the expectations of the hypothesis Australia renounced nuclear weapons despite the fact that the US had drastically cut its deployments and the UK had pulled out completely.

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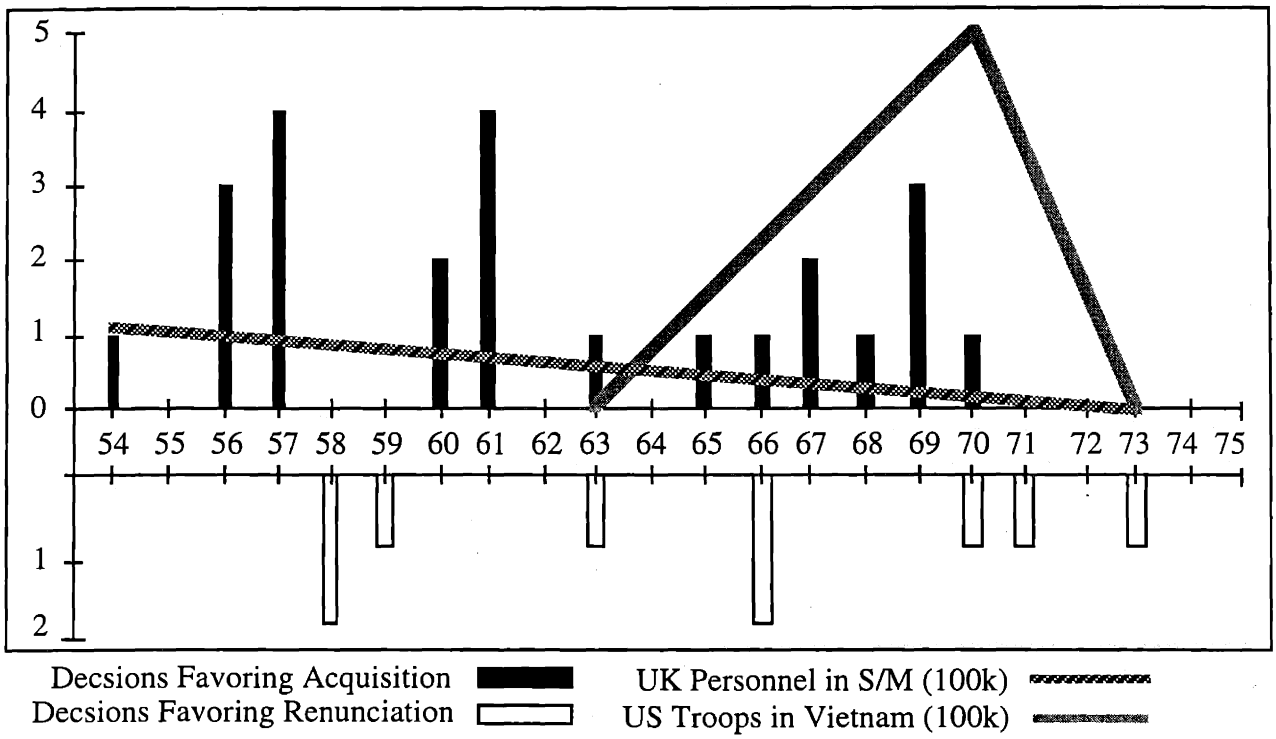
[31] On the impact of the UK withdrawal, see T. B. Millar, ed., *Britain's Withdrawal from Asia: It's Implications for Australia* (Proceedings of a Seminar conducted by the Strategic and Defense Studies Centre, The Australian National University), September 29-30, 1967.

**Box 4.5. Troop Deployments and Nuclear Decision Making, 1954-1975**[32]




**Test 3. Process Tracing**

The archival record suggests that British and American alliance commitments did figure very prominently in the minds of Australian decision makers -- at least on some occasions. A brief review of this material illustrates the point.

Out with the UK, In with the US

The British had hinted for some years that they would be reducing their deployments in the East, but it was not until 1965 that Australian leaders appreciated the scale and rapidity of Britain's planned withdrawal. Within the government, ministers suggested three responses, 1) try and keep the UK in Singapore as long as possible, 2) persuade the Americans to step in, or 3) develop

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[32] On the number of US troops in Vietnam, see Institute for Strategic Studies, *The Military Balance*, (London: Oxford University Press), [Volumes covering the years 1962-1973]. The graph for UK forces in Singapore and Malaysia is notional, but based on the British government's statement that it had 80,000 total military and civilian personnel in Singapore and Malaysia in 1967. Appendix, "Extract form United Kingdom, *Supplementary Statement on Defense Policy*, 1967, London HMSO, July 1967, Cmnd 3357," in Millar, *Britain's Withdrawal from Asia*, pp. 109-111.

nuclear weapons.[33] As fate would have it, 1965 was also the year that the US decided to escalate in Vietnam. The coincidence appeared to be a blessing: American troop deployments to Vietnam might offset the departure of British troops.[34] According to Australian logic, Vietnam meant that the US would become invested both militarily and politically in the future of Southeast Asia and would rediscover the value of its relationship with Australia. Prime Ministers Menzies and Holt thus supported the American war effort, sending some 50,000 Australians to support American deployments.[35]

It soon became apparent, however, that the war was not the windfall it first appeared to be. The war quickly became the dominant foreign policy issue of the period,[36] and by the time it ended, the Vietnam War had become the most unpopular conflict in Australian history.[37] It also became a source of friction in US-Australian relations. For some Australians, the friction gave way to bitterness and disillusionment.[38] As Millar described it, the US-Australian relationship dipped badly as a result of the Vietnam War and "never returned to its previous level of intimacy."[39]

A key event was Johnson's 1968 announcement of a unilateral halt in the bombing of North Vietnam and his decision to not seek reelection. American documents from the period describe the effect this way.

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33 Of course, these could be pursued concurrently as well as individually. Peter Howson, *The Howson Diaries: The Life of Politics* , Don Aitkin, ed., (Ringwood, Victoria: Viking Press, 1984), p. 181-183.

34 Bull, "Australia and the Great Powers in Asia," p. 348; Bell, *Dependent Ally: A Study in Australian Foreign Policy* , p. 75-76.

35 On Australian troops in Vietnam, see Institute for Strategic Studies, *The Military Balance*, (London: Oxford University Press), [Volumes covering the years 1962-1973]; Gregory Pemberton, *All the Way: Australia's Road to Vietnam*, (Sydney: Allen & Unwin, 1987); Brian Ross, "Australia's Military Involvement in the Vietnam War," Parts I-III, soc.history.war.vietnam, 1995, http://www.landfield.com/faqs/vietnam/australia/part1/.

36 W. J. Hudson, "The United Nations," in *Australia in World Affairs 1966-1970* , Gordon Greenwood and Norman Harper, eds., (Vancouver: University of British Columbia Press)1974, p. 208; Greenwood, "The Political Debate in Australia," p. 87; Bull, "Australia and the Great Powers in Asia," p. 325.

37 Bell, *Dependent Ally: A Study in Australian Foreign Policy* , p. 70.

38 The lingering bitterness and distrust of America's role in the region is strikingly illustrated by the views expressed by former Prime Minister Malcolm Fraser, a conservative MP who served as Minster of the Army in 1966 and 1967 and as Minister of Defence in 1970. Interview with Malcolm Fraser, April 8, 1999.

39 T. B. Millar, *Australia in Peace and War: External Relations Since 1788*, (New York: Maxwell Macmillan International Publishing Group,) 1991, pp. 330-331.

> This surprising and dramatic development, and the subsequent change in leadership in a United States, which as seen from Australia has seemed increasingly preoccupied with internal problems, have created uncertainty and anxiety in Australian minds about the future course of America's Asia policy. One of Australia's "powerful friends", the UK, was preparing to leave the scene. Would the other, the US also drift away?
>
> ...Gorton told the Liberal Party caucus and the press that he was convinced there would be a major US retrenchment in Asia -- possibly amounting to a return to pre-World War II isolationism -- under the next US administration, and that this might well necessitate abandonment of "the Menzies concept of forward defense" in favor of "an Israeli-type defence scheme." Although this topic dominated his discussions in Washington in May 1968 almost to the exclusion of all others, he left unconvinced by the Johnson administration's protestations of continued US firmness in East Asia.[40]

Gorton was right to be skeptical. American troop deployments peaked in 1970. Three years later, the Americans were gone.

After Vietnam

The United States, Australia's remaining guarantor, had just lost a war. American troops were being drawn down, and the US did not sound like it had much enthusiasm for coming back. Anxieties about the American commitment were compounded by President Nixon. While on tour in the region, the President declared that American allies would have to do more to protect themselves.[41] Dubbed the "Nixon Doctrine," it was a message that invited new doubts about the meaning and future of the American alliance.[42]

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40 NAII, Scope Paper, Visit of John Gorton, Prime Minister of Australia, April 1, 1969, pp. 2,4, attached to Memorandum for Mr. Henry Kissinger, the White House, Subject: Preparatory Meeting for the Visit of Prime Minister Gorton of Australia, March 14, 1969, Department of State Central Files, 1967-1969, Folder Pol 7, 3/1/69, Australia, Box 1842.

41 It has also been called the Guam Doctrine. Nixon announced that "...as far as the problems of military defence, except for the threat of a major power involving nuclear weapons, ...the United States is going to encourage and has the right to expect that this problem will be increasingly handled by, and the responsibility for it taken by, the Asian nations themselves." Public Papers of the Presidents of the United States, "Richard Nixon, 1969," (Washington, 1971), p. 279, reprinted in Meaney, ed., *Australia and the World: A Documentary History from the 1870's to the 1970's*, p. 707. The announcement would appear to have left open the possibility of a nuclear threat from Indonesia (not a "major power") or an overwhelming conventional threat. For years, the Australians had thought of American tactical nuclear weapons as the counter to Communist conventional superiority in the SEATO theater. See PRO, Outward Savinggram from the Department of External Affairs, Disarmament - Australian Defence Principles, Report by the Defence Committee, A1838/269 TS852/10/4/2/3, May 12, 1960, p. 6.

42 A press report at the time alleged that "A pessimistic report on US foreign policy prepared by the returning Australian Ambassador to Washington, Sir Keith Waller, is causing grave concern at the highest political and official levels. ...It forecasts a rapid and determined reorientation of US foreign policy,...[and that] US retreat from Asia will not mean merely a disengagement from Vietnam, but a major withdrawal from the whole area west of Hawaii. Asian and Pacific nations will

The Vietnam War and the changes in American policy that followed had a decisive impact on Australia's view of the alliance and on its security strategy. Australian concerns about American reliability had first surfaced in the early 1960s, when American policy seemed to tilt towards Indonesia.[43] By the end of the Vietnam war, doubts about the American commitment were forcing a change in grand strategy. The defeat in Vietnam, signified, as Desmond Ball put it, a "radical change...in Australia's strategic environment..."

> The Nixon Doctrine of 1970, followed by the withdrawal of US land forces from Southeast Asia, has meant that Australia has had to abandon its time-honoured policy of Forward Defence; strategic thinking today focuses much more on the direct defence of the Australian approaches, and its vital interests. Moreover, at least up to very major contingencies, Australia must itself accept the principal responsibility for its own defence. ...[This shift] from dependence upon 'great and powerful friends' to greater self-reliance has, from the perspective of Australian defence planners, been a transition from relative certitude to grave uncertainty.[44]

According to Hedley Bull, "the beginnings of a new doctrine of greater national self-reliance and diminished dependence on the United States" were discernible as early as 1970.[45] It came, in other words, at nearly the same time Australia was considering the development of a nuclear option.[46] The NPT opened for signature in 1968 and was signed by Gorton in 1970. The new Labor government, which also espoused a more independent Australian foreign policy, ratified the treaty in 1973, the year the US completed its exodus from Southeast Asia.

**Assessment**

The archival record provides some support for the notion that declines in security guarantees stimulate pro-nuclear behaviors, but on the whole, the hypothesis fares poorly. The presence of a security guarantee did not dampen Australia's interest in acquiring nuclear weapons, particularly in the 1950s, when the guarantee was seen as especially robust. More importantly, Australia

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be left progressively more to their own resources. ...Sir Keith's report throws considerable doubt on the future validity of both the SEATO and ANZUS pacts. *Inside Canberra*, February 26, 1970, reprinted in Meaney, *Australia and the World: A Documentary History from the 1870's to the 1970's*, p. 714.

[43] In the early 1960s, Menzies and other Australians saw Indonesia as an anti-status quo power using force to get its way. American policy makers, on the other hand, saw Indonesia as a potentially important ally in the Pacific. Norman Harper, "Australia and the United States (With Special Reference to South-East Asia)," in *Australia in World Affairs 1966-1970* , Gordon Greenwood and Norman Harper, eds., (Vancouver: University of British Columbia Press)1974, pp. 295-298, 304; Pemberton, *All the Way: Australia's Road to Vietnam*, pp. 169-186, 231.

[44] Desmond Ball and J. O. Langtry, "The Development of the Australian Defense Force," in *Strategy and Defense: Australian Essays*, Desmond Ball, ed., (London: George Allen & Unwin, 1982, p. 263.

[45] Bull, "Australia and the Great Powers in Asia," p. 346.

[46] On new emphasis on self-reliance, also see Greenwood, "The Political Debate in Australia," pp. 72-78. One newspaper report actually linked concerns about Vietnam to Australia's reluctance to sign the NPT, see *Sydney Morning Herald*, October, 9, 1968.

renounced nuclear weapons at a time when those commitments were perceived as being at their lowest ebb.

## H4. Superpower Pressure

Security guarantees are usually reserved for a country's most valued allies. They are intended to demonstrate a superpower's support, and once made, they are meant to endure. Superpower pressure differs both in form and substance. It is based on implicit or explicit threats, and is typically exercised around particular issues at particular times. Four tests are used to assess the power and relevance of these kinds of threats.

### Testing the Pressure Hypothesis

In Chapter 2, three congruence tests were offered for assessing the explanatory power of the superpower pressure hypothesis. Applied to the Australian case, the three predicted phenomena would include: 1) an awareness on the part of the United States that Australia was pursuing a nuclear option, 2) the presence of threatening communications intended to persuade the Australians to change their behavior, and 3) a recognition on the part of the Australians that they were being pressured by the Americans.

To assess these predictions, one can look at a pool of observations consisting of the 24 events in which there was an anti-nuclear outcome, i.e., where pro-nuclear proposals were rejected or failed, or where anti-nuclear proposals were accepted. Box 4.6. provides the results.

**Box 4.6. American Pressure Australian Nuclear Restraint**

| # | Date | Australian Action/Outcome | US Aware | US Threatens | Claim of Pressure |
|---|---|---|---|---|---|
| 1 | 54 | Seeks but not acquire NW sharing. | Yes | No | No |
| 2 | 56 | Seeks/not acquire NW info for bombers. | Yes | No | No |
| 3 | 58 | Rejects proposal for Mt. Isa PU reactor. | No | No | No |
| 4 | 2/58 | Seeks/not acquire NW from UK. | No | No | No |
| 5 | 4/58 | Bans discussion of NW with UK officials. | No | No | No |
| 6 | 8/58 | Seeks/not acquire NW from UK. | No | No | No |
| 7 | 58-60 | Seeks/not acquire V-Bomber. | | No | No |
| 8 | 11/59 | Rejects proposal to seek UK NW info. | No | No | No |
| 9 | 60 | Seeks/not acquire Bloodhound. | Yes | No | No |
| 10 | 60-62 | Seeks/not acquire TSR-2. | Yes | No | No |
| 11 | 8/61 | Seeks/not acquire UK NW-on-demand. | No | No | No |
| 12 | 7/61 | Seeks/not acquire UK NW info. | No | No | No |
| 13 | 9/61 | Rejects UK offer of nuclear weapons help. | No | No | No |
| 14 | 9/61 | W/draws proposal for US NW-on-demand. | No | No | No |
| 15 | 66 | Accepts transfer to IAEA safeguards. | Yes | No | No |
| 16 | 66 | Rejects proposal for nuclear reactor. | No | No | No |
| 17 | 69 | Seeks/not acquire PNE aid. | Yes | No | Yes |
| 18 | 70 | Signs NPT. | Yes | No | Yes |
| 19 | 71 | Cancels nuclear reactor. | Yes | No | No |
| 20 | 73 | Ratifies NPT. | Yes | No | No |
| 21 | 84 | Rejects proposal for NW capability. | No | No | No |
| 22 | 95 | Supports indefinite extension of NPT. | Yes | No | No |
| 23 | 96 | Endorses abolition of nuclear weapons. | Yes | No | No |
| 24 | 96 | Joins CTBT. | Yes | No | No |

**Test 1. The Superpower Is Aware of the Undesirable Behavior**
In general, the United States was unaware of the Australia's enduring interest in nuclear weapons and therefore could not have applied pressure in order to achieve an anti-nuclear result. The observations tend to be of two types: occasions where the Americans were directly involved (observations 1, 2, 15, and 17) or cases involving public commitments (observations 9, 10, 18, 19, 20, 22-24).

Evidence for the lack of US knowledge of Australian activities comes in three forms. First, high ranking American officials with access to intelligence, such as Glenn Seaborg, explicitly state that they were unaware of Australia's interest in nuclear weapons until 1967. Seaborg was also told by Australia's defense science advisor (who was privy to the highest level Australian deliberations) that a decision had been made to not tell the United States about its interest in nuclear weapons.[47]

[47] Seaborg, *Stemming the Tide*, p. 252.

Second, a review of US archival documents indicates that until the late 1960s, American policy makers took for granted that Australia would commit to nonproliferation initiatives, including the NTB, the transfer of US safeguards to the IAEA, and the NPT. The possibility of an Australian interest in acquiring nuclear weapons was never mentioned, indeed, it seemed not to have even been a possibility in the minds of American policy actors.

Third, Australian documents through the 1950s and 1960s never refer to American awareness of their activities and if anything suggest the opposite. The talks with British Prime Minister Macmillan in 1957, 1958, and again in 1961 illustrate the point. Macmillan offers to go to the US to plead the Australian cause, but Macmillan agrees to keep mum until Menzies thinks the time is right.[48] Thus, in roughly half of the observations (11 out of 23) for which there is some data on which to make an assessment, it appears that the first prerequisite for superpower pressure, knowledge of the relevant activity, is missing.

**Tests 2 and 3. Superpower Communicates Threats/Proliferator Perceives Being Threatened**

In the remaining cases, where the United States was aware of Australian activities it might want to curtail (or nonproliferation initiatives it might force down the throats of the Australians), there appears to be little evidence of American pressure. In 1954, when Australia expressed interest in nuclear sharing, it was simply pursing an idea originally articulated by the United States. There is no indication that the request was met with a rebuke or threats, and two years later in 1956, the Americans signed an agreement with the Australians to share defense-related nuclear information -- hardly a reaction consistent with the pressure hypothesis. Earlier that same year, Australia had asked for information about equipping its planes with nuclear weapons. Again, the US did not respond with chastisement but instead agreed to send an Air Force team to study the idea. "Nothing seems to have come of the study except a vague promise that if US policy should seek to develop a nuclear capability among allied nations, the Australians would be first-priority recipients."[49] In 1958 and 1959, the US made grants of nuclear material to the AAEE in support of its nuclear research.[50]

This pattern continued into the 1960s and 1970s. In 1960 and 1961, the US again transferred nuclear materials to Australia, and in 1962, it signed an agreement with the AAEC for cooperative work on the design of a HTGCR reactor.[51] Soon after, Americans were visiting Australia to promote PNEs.[52] In 1969, despite Australia's public opposition to the NPT, the US proposed a joint feasibility study of PNEs, and in 1971, it invited Australia to participate in talks on the possible

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48 PRO: DO 164/17; Inward Telegram to Commonwealth Relations Office from Canberra, No. 808, September 6, 1961 (Top Secret).

49 Alice Cawte, *Atomic Australia: 1944-1990*, (Kensington: New South Wales University Press, 1992), p. 108.

50 U.S. Atomic Energy Commission, *Annual Report to Congress of the Atomic Energy Commission,* (Washington: GPO); see also U.S. Atomic Energy, Cumulative Index to Twenty Five Semiannual Reports to Congress, January 1947-January 1959, (Washington: GPO, 1960), p. 114.

51 U.S. Atomic Energy Commission, *Annual Report to Congress of the Atomic Energy Commission 1962*, (Washington: GPO, 1963).

52 U.S. Atomic Energy Commission, *Annual Report to Congress of the Atomic Energy Commission 1963*, (Washington: GPO, 1964), p. 226.

sharing of gaseous diffusion technology for the enrichment of uranium -- this despite the fact that Australia had not ratified the NPT.[53]

Australian attempts to acquire the Bloodhound missile and nuclear-capable TSR-II were not met with reproval but instead with counter-offers. The United States tried to persuade the Australian government to buy America's nuclear-capable Nike missile instead of the Bloodhound. Australia decided to go with the Bloodhound, but the Americans did persuade the Australians to purchase the nuclear-capable, American-made F-111. None of these actions are consistent with a policy of pressuring Australia to give up its nuclear ambitions.

**Test 4. Process Tracing**

There are also two occasions, however, where it was publicly alleged that the United States exerted pressure on Australia to change its nuclear policy. One is the cancellation of the 1969 Australian-American PNE program.[54] A second and related charge of American pressure involves Australia's signature of the NPT.[55] As luck would have it, there are newly released archival data on both the Cape Keraudren affair and on Australia's NPT signature.

The Cape Keraudren Project

In the 1960s, advocates of nuclear technology hoped to harness the atom for a variety of peaceful purposes, including the use of peaceful nuclear explosions in large-scale engineering projects. Within the US Atomic Energy Commission, administrators of the Ploughshare Program were searching for a suitable location for demonstrating the promise of this new technology, and Australia was on the short list of possible sites. In 1962, PNE advocates proposed using nuclear explosives to dig a harbor at Cape Keraudren in northwestern Australia.[56] The idea had the

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53 U.S. Atomic Energy Commission, *Annual Report to Congress of the Atomic Energy Commission 1971*, (Washington: GPO, 1972), p. 171.

54 Regarding claims that the project was canceled because of American pressure, see J. L. Richardson, "Nuclear Follies," *Quadrant,* Vol. 13, No. 59 (May-June, 1969); "On the Nuclear Threshold," *Current Affairs Bulletin*; A. L. Burns "Australia and the Nuclear Balance", in *Problems of Australian Defense*, H. G. Gelber, ed., (Melbourne: Oxford University Press, 1970); Michael Carr, "Australia and the Nuclear Question: A Survey of Government Attitudes, 1945-1975," Unpublished MA thesis, University of New South Wales, 1979, pp. 108, 162-164; Quester, *Politics of Nuclear Proliferation*, pp. 160-161; "About Turn, Nuclear Quick March", *The Bulletin* (Sydney), February 28, pp. 21-22; S. Encel and Allan McKnight, "Bombs, Power Stations, and Proliferation", *The Australian Quarterly*, Vol. 42, No. 1 (March 1970), pp. 25-26; Alan Wood, *Australian Financial Review*, January 24, 1969 pp. 1, 7; *Sydney Morning Herald* , March 6, 1969, p. 5; "Heading for the Bomb?," *Nation* , July 12, 1969, pp. 12-14; *Sydney Morning Herald* , July 15, 1969, p. 1.

55 After Australia announced it would sign the NPT, the Deputy Leader of the Democratic Labour Party "accused the Government of having yielded to an American threat...." John Bennetts, "Australia to Sign Nuclear Treaty," *The Canberra Times*, February 19, 1970, p.1.

56 American interest in using peaceful nuclear explosions in Australia dated back to the early 1960s. Australian Archives (ACT): A5819/2 V16, Letter from Glenn T. Seaborg to Sir Howard Beale, October 25, 1962; Australian Archives (ACT): A5819/2 V16, W. H. Spooner, Minister of Supply, to Cabinet, Peaceful Use of Nuclear Explosives, April 5, 1963; Australian Archives (ACT):

backing of Congressman Craig Hosmer, co-chair of the Joint Atomic Energy Committee, but little came of the idea until 1969. That year, President Nixon took office and enthusiastically endorsed the project. Seaborg recalls that the new president embraced the Australian project "with vigor."[57] The two countries soon announced a new joint feasibility study, with additional steps to follow. The American proposal and subsequent announcement were made despite the fact that Australia had not signed the NPT.[58]

After the US first proposed the Cape Keraudren study, Ambassador Crook, the US representative to Australia, began negotiating the details of an agreement. On his own, the ambassador submitted a document to the Australian government outlining the requirements for a joint project. The document "implied" that "ultimately a decision to participate beyond the study stage would have to be considered in conjunction [with] the US's NPT responsibilities..."[59] If the Ambassador's aim was to encourage Gorton to sign the NPT, it backfired badly.

The Prime Minister "reacted indignantly to what he took as an indication that we intended to use the project to 'pressure' him into signing the NPT."[60] Crook's actions may have represented the views of the State Department, but not the President.[61] On instructions from Washington, he was forced to reverse himself, telling both Gorton and the press that Keraudren would not be used to pressure the Australians over the NPT.[62] Indeed, officials at the US Atomic Energy Commission had told the Australian government that Australia would get PNEs whether it signed NPT or not.[63]

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A5819/2 V16, Cabinet Minute, Decision No 772; Submission No 625 - Peaceful Use of Nuclear Explosives, May 7, 1963 (Confidential).

57 Glenn T. Seaborg with Benjamin S. Loeb, *The Atomic Energy Commission Under Nixon*, (New York: St. Martin's Press, 1993), p. 19.

58 Australia had not only failed to sign the Treaty, it had publicly criticized it. On May 17, 1968, some seven months before the Nixon offer, the Australian delegate to the UN laid out Australia's objections to the Treaty, objections that were later repeated by the Australian representative to the Non-Nuclear Countries conference. Millar, "Australia: Recent Ratification," pp. 78-9; *Sydney Morning Herald*, September 13, 1968, p. 3.

59 NAII, Background paper, Peaceful Nuclear Explosion Projects, Attachment to Memo for Mr. Henry Kissinger, The White House, May 1, 1969, p. 2 (Secret/Exdis), p. 4, Department of State Central Files, 1967-1969, Folder Pol 7, 5/1/69, Australia, Box 1842.

60 NAII, Enclosure: Additional Talking Points, attached to Memo for the President, Subject: Your Meeting with the Prime Minister of Australia, April 29, 1969 (Secret), Memo for signature attached to memo from John P. Walsh, Acting Executive Secretary, to the Secretary of State, p. 4, Department of State Central Files, 1967-1969, Folder Pol 7, 3/1/69, Australia, Box 1842.

61 For the State Department's view, see NAII, Background paper, Peaceful Nuclear Explosion Projects. In contrast to State Department's reticence, Seaborg maintains that the Cape project "was rapidly becoming a centerpiece of administration activity in science and technology." Seaborg, *The Atomic Energy Commission Under Nixon*, p. 18.

62 NAII, Telegram from the American Embassy in Canberra to the Secretary of State, March 11, 1969, pp. 1, (Secret), Department of State Central Files, 1967-1969, Folder Pol 7, 3/1/69, Australia, Box 1842.

63 NAII, Telegram from the American Embassy in Canberra to the Secretary of State, March 11, 1969, p. 2.

Though there was interest on both sides, the project ended before it got started. The Sentinel Mining Company, an American firm and the lead contractor, pulled out of the project for financial reasons, much to the disappointment of the American and Australian partners.[64]

Despite this setback, Prime Minister Gorton was "still interested in keeping the momentum going and hoped that the two Atomic Energy Commissions could find good reasons to continue their studies."[65] An advisor to Gorton, when discussing the PM's upcoming trip to the United States, told the American Embassy that "Gorton intends to seek a US agreement to proceed with Plowshare feasibility studies in Australia..."[66] News of Gorton's intentions worried the State Department, which advised the President not to raise the subject with the visiting Prime Minister. If the subject did come up, the President should "assure Gorton once again that we would have no thought of using such a project to 'pressure' him into signing the NPT."[67]

The NPT

The Cape Keraudren episode took place in the larger context of deliberations surrounding the NPT. The treaty opened for signature under Nixon's predecessor, Lyndon Johnson. Johnson was a hard driving, arm twisting politician, and many who worked for the president believe that he was personally committed to the treaty.[68] Still, it appears that when the treaty first opened for signature, the Johnson administration did little to pressure the Australians, a fact confirmed by External Affairs officials.[69] James Plimsoll, Secretary of the Department of External Affairs, described one exchange involving himself, Len Hewitt of the Prime Minister's Department, and Sir Henry Bland, Secretary of the Department of Defence, at a Defence Committee meeting in March of 1968. Both Bland and Hewitt opposed signing the treaty. Plimsoll supported signing, but was forced to admit that no pressure had been exerted by the Americans. According to Plimsoll,...

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64 Background paper, Peaceful Nuclear Explosion Projects, p. 2; Letter from Glenn T. Seaborg to the President, March 26, 1969 Nixon White House Central Files, AT, Folder: Peace Promotion, Box 3; Trevor Findlay, *Nuclear Dynamite*, (Rushcutters Bay, NSW: Brassey's Australia, 1990), pp. 98-100, 141-160; Cawte, *Atomic Australia: 1944-1990*, pp. 121-124.

65 Background paper, Peaceful Nuclear Explosion Projects, Attachment to Memo for Mr. Henry Kissinger, The White House, May 1, 1969, p. 2 (Secret/Exdis), p. 3, Department of State Central Files, 1967-1969, Folder Pol 7, 5/1/69, Australia, Box 1842. See also Memo from Clay T. Whitehead to Richard L. Sneider, [NSC], May 5, 1969, Nixon White House Central Files, CO 10, Folder: Ex CO 10, Australia, Begin 5/6/69, Box 10.

66 NAII, Telegram from the American Embassy in Canberra to the Secretary of State, Subject: Discussion of NPT and Atomic Energy Matters during Visit Australian Prime Minister Gorton, April 19, 1969, pp. 1 (Secret, Limdis), Department of State Central Files, 1967-1969, Folder Pol 7, 3/1/69, Australia, Box 1842.

67 NAII, Enclosure: Additional Talking Points, attached to Memo for the President, Subject: Your Meeting with the Prime Minister of Australia, April 29, 1969 (Secret), pp. 4-5.

68 Interview with Spurgeon Keeny, January 12, 1999; Interview with Francis Bator, May 18, 1999.

69 A delegation from ACDA and AEC did visit Australia to sell the treaty, and the NPT did come up for discussion during Rusk's April, 1968 visit, but there is no evidence that the Americans attempted to "pressure" their hosts. George Bunn, who was part of the ACDA/AEC delegation confirms this view. Interview with George Bunn, Palo Alto, CA, November 15, 1996.

> Mr. Hewitt asked whether Australia had received any concrete intimation from the United States that it very much wanted Australia to adhere to the Treaty, and that our failure to do so would have a harmful effect on relations with the United States.
>
> I replied that this had never, as far as I knew been said to us directly....
>
> Sir Henry Bland said it was significant that in all the cables from Washington there had been no reference to the United States putting pressure on Australia. His own interpretation was that it was the typical situation of the United States taking us for granted.[70]

In retrospect, a lack of American pressure over the NPT would be understandable. Johnson's chief concern at that time was the war in Vietnam. Australian political and military support was seen as critical, and the Americans had more than once come to the Australians asking for ever larger military commitments. Given the circumstances, Johnson might have thought it more prudent to focus on Vietnam -- described at the time as a vital interest -- and avoid any friction over the NPT.[71]

Of course, while the Johnson administration produced the treaty, it was the *Nixon* administration that was left with the job of bringing it into force. When President Nixon assumed office in 1969, his attitude toward the NPT was lukewarm at best. On the very day the new President announced he would seek ratification of the treaty, he issued a National Security Decision Memorandum directing that American allies -- particularly, the West Germans -- not to be harassed over the treaty.[72] What mattered in Nixon's *realpolitik* was the Soviet competition and the alliance system, not international treaties. In short, Nixon was not going to squeeze the Australians for Johnson's bit of paper, and he said so explicitly.[73]

Whatever reservations Nixon had about pressuring his allies would have certainly been strengthened in the wake of the imbroglio involving Ambassador Crook and the Cape Keraudren project. Gorton's bitter reaction to Crook's bit of freelancing had the Americans bending over

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70 NAII, Archives of the Department of Foreign Affairs and Trade: Unregistered document; Memo from James Plimsoll to Minister of External Affairs, Non-Proliferation Treaty, 21 March 1968, p. 3, (Top Secret).

71 On the Vietnam war, Australia's participation in the war, and the nature of American-Australian cooperation at the time, see Gregory Pemberton, *All the Way: Australia's Road to Vietnam.*

72 Seymour M. Hersh, *The Price of Power: Kissinger in the Nixon White House*, (New York: Summit, 1983), p. 148; Hersh, *The Samson Option*, pp. 209-210; Seaborg, *The Atomic Energy Commission Under Nixon*, pp. 53-54.

73 "Nuclear Treaty Signed by 88 Countries," *Sydney Morning Herald*, March 5, 1969, p. 4. On the lack of pressure, also see Roy Macartney, "No Pressure on A-Pact Says Envoy, *Sydney Morning Herald*, March 6, 1969, p. 5; John Douglas Pringle, "Australia Not Out of Wood," *Sydney Morning Herald*, May 12, 1969, p. 2; Roy Macartney, "US Nuclear Aid to Australia in Jeopardy," *Sydney Morning Herald*, March 1, 1969, p. 4.

backwards to avoid any hint of pressure. Not only would pressuring Gorton run counter to US policy, it was -- given Gorton's temperament -- likely to be counter-productive.[74]

When the Prime Minister came to Washington for an abbreviated visit in April of 1969, Gorton expressed "his doubts about the NPT."[75] The Americans, it appears, were careful not to challenge Gorton on the issue. According to a telegram from the US Embassy, Gorton returned to Canberra "convinced that USG was not really concerned about GOA attitude on NPT. It does not appear to Primin that we place much importance on it. (Gorton may well have gained this mistaken opinion from Secretary's assurance that USG not pushing Australia.)" When Gorton visited Washington a month later, the message was the same. A set of talking points were written for Nixon's meetings with Gorton. They identified six "points to stress," none of which mention the NPT or other nuclear issues. More importantly, they mention two "points to avoid." The first of the points to avoid is "pressuring Gorton to sign the NPT."[76] When Gorton returned from his May visit, he described his talks with the Nixon administration....

> ...I found the President fully appreciat[ive] of our position. He understood why Australian government was not signing [the] Treaty until our questions were resolved to our satisfaction. I am satisfied no pressure will be applied by [the] United States administration to induce us to sign.[77]

In sum, it appears that not only did the Americans not pressure Australia, they affirmatively set about to avoid even the appearance of pressure.[78]

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74 In a memo meant to brief the President for his meeting with Gorton, the Australian Prime Minister was described as: "...strong-willed and hot tempered, blunt and direct ...angered by any suggestion of pressure or arm-twisting ...resistant to persuasion ...digs in his heels in if he feels he is being pushed ...prickly aggressive man who can be extremely ...difficult to handle..." See NAII, Enclosure: Background on the Visit, pp. 2-3, attached to Memo for the President, Subject: Your Meeting with the Prime Minister of Australia, April 29, 1969 (Secret).

75 NAII, Papers for Background briefing books: Secretary's Briefing Memorandum and Talking Points, Attachment to Memo for Mr. Henry Kissinger, The White House, May 1, 1969, p. 2 (Secret/Exdis), Department of State Central Files, 1967-1969, Folder Pol 7, 5/1/69, Australia, Box 1842.

76 NAII, Memo for the President, Subject: Your Meeting with the Prime Minister of Australia, April 29, 1969 (Secret), Memo for signature attached to memo from John P. Walsh, Acting Executive Secretary, to the Secretary of State, p. 1, Department of State Central Files, 1967-1969, Folder Pol 7, 3/1/69, Australia, Box 1842.

77 NAII, Telegram from the American Embassy in Canberra to the Secretary of State, May 12, 1969, pp. 2-3, Department of State Central Files, 1967-1969, Folder Pol 7, 3/1/69, Australia, Box 1842.

78 There is one occasion, however, where pressure may have played a role, but the effect was to stimulate a proliferation decision. It involves the weapons-on-demand episode. Prime Minister Menzies was quite explicit about his reasons for seeking a weapons-on-demand agreement from Britain. He argued that the US and UK would force Australia to join the Nuclear Test Ban Treaty, thus preventing Australia from acquiring its own nuclear weapons. It was, therefore, the expectation of superpower pressure -- in this case, pressure to join a treaty -- that led Menzies to make his proposal.

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In general, the pressure hypothesis performs poorly -- in almost every instance, the hypothesis fails one or more tests. Moreover, there is particularly strong process tracing evidence that disconfirms the pressure hypothesis in the two cases where it is most frequently alleged, namely the Cape Keraudren Project and the NPT.

# III. Hypotheses on Resources

The resource hypotheses suggest that developing states fail to acquire nuclear weapons, because they lack the financial or scientific capability to do so. Australia is not considered a developing state, and so these explanations would not apply. Still, it is worth taking a moment to look at these hypotheses in an Australian context.

## H.5 and H.6 Lack of Financial and Scientific Resources.

A lack of financial and scientific resources does not appear to have prevented Australia from becoming a nuclear weapons state.[79] That conclusion is consistent with the core test of these hypotheses: Australian financial and scientific resources far exceeded those of China, Israel, or Pakistan at the time these countries decided to pursue the bomb. It is also consistent with the Australians own assessments of their capability.[80]

The Australian Cabinet formally commissioned the AAEC to estimate the cost of an indigenous nuclear weapons program in 1965. Departments opposing the AAEC's policies were critical of the numbers and complained that they did not include the costs of a delivery system, but they were generally accepted as a gross indicator of the resources required.[81] The Defence Committee's

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[79] It is worth noting, however, that considerations of cost did play a role in inter-departmental debates over nuclear weapons. Opponents, and in particular the Treasury, frequently argued that the cost of the nuclear option was too high. Cost was also an issue in 1958, when the Defence Committee rejected the AAEC's proposal for a military plutonium reactor at Mt. Isa. At the time, however, the Defence Committee believed it had a less expensive option, i.e., obtaining nuclear weapons from their allies. In 1972, when former Minster of the Treasury and then Prime Minister, William McMahon, killed off the Jervis Bay reactor, he cited the Treasury's "nagging doubt ...relating to the economic viability of the project." "No Plans for Plutonium Says Ex-PM," Letter to the Editor, William McMahon, *Sydney Morning Herald*, September 3, 1975, p. 6.

[80] Australia maintained a small nuclear infrastructure including two research reactors: a 10 MW heavy-water moderated, enriched-uranium research reactor (HIFAR) and a smaller graphite and water moderated reactor for physics experiments (MOATA). For a description of Australian Atomic Energy Commission facilities and activities, see Cawte, *Atomic Australia*, p. 100; Carr, "Australia and the Nuclear Question: A Survey of Government Attitudes, 1945-1975," p. 90; Ann M. Moyal, "The Australian Atomic Energy Commission: A Case Study in Australian Science and Government," *Search*, Vol. 6, No. 9 (September, 1975), pp. 365-383.

81 Sir Richard Randall, Secretary of the Treasury described the cost estimates as "a joke." Archives of the Department of Foreign Affairs and Trade: Unregistered document; Memo from James Plimsoll to Minister of External Affairs, Non-Proliferation Treaty, 21 March 1968, p. 2, (Top

inter-departmental Working Group on the NPT reviewed the AAEC study and explicitly looked at the "practicability of [an] Australian independent capability." Its report from March of 1968 makes clear that Australia's financial and technical capabilities were not an obstacle to nuclear weapons development.

> The conclusion is that while considerable financial and manpower resources would be required it would not be beyond Australian resources and knowledge to produce nuclear weapons within a 7 to 10 period with or without external assistance or supplies.[82]

Academics outside of government had no access to these estimates, but nevertheless attempted to cost out a minimum nuclear weapons program.[83] While these authors invariably argued against the nuclear option, most agreed that the cost of such a project, spread out over ten years, would be manageable, representing roughly six percent of the defense budget.[84]

## H7. Denial of Access to Foreign Technology

The denial hypothesis contends that developing states are unable to acquire nuclear weapons, because nuclear supplier states refuse to transfer the requisite nuclear technologies. The Australian government's own estimates indicated that it could develop nuclear weapons without outside assistance. Moreover, in the late 1960s, Australia could have turned to a number of foreign suppliers. It had signed a nuclear cooperation agreement with France -- a nuclear weapons state that had declared its intention to remain outside of the NPT. When the Jervis Bay reactor project

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Secret). Baxter had previously presented cost estimates of a military plutonium production program in 1958.

82 Archives of the Department of Foreign Affairs and Trade: Unregistered document; Consolidated paper prepared for the Defence Committee, Non-Proliferation Treaty, March 1968, p. 14 (Top Secret), attached to Defence Committee Agendum No. 9/1968, Non-Proliferation Treaty, G. L. Prentiss, Secretary Defence Committee, 18th March, 1968 (Top Secret).

83 On outside cost estimates, see Ian Bellany, *Australia in the Nuclear Age: National Defense and National Development, Australia in the Nuclear Age: National Defense and National Development*, (Sydney: Sydney University Press, 1972); Bellany, "Nuclear Arms for Australia?;" Millar, "Australia: Recent Ratification," p. 82; Desmond Ball, "Australia and Nuclear Policy," in *Strategy and Defense: Australian Essays*, Desmond Ball, ed., (London: George Allen & Unwin, 1982), p. 325; Desmond Ball, B. D. Beddie, M. L. Boyle, M. I. Carr, J. H. Cooney, T. Guy, P. A. Mench, J. L. Richardson, I. G. Simington, W. H. Smith, R. E. Babbage, J. A. Diety, P. Falkland, P. C. Gration, and R. J. O'Neil, *An Australian Nuclear Weapons Capability*, (Canberra: United Services Institution of the Australian Capital Territory, 1975), pp. 7-9, 31-32.

84 Outside analysts did worry that a nuclear program would divert scarce scientific and technical resources. Questions of capability typically focused on financial, not human resource, issues. Concerns about cost have an institutional base, namely the Treasury, while human resource issues have no clear institutional representative. Moreover, financial costs are specific, immediate and born directly by the government, while human resource costs are broad, intermediate to long-term, and born by society as a whole. On concerns about diverting human resources, see Harry G. Gelber, "Australia and Nuclear Weapons," in Johan Jorgen Holst, ed., *Security, Order, and the Bomb*, (Oslo: Universitetsforlaget, 1972), pp. 105-107; Millar, "Australia: Recent Ratification," pp. 71-72, 82.

was put out for bid, it received proposals from several countries, some of whom promised to provide an independent enrichment capability as part of the deal.[85] These countries were hoping to sell nuclear technology and know-how, despite Australia's criticisms of the NPT. There is no evidence that supplier states avoided nuclear commerce with Australia, nor is there any evidence any any supplier state attempted to persuade other suppliers to reduce nuclear trade with Australia.

One might be inclined, therefore, to dismiss the denial hypothesis, but that would be too hasty. Denial does play a role in Australian nuclear history -- not denial of weapons-related technology but rather, the denial of nuclear weapons themselves. On several occasions, nuclear states declined to supply Australia with nuclear weapons. Box 4.7 provides a list of anti-nuclear outcomes. Observations where denial may have been a factor (nos. 1-2, 4, 6-7, 9-11, 14) are in bold.

Three of the nine observations constitute denial only in a technical sense. Australia failed to acquire the V-bomber (7), the Bloodhound (9), and the TSR (10), because Britain failed to follow through on the transfer, but that was because the British Treasury cut the programs, not because of concern about nonproliferation. Indeed, in two of those three cases, Australia acquired substitute technologies from the US. The strongest examples of denial involve the United States (1, 2, and possibly 14). The remaining observations (4, 6, 11) are difficult to categorize. In each of these last cases, Britain declined to transfer nuclear weapons, but was willing to reach some accommodation on the issue, even to the point of making a side deal that would have bypassed the United States. Moreover, in two of the three instances, Britain made offers to pursue the matter further, but Australia did not actively follow up on the offers.

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85 A serious international technology transfer control regime simply did not exist during the period analyzed here. Substantive international controls did not emerge until after the Indian nuclear test in 1974, the year after Australia ratified NPT. Lawrence Scheinman, *The International Atomic Energy Agency and the World Nuclear Order*, (Washington: Resources for the Future, 1987), pp. 5-21. Individual countries, such as the United States, occasionally pursued nonproliferation goals with specific countries, but America was substantially more keen on the concept than its European allies. See essays by Goens, Hackel, and Muller in Harald Muller, ed., *A European Non-Proliferation Policy*, (Oxford: Clarendon Press, 1987); and essays by Winkler and Khalilzad in *Nuclear Proliferation in the 1980s*, William H. Kincade and Christoph Bertram, eds., (New York: St. Martin's Press, 1982).

**Box 4.7 Denial and Anti-Nuclear Outcomes**

| No. | Date | Anti-Nuclear Outcome | Denial by Another State? |
|---|---|---|---|
| **1** | **54** | **Seeks but not acquire NW sharing.** | **Yes** |
| **2** | **56** | **Seeks/not acquire NW info for bombers.** | **Yes** |
| 3 | 58 | Rejects proposal for Mt. Isa PU reactor. | No |
| 4 | 2/58 | Seeks/not acquire NW from UK. | Yes |
| 5 | 4/58 | Bans discussion of NW with UK officials. | No |
| **6** | **8/58** | **Seeks/not acquire NW from UK.** | **Yes** |
| **7** | **58-60** | **Seeks/not acquire V-Bomber.** | **Yes** |
| 8 | 11/59 | Rejects proposal to seek UK NW info. | No |
| **9** | **60** | **Seeks/not acquire Bloodhound.** | **Yes** |
| **10** | **60-62** | **Seeks/not acquire TSR-2.** | **Yes** |
| **11** | **8/61** | **Seeks/not acquire UK NW-on-demand.** | **Yes** |
| 12 | 7/61 | Seeks/not acquire UK NW info. | No |
| 13 | 9/61 | Rejects UK offer of nuclear weapons help. | No |
| **14** | **9/61** | **W/draws proposal for NW-on-demand.** | **Maybe** |
| 15 | 66 | Accepts transfer to IAEA safeguards. | No |
| 16 | 66 | Rejects proposal for nuclear reactor. | No |
| 17 | 69 | Seeks/not acquire PNE aid. | No |
| 18 | 70 | Signs NPT. | No |
| 19 | 71 | Cancels nuclear reactor. | No |
| 20 | 73 | Ratifies NPT. | No |
| 21 | 84 | Rejects proposal for NW capability. | No |
| 22 | 95 | Supports indefinite extension of NPT. | No |
| 23 | 96 | Endorses abolition of nuclear weapons. | No |
| 24 | 96 | Joins CTBT. | No |

## Assessment: Resources and Nuclear Decision Making

Australia had more resources than many of the states that joined the nuclear club. It had foreign suppliers knocking on its door, and the government's own internal estimates concluded that Australia could accomplish the task without outside assistance. This would seem to be reason enough to reject the resource hypotheses.

Nevertheless, there are a limited number of occasions in which denial policies -- at least as regards the outright transfer of weapons -- contributed to nuclear restraint. Denial did not constitute an insuperable barrier, however. Australia had other options, and could have independently pursued a nuclear capability if it had chosen to do so. The effect of denial policies was to obstruct the easiest and least costly option for entry into the nuclear club.

# IV. Summary: Hypotheses on Power and Resources

In this chapter, we investigated the effects of power and resources on nuclear decisions and outcomes. There is near unanimous agreement that the factors discussed in this chapter -- threats, security guarantees, pressure, scientific capability -- are decisive in proliferation decisions. The results obtained here, however, paint a very different picture. As Box 4.8 indicates, several hypotheses fail outright, including general bipolarity (H2), pressure (H4), lack of financial resources (H5), and scientific resources (H6). The denial hypothesis (H7) fails most of its tests but nevertheless describes part of the Australian story. The threat (H1) and security guarantees (H3) do not perform nearly as expected. Though there is evidence that an increase in threats or a decline in alliance commitments may stimulate states to seek nuclear weapons, the overall relationship between threat and behavior is quite weak, particularly as it relates to nuclear restraint.

## Box 4.8. Summary of Findings for Power & Resource Hypotheses

| Hypothesis | Tests | Results |
|---|---|---|
| **H1. Threat** | 1) Correspondence b/t level of threat and NDM.<br>2) Process tracing. | Fails test.<br>Threats explains some pro-nuclear decisions, but overall, a weak explanation: Aus sought NW when the threat was comparatively low but renounced NW despite persistence of nuclear adversaries. Process tracing evidence shows threat not a concern in the 1950s but Chinese threat cited in the mid-1960s. |
| **H2. Bipolarity** | 1) Correspondence b/t of bipolarity and NDM. | Fails test.<br>Aus sought NW under bipolarity and pursued abolition after the end of bipolarity. |
| **H3. Security Guarantee** | 1) Correspondence b/t guarantee and NDM.<br>2) Correspondence b/t allied troop deployments and NDM<br>3) Process tracing. | Fails test.<br>Decline in allied commitments corresponds with some pro-nuclear decisions, but overall, a weak explanation:: Aus renounced NW even as allied commitments were in decline. Process tracing evidence shows concern about withdrawal of US and UK. |
| **H4. Pressure** | 1) Superpower is aware of proliferator activity.<br>2) Superpower issues threat.<br>3) Proliferator perception of being pressured.<br>4) Process tracing. | Fails test.<br>Hypothesis performs poorly on all tests. If anything, US officials affirmatively avoided the appearance of pressure. Process tracing evidence is particularly strong. |
| **H5. Financial Resources** | 1) State will have fewer resources than NWS at the time of their decision.<br>2) State will not have slack resources.<br>3) No expenditures for similar but less important programs.<br>4) Process tracing. | Fails Test<br>Hypothesis not intended to apply to developed states. Aus documents maintain that government had the capability to develop NW. |
| **H6. Scientists** | [See 4 tests of financial resources hypothesis above.] | Fails Test<br>Hypothesis not intended to apply to developed states. |
| **H7. Denied Foreign Tech** | 1) Proliferator can't acquire tech from another supplier.<br>2) Suppliers will reduce nuclear transfers to potential proliferators.<br>3) Suppliers will lobby others to restrict tech transfers.<br>4) Process tracing. | Passes Test<br>Hypothesis not intended to apply to developed states. US denial of nuclear weapons did block the easiest, cheapest route to nuclear weapons, but Aus had numerous opportunities to acquire tech from foreign suppliers. |

NDM = Nuclear decision making NWS = Nuclear weapons state

## Box 4.3. Threat Codings for Australian Nuclear Decisions

| # | Date | Decision/Action | NWS | Latent NWS | Conven I 2x Mil-Pop | Conven II 2x Mil or Pop |
|---|---|---|---|---|---|---|
| 1 | 54 | Ask US regarding nuc sharing. | USSR | – | USSR | USSR, Jpn |
| 2 | 56 | Request NW information from US. | USSR | – | USSR | USSR, Jpn |
| 3 | 8/56 | Seek pact on defense uses of nuc energy. | USSR | – | USSR | USSR, Jpn |
| 4 | 11/56 | Seek NW from UK officials. | USSR | – | USSR | USSR, Jpn |
| 5 | 1/58 | Seek acquisition of V-Bomber for NW. | USSR | PRC | USSR | USSR, Jpn |
| 6 | 2/58 | Reject proposal for PU reactor for NW. | USSR | PRC | USSR | USSR, Jpn |
| 7 | 2/58 | Seek NW from UK officials. | USSR | PRC | USSR | USSR, Jpn |
| 8 | 2/58 | Seek NW information from UK. | USSR | PRC | USSR | USSR, Jpn |
| 9 | 4/58 | Ban talk of NW with UK officials. | USSR | PRC | USSR | USSR, Jpn |
| 10 | 8/58 | Seek procurement of NW from UK. | USSR | PRC | USSR | USSR, Jpn |
| 11 | 59 | Establish Defence Nuclear Officer | USSR | PRC, Jpn | USSR | USSR, Jpn |
| 12 | 11/59 | Rejects seeking NW info from UK tests. | USSR | PRC, Jpn | USSR | USSR, Jpn |
| 13 | 60 | Seek acquisition of Bloodhound missile. | USSR | PRC, Jpn | USSR, PRC | USSR, PRC, Jpn |
| 14 | 60 | Seek acquisition of TSR-2. | USSR | PRC, Jpn | USSR, PRC | USSR, PRC, Jpn |
| 15 | 61 | Seek NW-on-demand from UK. | USSR | PRC, Jpn | USSR, PRC | USSR, PRC, Jpn, Indo |
| 16 | 61 | Seek NW-on-demand from US. | USSR | PRC, Jpn | USSR, PRC | USSR, PRC, Jpn, Indo |
| 17 | 7/61 | Seek nuclear weapons info from UK. | USSR | PRC, Jpn | USSR, PRC | USSR, PRC, Jpn, Indo |
| 18 | 9/61 | Reject UK offer of nuclear weapons help. | USSR | PRC, Jpn | USSR, PRC | USSR, PRC, Jpn, Indo |
| 19 | 12/61 | Reject UN resolution on NW acquisition. | USSR | PRC, Jpn | USSR, PRC | USSR, PRC, Jpn, Indo |
| 20 | 63 | Seek nuclear capable F111. | USSR | PRC, Jpn | USSR, PRC | USSR, PRC, Jpn, Indo |
| 21 | 65 | Conduct study on Aus NW. | USSR | Indo, Jpn | USSR, PRC | USSR, PRC, Jpn, Indo |
| 22 | 66 | Reject transfer of safeguards to IAEA | USSR, PRC | Jpn | USSR, PRC | USSR, PRC, Jpn, Indo |
| 23 | 66 | Transfer safeguards to IAEA | USSR, PRC | Jpn | USSR, PRC | USSR, PRC, Jpn, Indo |
| 24 | 66 | Reject building nuclear power plant. | USSR, PRC | Jpn | USSR, PRC | USSR, PRC, Jpn, Indo |
| 25 | 67 | Impose uranium export restrictions. | USSR, PRC | Jpn | USSR, PRC | USSR, PRC, Jpn |
| 26 | 67 | Conduct study on Aus NW. | USSR, PRC | Jpn | USSR, PRC | USSR, PRC, Jpn |
| 27 | 68 | Reject signing NPT. | USSR, PRC | Jpn | USSR, PRC | USSR, PRC, Jpn |
| 28 | 69 | Seek nuclear agreement with France. | USSR, PRC | Jpn | USSR, PRC | USSR, PRC, Jpn |
| 29 | 69 | Request support for PNE program. | USSR, PRC | Jpn | USSR, PRC | USSR, PRC, Jpn |
| 30 | 69 | Build nuclear power reactor. | USSR, PRC | Jpn | USSR, PRC | USSR, PRC, Jpn |
| 31 | 70 | Sign NPT. | USSR, PRC | Jpn | USSR, PRC | USSR, PRC, Jpn |
| 32 | 70 | Reject ratification of NPT. | USSR, PRC | Jpn | USSR, PRC | USSR, PRC, Jpn |
| 33 | 71 | Cancel nuclear reactor. | USSR, PRC | Jpn | USSR, PRC | USSR, PRC, Jpn |
| 35 | 73 | Ratify NPT. | USSR, PRC | Jpn | USSR, PRC | USSR, PRC, Jpn |
| 36 | 84 | Reject pursuit of nuclear capability | USSR, PRC | – | USSR, PRC | USSR, PRC |
| 37 | 95 | Support indefinite extension of NPT. | PRC | – | PRC | PRC |
| 38 | 96 | Endorses abolition of nuclear weapons. | PRC | – | PRC | PRC |
| 39 | 96 | Sign and ratify CTBT. | PRC | – | PRC | PRC |

# Chapter 5. Explaining Australian Nuclear Behavior: Hypotheses on Ideas and Institutions

This chapter examines the eight hypotheses having to do with ideas and institutions. The first hypothesis focuses on norms (H8). It is followed by hypotheses on various domestic institutional arrangements, including democracy (H9), electoral politics (H10), a liberalizing economy (H11), and organizational politics( H12). The final three hypotheses focus on international institutions, and in particular, the nonproliferation regime (H13-15). The chapter ends with a brief assessment of the results.

# I. Hypothesis on Ideas

## H8. Anti-Nuclear Norms

Advocates of the norms hypothesis argue that the absence of large numbers of nuclear weapons states can be attributed to the gradual spread of an international norm against the possession of nuclear weapons. For a country like Australia -- one of the few countries to officially endorse the abolition of nuclear weapons -- a norms-based explanation would seem promising.

### Test 1. Policy on Chemical and Biological Weapons

To assess the claim of the norms hypothesis, a correspondence test is used. It predicts that a normative rejection or renunciation of nuclear weapons will be coextensive with a normative rejection of chemical and biological weapons (CW, BW). Applied to the Australian case, this test has two steps: reviewing the history of Australian chem-bio policy, and then comparing CW/BW decisions with decisions on nuclear weapons.

Australian Policy Towards Chemical and Biological Weapons

Australia's first experience with chemical weapons dates back to World War II, when it stored and maintained stocks of British chemical weapons. In one of the more unsavory episodes in contemporary Australian history, the government actually tested mustard gas on its own soldiers.[1] After the war, some of the stocks were dumped at sea, but others remained in storage for decades.[2] In 1952, the Australian government reviewed its CW and BW policies and "agreed that a nucleus staff should be maintained by Department of Supply in order to keep abreast of current developments in chemical warfare and to provide a trained staff ready for expansion in time of emergency."[3] In 1959, the Defence Committee endorsed a proposal "that the United States

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[1] The Gillis Report, "Australian Field Trials with Mustard Gas, 1942-1945," Peace Research Centre, The Australian National University, PeaceDoc No. 1, (Canberra: Department of Defence, Australia, 1985); Karen Freeman, "Mustard Gas Tests Revealed WWII Volunteers Were Guinea Pigs," *St. Louis Post-Dispatch*, August 11, 1989, p. 1A.

[2] [2] Maria Haug, "Historical Chemical Weapons Sites in the Asia-Pacific Region," Bonn International Center for Conversion, http://bicc.uni-bonn.de/weapons/chemweap/asiapac/austra.html.

[3] ACT, Attachment 3, "Present Position in Australia," in Defence Committee Agendum, "Chemical Warfare," Agendum No. 23/1960, A7942/1 C6, March 14, 1960, p. 1 [Secret]. There is another archival file from the 1950s that refers to chemical weapons, but it remains closed to public review.

authorities be asked to release data on CW to Australia..."[4] A year later, it began a review of the "potentialities of Chemical Warfare and Biological Warfare."[5] The government...

> "reaffirmed its earlier view that the 'V' and 'G' agents [nerve gas], and particularly their use in tropical environments, was of great potential importance to Australia. The use of other chemical agents such as the so-called pycho-chemicals, of which there is little knowledge in Australia, may have important military applications.[6]

Australia's interest in CW research dovetailed with American desires to test nerve gas in tropical environments.[7] In 1962, the Minister of Defence submitted a proposal for joint CW trials to be held in Australia and "following Cabinet discussion of this matter, the Minister for Defence accepted a proposal by the United States Secretary of Defense to establish a joint United States/Australian Survey Team to consider the technical and political aspects of chemical testing in areas under the control of the Australia Government."[8] A year later, in October of 1963, Athol Townley, the Minister of Defence, lobbied his cabinet colleagues to agree to the next stage and commit to a full series of CW field trials.[9]

After 1963, the paper trail becomes thin. It appears that Australia's Minister of External Affairs discussed "Chemical Warfare" in meetings with President Johnson in November of 1964.[10] Beyond that, there are a series of Australian files that at least suggest that discussion of CW trials continued for some time, perhaps as late as 1970.[11]

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ACT, Operation Buffalo - Target Response Tests - Materials Group - Part 9a - Effects on Chemical Warfare Equipment...., A6454, ZB70, [Date range: 1958-1958], [Closed].

[4] ACT, Department of Air Brief, "Chemical Warfare Defence Committee Agendum 74/60 Including Supplements 1, 2 and 3," A7942/1 C6, September, 1961, p. 2 [Secret].

[5] ACT, Athol Townley, [Minister for Defence], "Chemical Warfare," A7942/1 C6, October, 1963, p. 1 [Secret].

[6] ACT, Minute No. 1/1960 - Chemical Warfare, in Defence Committee Agendum, "Chemical Warfare," Agendum No. 23/1960, A7942/1 C6, March 14, 1960, p. 3 [Secret].

[7] ACT, Minute No. 1/1960 - Chemical Warfare, in Defence Committee Agendum, "Chemical Warfare," Agendum No. 23/1960, A7942/1 C6, March 14, 1960, p. 3 [Secret].

[8] ACT, Athol Townley, [Minister for Defence], "Chemical Warfare," A7942/1 C6, October, 1963, p. 2 [Secret]. In 1961, the ever irrepressible Air Marshall Scherger is alleged to have directly approached the Americans for information about CW but was told that his government should submit a formal request. See PRO: DO 164/17; Memo from Roger Makins, Chair of the UKAEA, to [E. W.] Playfair, [Permanent Secretary, Ministry of Defence], July 19, 1961, p. 1.

[9] ACT, Athol Townley, [Minister for Defence], "Chemical Warfare," A7942/1 C6, October, 1963, p. 2 [Secret].

[10] LBJ Library, Memo from Benjamin Read to McGeorge Bundy, "Request for Appointment for Australian Minister of External Affairs, Mr. Paul Hasluck," November 14, 1964, p. 1, NSF Country Files, Box 233, Australian Memos (2 of 2), Vol I 11/63-12/65.

[11] One file series is entitled "Chemical Warfare Testing in Australia" and a second has the heading "CS [Chemical systems] Field Tests." They cover a period from 1961 to 1970, and remain closed to the public. ACT, United States Projects - Chemical Warfare Testing in Australia,

This same period, 1964 to 1970, was one dominated by the Vietnam War. Recently, there have been allegations that American forces in Vietnam used nerve gas.[12] No such allegations have been made against Australian forces, but it is worth noting that Australia did have what it called "chemical weapons" in Vietnam. The National Australian Archives has a series of files on the topic that cover a period from 1965 to 1972. The files probably hold materials related to tear gas, not nerve gas, but nearly all the files remains closed.[13]

Australian interest in CW during the 1960s stands in marked contrast to recent Australian policy. As in the field of nuclear weapons, Australia went from an interested party to an anti-proliferation crusader. In 1985, it formed the "Australia Group," which sought to police the export of chemical precursors, and in the early 1990s, Australia played a leading role in efforts to establish the Chemical Weapons Convention (CWC). It ratified the treaty in 1994.[14]

CW/BW Policy Compared with Nuclear Decision Making

Given this chronology, one can compare Australia's actions in the field of chemical and biological warfare with decisions regarding its nuclear weapons policy. According to the test of this hypothesis, a normative rejection of nuclear weapons should be co-extensive with a normative rejection of CW and BW. In instances where Australia rejects nuclear weapons but simultaneously seeks, possesses, or uses CW/BW, the norms hypothesis is unlikely to account for the outcome. Box 5.1 summarizes the results of this test. A "Yes" in the last column indicates that the result is consistent with norms hypothesis.

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A1838/346, 694/7/37 Parts 1-3, [Date range: 1961-1970], [Closed]; ACT, CS [Chemical systems] Field Tests, A1946/2, 1967/301, [Date range: 1965-1968] [Closed].

12 The most notable case being CNN's story on "Operation Tailwind," a story that CNN later retracted amidst great controversy. For an attempt to sift out the arguments, see the series of articles by Susan Paterno in *American Journalism Review*, September of 1998, http://ajr.newlink.org. The American government has admitted to using herbicides and defoliants as well as various forms of tear gas or "harassing agents," none of which was prohibited by the Geneva Protocol of 1925. It has been argued, however, that the use of CS and other harassing agents in very large quantities -- quantities inappropriate for riot control -- constituted an offensive use of CW and that deaths from asphyxiation were, in fact, a consequence of their use. M. F. Kahn, "Vietnam," in CBW Chemical and Biological Warfare, Steven Rose, ed., (Boston: Beacon Press, 1968), pp. 87-98.

13 ACT, Headquarters, Australian Forces Vietnam, Chemical Weapons and Flame Throwers General, AWM98, R1040/2/1, [Date range: 1965-1972], [Closed]; ACT, Headquarters, Australian Forces Vietnam, Chemical Weapons and Equipment SMOKE Generators, AWM98, R1040/4/1, [Date range: 1965-1972], [Closed]; ACT, 2 AOD [Advanced Ordinance Depot], Chemical Weapons and Equipment - General, AWM100, R1040/1/1, [Date range: 1965-1972], [Closed]; ACT, Headquarters, 1st Australian Task Force, Chemical Weapons and Equipment - General Gas Gun, AWM103, R1040/1/1, [Date range: 1965-1972], [Closed]; ACT, Headquarters, Australian Forces Vietnam, Chemical Weapons and Equipment. General, AWM181, R1040/1/1, [Date range: 1967-1968].

14 On the Australia Group, see, Gordon M. Burck and Charles C. Flowerree, *International Handbook on Chemical Weapons Proliferation*, (New York: Greenwood Press, 1991), p. 33. On Australia's role in the lead up to the CWC, see Trevor Findlay, *Peace Through Chemistry: the New Chemical Weapons Convention*, Peace Research Centre, (Canberra: Australia National University, 1993), pp. 8-10.

**Box 5.1. Anti- Nuclear Actions Compared with CW/BW Policies**

| # | Year | Anti-Nuclear Event | Meets Prediction? (Not seek, own, use CBW) |
|---|---|---|---|
| 1 | 58 | Rejects proposal for Mt. Isa PU reactor. | No |
| 2 | 58 | Bans discussion of NW with UK officials. | No |
| 3 | 59 | Rejects proposal to seek UK NW info. | No |
| 4 | 61 | Rejects UK offer of nuclear weapons help. | No |
| 5 | 61 | W/draws proposal for US NW-on-demand. | No |
| 6 | 66 | Accepts transfer to IAEA safeguards. | No |
| 7 | 66 | Rejects proposal for nuclear reactor. | No |
| 8 | 70 | Signs NPT. | No |
| 9 | 71 | Cancels nuclear reactor. | |
| 10 | 73 | Ratifies NPT. | |
| 11 | 84 | Rejects proposal for NW capability. | Yes |
| 12 | 95 | Supports indefinite extension of NPT. | Yes |
| 13 | 96 | Endorses abolition of nuclear weapons. | Yes |
| 14 | 96 | Joins CTBT. | Yes |

Empty boxes indicate no information either way.

From 1958 to 1961, there is clearly no norm against the possession or possible use of CW. This is also very likely the case for the period between 1966 and 1970. Later, in the mid-1980s and 1990s, it is equally clear that Australian policy makers rejected CW warfare.

Less clear are the three critical years between 1971 and 1973. Australian policy in these years is crucial for evaluating the relevance of norms. In 1973, the Labor government renounced nuclear weapons and ratified the NPT. A key question, therefore, is whether a norm *predated* or *followed* the 1973 decision. A lack of data precludes a definitive judgment, but indirect evidence suggests that the decision preceded the norm, and not the other way around.

That conclusion is based, in part, on the temporal character of norms. In general, the waxing and waning of norms is thought to be a gradual or evolutionary process -- a norm slowly builds, endures over time, and may gradually fade.[15] Of course, a sudden external shock can accelerate the process by providing the breakthrough opportunity for a norm to become widely known and accepted (or widely discredited). Given that developmental process, it seems unlikely that an anti-CW norm had taken hold by 1973. Australian interest in CW may have persisted as late as 1970, and so it is unlikely that a controlling norm would have developed in three short years, especially in the absence of an external shock. It is more likely that an anti-WMD norm developed after, and not before, Australia's entry into the nonproliferation regime.

This conclusion is consistent with other available data. First, Australia's numerous attempts to secure nuclear weapons are hardly compatible with the presence of a robust anti-nuclear norm.

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15 On the development and dynamics of norms, see Ann Florini, "The Evolution of International Norms," *International Studies Quarterly*, Vol. 40, No. 3 (Sept.,1996) pp. 363- 389; Ethan A. Nadelmann, "Global Prohibition Regimes: The Evolution of Norms in International Society," *International Organization*, Vol. 44, No. 4 (Autumn 1990), pp. 479-526.

Second, an anti-nuclear consensus did not emerge in broader Australian society until well after the NPT decision. In 1971, when asked whether they approved or disapproved of a "defence system for Australia which includes nuclear weapons," 65% of the respondents in a national survey approved, while only 30% disapproved. The results were nearly exactly the same when the survey was conducted again in 1980.[16] The emergence of a broad-based anti-nuclear norm in the 1980s may help account for Australia's transition from simple abstainer to nonproliferation crusader, but it cannot account for the initial renunciation of nuclear weapons in 1973.

In sum, the norms hypothesis fails its test. There is little correspondence between nuclear restraint and a normative rejection of chemical and biological weapons. This conclusion is also consistent with other information about the actions of Australian policy actors and the beliefs held by the Australian public. In general, it appears that the decision to renounce nuclear weapons preceded the formation of an anti-nuclear norm by at least a decade.

# II. Hypotheses on Institutions

## H9. Democracy (General)

According to the simple form of the democracy hypothesis, democracies do not seek nuclear weapons. To test this claim for a single country, one can compare nuclear decision making in democratic and undemocratic periods. Democratic periods should exhibit fewer and less committed actions towards nuclear weapons and more actions towards renunciation. In the case of Australia, however, democracy has been a constant since its founding as an independent state. The Polity III rating for Australia is the maximum score of 10 for the entire rating period, 1920-1994.[17] Doyle similarly codes Australia as a full democracy throughout the period under examination.[18]

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16 David Campbell, "Australian Public Opinion on National Security Issues," Working Paper No. 1, Peace Research Centre, The Australian National University, PeaceDoc No. 1, (Canberra: Australian National University), April, 1986, p. 51.

17 Polity III uses a scale that runs from -10 to 10, with 10 representing the most democratic.

18 Michael Doyle, "Liberalism and World Politics," *American Political Science Review* , Vol. 80, No. 4 (December, 1986), 1151-1169. It should be noted, however, that while Australia is a democracy, decisions about security policy have traditionally been confined to a very small group of elites. Within the Cabinet, only a handful of people dealt with defense and foreign affairs, and participation was often limited because of secrecy laws. Decisions related to British atomic testing in Australia, for example, were managed by less than five Cabinet members. Issues that were brought before the full Cabinet more for approval than review, since Cabinet ministers presumed that senior members had already vetted the issues in committee. Decision making grew even more narrow during the Gorton years, when policy was run out of the Prime Minster's office rather than through Cabinet. On elite decision making, see Coral Bell, *Dependent Ally: A Study in Australian Foreign Policy*, (Melbourne: Oxford University Press, 1988), p. 81; T. B. Millar, *Australia's Foreign Policy*, (Sydney: Angus and Roberston, 1968), p. 15. On the British tests, see J. L. Symonds, *A History of British Atomic Tests in Australia*, (Canberra: Australian Government Publications Service, 1985), p. 1. On Gorton bypassing Cabinet, see Alan Reid, *The Gorton Experiment*, (Sydney: Shakespeare Head Press, 1971), p. 191.

Democracy cannot, therefore, serve as an explanation for variations in outcomes.[19] Moreover, it has to be said that Australia's democratic system of governance did not prevent Australia from seeking nuclear weapons, even when it was evident that the international community was progressing towards a nonproliferation treaty.

## H10. Electoral Politics

The electoral politics hypothesis is a more specific variant of the democracy hypothesis. It contends that governments adopt anti-nuclear policies, because it is in their electoral interest to do so. For the purposes of this study, electoral interest is understood as the addition or maintenance of electoral support from one of three core constituencies: voters, party activists, and coalition partners.

Four congruence tests are considered. Each attempts to identify a correspondence between electoral interest and anti-nuclear behavior. The first test predicts that the rejection of pro-nuclear proposals or the acceptance of anti-nuclear proposals will correspond with the voters' rejections of nuclear weapons, as measured in public opinion surveys. The second and third tests predict that parties in power, intending to derive electoral benefits from their anti-nuclear policies, will attempt to tell voters and party activists about their anti-nuclear records through their campaigns and platforms. The fourth test focuses on coalition partners, and whether they include nuclear issues in their campaigns and platforms.

### Test 1. Public Opinion and Nuclear Weapons Decision Making

Survey data on the Australian public's attitudes towards nuclear weapons comes in two forms: a) questions on the possible possession of nuclear weapons by Australia and b) questions about Australia's involvement with nuclear-armed allies. In five national surveys by Australian Gallup Polls and Morgan Gallup Polls, Australians were asked whether they would approve of a "defence system for Australia which includes nuclear weapons." The results are provided in Box 5.2.

The figures suggest that a strong majority of Australians supported nuclear weapons up until the late 1980s. The exception is the 1975 poll, whose results Campbell attributes to the fact that détente was at its peak.[20] Even this survey, however, reveals rather robust support for nuclear weapons -- some two years after Australia had ratified the NPT.

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[19] It is possible, however, to argue that democracy mattered in an indirect way. A defining feature of democracy is that it is a system in which parties rotate in and out of office. Given that Australia was a democracy, it was inevitable that Labor would, at some point, take power. Policy cleavages and system of rotating power can thus create a situation in which an anti-nuclear party takes office and commits future governments to a policy of abstinence, i.e., by ratifying the NPT. Of course, a pro-nuclear party can also win office and pursue contrary policies. A key difference, however, may be that it is easier for an anti-nuclear government to join an international treaty than it is for advocates of nuclear weapons to build the bomb. This would only matter if it could be shown that democracies are more likely than their authoritarian counterparts to abide by their treaty obligations -- a not implausible proposition. If it can be demonstrated that regime compliance and democratic government are correlated, then the combination of democracy and nuclear treaties might be a potent combination.

[20] Campbell, "Australian Public Opinion on National Security Issues," p. 19.

**Box 5.2. Nuclear Defense for Australia**[21]

| Year | Approves of Nuclear Defense | Disapproves of Nuclear Defense |
|---|---|---|
| 1957 | 61% | 27% |
| 1971 | 65% | 30% |
| 1975 | 41% | 49% |
| 1980 | 64% | 27% |
| 1988 | 22% | 73% |

The general trend in these numbers is corroborated by a much larger set of surveys on Australians' attitudes towards nuclear weapons and the American alliance. These polls can be divided into two sets. One set consists of questions that ask whether the United States should "base nuclear weapons" in Australia or whether "nuclear weapons should be kept out of Australia." The results are summarized in Box 5.3.

**Box 5.3. American Nuclear Weapons Based on Australian Soil**[22]

| Year | Approves of Nuclear Weapons | Disapproves of Nuclear Weapons |
|---|---|---|
| 1960 | 62% | 23% |
| 1962 | 59% | 31% |
| 1962 | 47% | 44% |
| 1965 | 51% | 34% |
| 1966 | 58% | 31% |
| 1988 | 23% | 73% |

A second and more frequently asked set of questions focused on visits by nuclear-armed American ships and aircraft and the presence of nuclear-related American facilities on Australian territory (e.g., communication facilities). In polls conducted from 1961 through 1976, a majority of Australians favored visits by ships or planes carrying nuclear weapons as well as other nuclear-related facilities.[23] Surveys from 1981 to 1989 are more difficult to interpret because of differences

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21 Campbell, "Australian Public Opinion on National Security Issues," p. 51; Alistar Marchall, "Australian Public Opinion and Defence: Towards a New Perspective," Peace Research Centre, Working Paper No. 92, (Canberra: Australian National University), September, 1990, p. 25. The wording of the 1971 question was more specific, referring to building and defending Australia with nuclear weapons. More generally, on the topic of Australian public opinion and defense issues, see David Campbell, The Social Basis of Australian and New Zealand Security Policy, Peace Research Centre, (Canberra: Australia National University, 1989); Murray Goot, *Australian Public Opinion Polls: Index 1941-1968*, Occasional Monograph No. 2, (Sydney: University of Sydney, 1969).

22 Campbell, "Australian Public Opinion on National Security Issues," pp. 40, 50; Marshall, "Australian Public Opinion and Defence: Towards a New Perspective," p. 24.

23 Campbell, "Australian Public Opinion on National Security Issues," pp. 40-42, 44-45, 50.

in question wording, but there is no doubt that by 1987, the majority opinion had shifted against both nuclear visits and nuclear support facilities.[24]

Overall, the results are strikingly consistent with the other surveys on nuclear weapons: there is support for nuclear weapons starting in the 1950s and extending into the early 1980s. Only in the late 1980s does one see an unequivocal turn against nuclear weapons in all their guises.

Box 5.4 compares public opinion on nuclear policy and government policy. Its purpose is to ascertain whether there is a correspondence between anti-nuclear decisions and anti-nuclear attitudes on the part of the public.

**Box 5.4. Correspondence Between Public Opinion and Nuclear Decision Making**

| # | Year | Anti-Nuclear Decision | Meets Prediction? (Anti-NW public opinion) |
|---|---|---|---|
| 1 | 58 | Rejects proposal for Mt. Isa PU reactor. | No |
| 2 | 58 | Bans discussion of NW with UK officials. | No |
| 3 | 59 | Rejects proposal to seek UK NW info. | No |
| 4 | 61 | Rejects UK offer of nuclear weapons help. | No |
| 5 | 61 | W/draws proposal for US NW-on-demand. | No |
| 6 | 66 | Accepts transfer to IAEA safeguards. | No |
| 7 | 66 | Rejects proposal for nuclear reactor. | No |
| 8 | 70 | Signs NPT. | No |
| 9 | 71 | Cancels nuclear reactor. | No |
| 10 | 73 | Ratifies NPT. | No |
| 11 | 84 | Rejects proposal for NW capability. | Unclear |
| 12 | 95 | Supports indefinite extension of NPT. | Yes |
| 13 | 96 | Endorses abolition of nuclear weapons. | Yes |
| 14 | 96 | Joins CTBT. | Yes |

NW = nuclear weapons

It appears that Australian decisions to reject nuclear weapons in the period from 1958 to 1971 were made despite, not because of, the public's attitude towards nuclear weapons. More importantly, the decision to renounce nuclear weapons in 1973 preceded the development of wide-spread anti-nuclear sentiment on the part of voters. Government policy in the 1990s does correspond with public preferences, and it may be that the change in public opinion helps explain Australia's shift from a passive member of the regime to an advocate of abolition. That result -- even if true -- comes too late to explain Australia's initial decision to forgo the bomb, however.

### Tests 2 and 3. Campaigns and Platforms of the Ruling Party

Of course, voters make up only one electoral constituency. Governments and parties also need the support of party activists, and the competition for their support might also affect nuclear outcomes. To test this possibility, the campaigns and platforms of the two governing parties are analyzed. If governments hope to derive political benefits from their nuclear policy with party activists, then one would expect parties to communicate their positions and accomplishments in the party's platform

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[24] Campbell, "Australian Public Opinion on National Security Issues," pp. 45, 47; Marshall, "Australian Public Opinion and Defence: Towards a New Perspective," pp. 22, 26.

and election campaign. The analysis begins with a look at the Liberal-Country Party and then turns to the Australia Labor Party.

The Liberal-Country Party

For most of the period under review in this study, the Liberal-Country Party (L-CP) held the reins of government. The L-CP represented the marriage of the conservative, pro-business Liberal Party and the Country Party, whose primary concern and constituency were Australia's rural farmers. The Country Party was not an active player on foreign policy issues, except when they affected trade or economic issues related to agriculture. Within the L-CP, Liberal members held the important foreign policy posts and articulated the party's views to the general electorate.

In Australia, Federal elections are held frequently, with either House or Senate seats under contest,[25] but "rarely, ...has an election been fought on the foreign policy issue."[26] For most elections, the most important issues have centered economic and other domestic concerns -- issues that had the greatest appeal for voters.[27] The Liberals' 1958 party manifesto, for example, "ignored foreign policy almost completely."[28]

The voters' disinterest in foreign policy extended to questions concerning nuclear weapons, which had "never been a particularly important political issue within the country."[29] Perhaps that is why neither the Labor party nor the Democratic Labor Party -- which staked out opposing positions on nuclear weapons -- were ever able to "raise very much interest in the issue."[30] The one issue that did draw the attention of a larger audience was the NPT, but even in this case, discussion was "confined to a central core of interested people ...with only muted contributions from the public at large."[31]

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25 For example, for the period of most concern to this study, there were elections in 1955, 1958, 1961, 1963, 1964, 1966, 1967, 1969, 1970, and 1973.

26 Campbell, "Australian Public Opinion on National Security Issues," p. 3.

27 It is the lament of foreign policy specialists in every country that the voting public is uninterested and unmoved by the defense and foreign policy agenda. Commenting in 1967, T. B. Millar observed that Vietnam aside, "most anything else is left to two or three journals of comment, three or four newspapers, a handful of academics, and predictable panels of politicians on both sides." T. B. Millar, "The Substance of British Defense Policy Changes", in *Britain's Withdrawal from Asia: It's Implications for Australia*, T. B. Millar, ed., (Proceedings of a Seminar conducted by the Strategic and Defense Studies Centre, The Australian National University), September 29-30, 1967, p. 67.

28 D. W. Rawson, *Australia Votes: The 1968 Federal Election*, (Victoria: Melbourne University Press, 1961), p. 48.

29 Ian Bellany, *Australia in the Nuclear Age: National Defense and National Development, Australia in the Nuclear Age: National Defense and National Development*, (Sydney: Sydney University Press, 1972), p. 81.

30 J. L. Richardson, "Australia and the Non-Proliferation Treaty," (Canberra: Australian National University Press, 1968), p. 2.

31 Michael Carr, "Australia and the Nuclear Question: A Survey of Government Attitudes, 1945-1975," Unpublished MA thesis, University of New South Wales, 1979, p. 136; see also George Quester, *Politics of Nuclear Proliferation*, (Baltimore: Johns Hopkins University Press, 1973), p. 160

There were a few elections, however, in which defense and foreign policy did play a more prominent role. In 1963, the Liberal campaign emphasized the Communist threat and the need to preserve the American alliance.[32] The Liberals' strategy was motivated, in part, by the Labor Party, which had called for a nuclear weapons free zone (NWFZ) in the southern hemisphere. After Labor's endorsement of a NWFZ, the Liberals pounced. Labor was "manoeuvred by its political opponents into appearing totally opposed (which it was not) to allowing any Australian facilities to be used for any aspect of the American deterrent system."[33] The election was rendered as a choice between the Liberals, who would defend Australia against a growing Communist threat and Labor, which favored unilateral disarmament and a break with the American alliance. Labor lost decisively. A second election where foreign and defense policy took center stage was the election of 1966. That year, the election turned on the issue of the Vietnam War.[34] President Johnson visited Australia just before the election, and the Australian electorate gave the incumbent -- the L-CP's Harold Holt -- a resounding reelection victory.

What is noteworthy about these two exceptions is that in neither case did the Liberals' campaign articulate any positive position either for or against nuclear weapons. In 1963, the Liberals attacked the ALP for its disarmament proposal without affirming an alternative. In 1966, no mention was made of nuclear weapons, even though the government was secretly deliberating on the issue.

Indeed, the *only* example of the Liberal Party articulating a clear position on nuclear weapons came in the Gorton government's 1969 re-election campaign.[35] In a policy speech kicking off the campaign, the Prime Minister announced that the government would not sign the NPT.[36] Gorton's opposition to the NPT may have been rooted in his own ideas about defence, but some Liberals may have thought that the position would pay political dividends as well. As an Australian newspaper reported at the time....

> There is a feeling in the Liberal Party that a nuclear policy is something the Government might gain a lot of votes from at the elections. The ALP looks certain to take a negative attitude toward it and, worse, it might actually tear itself up on internal disputes on whether the purely civil aspects of nuclear power are acceptable.[37]

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32 Bell, *Dependent Ally: A Study in Australian Foreign Policy*, p. 83.

33 A. L. Burns "Australia and the Nuclear Balance," in *Problems of Australian Defense*, H. G. Gelber, ed., (Melbourne: Oxford University Press, 1970), p. 144. On the government's response to the NWFZ idea, see *Current Notes on International Affairs*, October 1963, p. 58.

34 Gordon Greenwood, "The Political Debate in Australia," in *Australia in World Affairs 1966-1970,* Gordon Greenwood and Norman Harper, eds., (Vancouver: University of British Columbia Press, 1974), p. 87; Bell, *Dependent Ally: A Study in Australian Foreign Policy*, pp. 77, 83.

35 On the absence of a publicly articulated policy regarding nuclear weapons, see Anthony Clunies Ross, *Australia and Nuclear Weapons: The Case for a Non-Nuclear Region in South East Asia,* (Sydney: Sydney University Press) 1966, pp. 92-93.

36 Reid, *The Gorton Experiment*, p. 313.

37 *The Bulletin*, August 2, 1969, p. 23. Public opinion polling at time seems to suggest that this calculation was likely true. A 1969 national survey found that 53% of those polled voiced the opinion that the government should not sign the treaty, compared with 36% who favored signature. There are allegedly other polls from the same period that generated opposite results, but there is

Like their election campaigns, the Liberal Party's platforms -- when they existed -- avoided any statement regarding the acquisition or renunciation of nuclear weapons.[38]

The Australia Labor Party (ALP)

In contrast to the Liberal-Country Party, the Australia Labor Party articulated clear positions on nuclear weapons in their campaigns and their political platforms. Unfortunately for the ALP, in many cases these positions were unpopular with the electorate and even with voters in their own party. For most of the period under review, Labor lost its elections. Being the perennial opposition party meant that its views on nuclear weapons was largely irrelevant, since it had no ability to translate them into government policy.

The ALP's most infamous stand on nuclear weapons was its 1963 position favoring a NWFZ in the southern hemisphere.[39] In 1965, that position was reaffirmed over the objections of prominent party leaders.[40] The reaffirmation of the NWFZ policy came despite its defeat at the polls in 1963 and despite any number of public opinion surveys showing that voters were opposed to the idea.[41] Indeed, even a majority of Labor voters objected to the concept.[42]

The other issue on which Labor articulated a clear position was the NPT. In 1969, in the run up to elections, Labor announced that it would favor signing and ratifying the treaty,[43] despite polls indicating that the public opposed the NPT. The election results appeared to confirm this view: the party that had campaigned against the treaty, the DLP, made the most electoral gains, while Labor saw its share of the vote decline.[44]

The treaty became an issue again in 1973, when at long last, Labor beat the L-CP and took control of the government. Immediately upon assuming office, the Whitlam government took a series of "highly symbolic decisions, which were meant to signify Labor's complete break with the

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some question as to validity of those surveys. On the polls, see Campbell, "Australian Public Opinion on National Security Issues," pp. 50-51; and "On the Nuclear Threshold", *Current Affairs Bulletin*, Vol. 15, No. 2 (December 1969), p. 25, which cites a poll published in the *Sydney Morning Herald* from October 16, 1969.

38 Murray Goot, "Policies and Partisans: Australian Electoral Public Opinion 1941-1968," Occasional Monograph No. 1, (Sydney: University of Sydney, 1969), p. 183-187.

39 The NWFZ policy had been first proposed in 1962, on the heels of the 1961 UN resolution (rejected by the Australian government) asking countries for a pledge to refrain from acquiring nuclear weapons. Party leaders tabled the proposal, but in 1963 it was incorporated into the ALP's platform.

40 Ross, *Australia and Nuclear Weapons*," pp. 95-97

41 A national poll conducted in 1963 showed that only 36% of those surveyed thought a NWFZ was practical, compared with 45% who doubted the proposal. Campbell, "Australian Public Opinion on National Security Issues," p. 56.

42 Murray Goot, "Policies and Partisans: Australian Electoral Public Opinion 1941-1968," pp. 129-130.

43 Carr, "Australia and the Nuclear Question," p. 139.

44 Reid, *The Gorton Experiment*, p. 400.

assumptions underlying the conduct of foreign policy under the previous L-CP administrations."[45] One of its first acts was to ratify the NPT, but the electoral benefit of such a policy was unclear.[46] According to Quester, Labor "chose to live with [its NPT stance] after winning," irrespective of its effects "at the polls in the future." Quester concludes that Labor's ratification of the treaty "cannot be seen as any direct concession to public opinion."[47]

In sum, the LC-P, which ruled Australia for virtually the entire period under consideration, did not discuss nuclear weapons in its platforms or campaigns until 1969, when it came out against the NPT. The Labor Party did incorporate positions on nuclear weapons in its platforms and campaign, and suffered electorally as a consequence. The hypothesis thus fails these two tests, but with one very important exception -- Labor's endorsement of the NPT in the 1972 campaign. It is clear that Labor's NPT stance did not help the party with the general electorate, nor even with its own voters, but it did satisfy pro-disarmament party activists. Once elected, Whitlam followed through on his promise and ratified the treaty, despite the fact that ratification was perceived as an electoral loser.

**4. Coalition partners will have platforms or campaigns that include nuclear issues.**
The final test of the party politics hypothesis attempts to measure the impact of coalition partners, i.e., minority parties within a ruling governmental coalition. Perhaps these parties, or the competition for their electoral support, influence nuclear decision making, leading governments give up their nuclear ambitions for fear of offending a valuable political ally. To test this possibility, the campaigns and platforms of minority parties are analyzed. If governments hope to win the support of minority parties, and think they can do so by trimming their nuclear policy, then one would expect that the minority parties are sufficiently motivated by nuclear issues that they will be included in their platforms or campaigns. In Australian politics, the ruling Liberal Party depended on two smaller parties, the Country Party and the Democratic Labor Party (DLP). The Country Party had a very specific, domestic agenda unrelated to nuclear policy. The Democratic Labor Party, on the other hand, was especially active on questions of foreign policy, and so the focus here is on the DLP and its influence.

The Democratic Labor Party was founded in 1955, after its founders broke with the Australia Labor Party. Predominantly Catholic and fiercely anti-Communist, the DLP continued as a party until 1978.[48] The DLP was a small party and controlled only a handful of legislative seats, but under Australia's "second preference" voting scheme, even a small party could -- under particular circumstances -- exercise a disproportionate influence.[49] Beginning in 1961, the party became an increasingly important part of the L-CP governing coalition. The DLP was a fervent supporter of nuclear defenses. Indeed, the DLP was the only party to openly advocate nuclear weapons on

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45 Alan Dupont, *Australia's Threat Perceptions: A Search for Security* (Canberra: Strategic and Defense Studies Center, The Australian National University, 1991), p. 69

46 Desmond Ball, "Australia and Nuclear Policy," in *Strategy and Defense: Australian Essays*, Desmond Ball, ed., (London: George Allen & Unwin, 1982), p. 322.

47 Quester, *Politics of Nuclear Proliferation*, p. 166.

48 On the DLP, see P. L. Reynolds, *The Democratic Labor Party*, (Milton, Queensland: The Jacaranda Press, 1974); Millar, *Australia's Foreign Policy*, pp. 28-29.

49 Under the Australian system, voters could allocate their ballot to another party if their first choice lost. Thus, DLP voters could vote for their own candidates and then vote again for either the L-CP or Labor. With its control of second preference votes, the DLP could swing an election.

Australian soil, a position it incorporated into its platform in 1962.[50] It even ran television commercials on the issue during electoral campaigns. Not surprisingly, the party held a special animus for the NPT and urged its rejection.[51]

It is difficult to assess the specific impact the DLP had on government nuclear policy. Most observers describe the DLP as a powerful force, particularly in the Gorton years as the Liberals saw their share of the vote decline and became increasing dependent on DLP second preference votes.[52] Indeed, DLP unhappiness with aspects of Gorton's defense policy forced the Prime Minister to call off elections in 1968.[53] On the other hand, Gorton went against the DLP and signed the NPT.

**Assessment**

It would seem that the party politics hypothesis does not fare well as an explanation for Australia's rejection and renunciation of nuclear weapons. Australian voters were not particularly interested in nuclear issues, indeed, not interested in foreign policy in general.[54] There was, therefore, little

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[50] In 1962, DLP policy called for the basing of American nuclear weapons in Australia, but this soon gave way to the view that Australia should produce its own nuclear weapons. On the DLP's nuclear policy and political platform, see Reynolds, *The Democratic Labor Party*, p. 36; T. B. Millar, "Australia: Recent Ratification," in Robert Lawrence and Joel Larus, eds., *Nuclear Proliferation: Phase II*, (Wichita: University Press of Kansas, 1974), pp. 72, 80; Ross, *Australia and Nuclear Weapons*," p. 95. For a more general statement of the DLP's nuclear policy from one of its own, see Senator Frank McManus, "Should We Have the Bomb," *Australian*, November 15, 1967, p. 9.

[51] On the NPT, see Reid, *The Gorton Experiment*, p. 331; Burns "Australia and the Nuclear Balance," p. 146.

[52] On the influence of the DLP, see Reid, *The Gorton Experiment*, p. 146, 332; Bell, *Dependent Ally: A Study in Australian Foreign Policy*, pp. 82, 96-97, Harry G. Gelber, "Australia and Nuclear Weapons," in Johan Jorgen Holst, ed., *Security, Order, and the Bomb*, (Oslo: Universitetsforlaget, 1972), pp. 112-114; Dupont, *Australia's Threat Perceptions*," pp. 161-162. A somewhat different view is offered by Millar, who noted on the one hand that the L-CP depended on the DLP's electoral support but that ultimately, the government did not adopt the DLP's policies and that it was not "a major force in foreign affairs." Millar, "Australia: Recent Ratification," p. 72; Millar, *Australia's Foreign Policy*, pp. 28-29.

[53] Reid, *The Gorton Experiment*, pp. 141-150.

[54] This assessment is consistent with the fact that most nuclear policy was made in secret. As Trood observed, "traditionally, public policy is decided in secret, amongst senior public servants and the members of the government. Public debate usually succeeds, rather than precedes, the announcement of policy." Issues that are played out in secret are typically not the stuff of party politics. Indeed, the only pre-NPT discussion of nuclear weapons I have been able to find came in 1957, when Prime Minister Menzies discussed the issue at a press conference and when the Senate briefly discussed the idea of Australia acquiring nuclear weapons. On Australian secrecy, see Russell Trood, "Australian Uranium Exports: Nuclear Issues and the Policy Process," in *Nuclear Exports and World Politics: Policy and Regimes*, Robert Boardman and James Keeley, eds. (New York: St. Martin's Press, 1983), p. 121. On Menzies comments and their later retraction, see Australian Archives (ACT): A1945/13 186-5-3; Extract from Prime Minister's Defence Statement of 19th September, Nuclear Weapons, p. 1; Australian Archives (ACT): A1945/13 186-5-3; Defence Statement Clarification, Press Release by the Prime Minister, September 20, 1957, p. 1. On the '57 debate, see Commonwealth Parliamentary Debates (Senate), S.10, May 8, 1957, p. 608.

electoral advantage to be gained by any party. As one observer put it, "the successive elections of the period seems to indicate that the Australian governments concerned had no great reason (other than the DLP pressures) to tailor foreign policy to party necessities."[55]

More specifically, the hypothesis fails the first and fourth tests outright. It also performs poorly on the second and third tests, the main exception being Labor's brief, but critical, tenure between 1973 and 1975.

Labor, the party most opposed to nuclear weapons, was consistently rejected by voters and thus did not have an opportunity to act on its preferences until 1973 -- some twenty years after Australia's first interest in nuclear weapons. Within Labor, both voters and party leaders were divided on the nuclear issue, though the disarmament wing was able to win the intra-party struggle. When Labor finally took power, its actions in favor of disarmament were decisively important, but were more a product of an evolving ideological commitment than shrewd electoral politics. Labor did not expect, nor did it receive, an electoral boost as a result of ratifying the NPT.

## H11. The Organizational Politics Hypothesis

This hypothesis contends that organizational politics permeates the policy process, from proposals to decisions to implementation. According to this view, organizational interest explains organizational preferences and thus explains policy outcomes. Applied to the Australian case, it suggests that Canberra's nuclear decisions reflect organizational interest.[56] One proponent of this view is George Quester, who described Australia as "close to becoming a country in which a small group of nuclear physicists could physically prepare a *de facto* nuclear-weapons option and veto a legal renunciation of such weapons." Given other circumstances, Quester continued, "this scientific bureaucracy would probably have determined policy."[57]

Quester's assessment was based on an examination of Australian policy towards the NPT. For a more general assessment of the organizational politics hypothesis and Australian behavior, four tests are used. The first looks at proposals. Is there a correspondence between the organizations that sponsor acquisition or renunciation proposals and the organizations that benefit from those proposals? The second test looks at policy positions. Do an organization's policy positions on nuclear weapons correspond with the interests of the organization? The third test analyzes decision sets and the composition of the decision group. It asks if changes in the decision set and decision group correspond with changes in decision outcomes over time. Finally, a process tracing test looks to the archival record for direct evidence favoring or challenging the hypothesis.

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55 Another scholar characterized the public's role as one of "silent acquiescence." Bell, *Dependent Ally: A Study in Australian Foreign Policy*, p. 83; and J. L. Richardson, "Australia and the Non-Proliferation Treaty," p. 2.

56 For an example of the organizational politics model applied to other aspects of Australian politics, see Brian Dollery and Peter Hamburger, "Modelling Bureaucracy: The Case of the Australian Federal Budget Sector, 1982-1992," *Public Administration*, Vol. 74 (Autumn, 1996), pp. 477-507. For a more general treatment of bureaucracies in parliamentary systems, see Martin Laffin, "Understanding Minister-Bureaucrat Relations: Applying Multi-Theoretic Approaches in Public Management," *Australian Journal of Public Administration*, Vol. 56, No. 1 (March, 1997).

57 Quester, *Politics of Nuclear Proliferation*, p. 162.

**Defining Organizational Interests**

The first three tests require a definition of organizational interest. For the purposes of this study, organizational interest is defined in terms of four dimensions: budgets, autonomy, jurisdiction, and mission. One can code each organization for the effects of acquisition or renunciation on its primary bureaucratic interests.[58] Box 5.5 provides such codings for the Australian bureaucracies that participated in acquisition and renunciation decisions.

**Box 5.5. Australian Organizational Interests and the Acquisition of NW**

| Ministry | Interests | | | | No. Interests Engaged | Pro or Anti-NW |
|---|---|---|---|---|---|---|
| | 1) Budget | 2) Autonomy | 3) Jurisdiction | 4) Mission | | |
| **Defence** | + | + | + | + | 4 | Pro |
| **Supply** | + | + | + | + | 4 | Pro |
| **Atomic** | + | Variable | + | + | 4 | Likely Pro |
| **Treasury** | NA | NA | - | - | 2 | Anti |
| **Ex Affairs** | NA | NA | NA | Depends on allies | 1 | Variable |

\+ = Acquisition maintains or enhances the organizational interest
\- = Acquisition detracts from the organizational interest
NA = Acquisition does not affect the organizational interest

As traditionally understood, a nuclear weapons program would increase the budgets of Defense, Supply, and the AAEC. It would have no direct impact on the budgets of the Treasury and External Affairs. Nuclear weapons would also likely increase the autonomy of Defence and Supply, if for no other reason than the programs would be secret programs, and thus subject to review by a smaller set of civilian authorities. The autonomy of Treasury and Foreign Affairs would not be directly affected -- each would continue to freely render judgments in its own domain. For the AAEC, whether nuclear weapons would add or detract from autonomy depends on the controlling authority. Nuclear weapons could increase the autonomy of the AAEC vis-a-vis civilian authorities, again because of secrecy and as a consequence of its monopoly over information. On the other hand, a nuclear weapons program might entail ceding autonomy to the military. As regards jurisdiction, Defence, Supply, and the AAEC could expect that their jurisdictions would expand, especially if the country opted for an indigenous fuel cycle, and Treasury's jurisdiction might shrink with the expansion of classified projects.

Nuclear weapons are at least consistent with the missions of Defence, Supply, and the AAEC.[59] For Treasury, nuclear weapons -- representing a new and potentially costly program -- would run

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58 Since nuclear proposals can differ in significant ways, a general coding for interest requires several assumptions. One key assumption is that a nuclear weapons program will be funded on the basis of new funds and not from cuts in existing program funds.

59 The AAEC was statutorily constructed in a way as to make it part of the national security architecture. The secrecy rules under which it operated made it distinct from a purely scientific organization, and indeed, some scientists who first worked at the AAEC expected that their efforts might be directed towards nuclear weapons. See Cawte, p. 118; Carr, "Australia and the Nuclear Question," pp. 169-170; Ann M. Moyal, "The Australian Atomic Energy Commission: A Case Study in Australian Science and Government," *Search*, Vol. 6, No. 9, September, 1975, p. 367.

counter to the organization's mission of exercising budget restraint. For External Affairs, whose mission might be defined as maintaining good relations with Australia's "great and powerful friends," the desirability of nuclear weapons depends on the attitude its allies. If the US and UK want Australia to acquire nuclear weapons, then nuclear weapons would not detract from EA's mission. If, on the other hand, the US or UK object to Australian nuclear weapons, then its mission might suffer.

The two organizations that stand to benefit most from a nuclear weapons program are the Air Force and the AAEC. The Air Force would be the first service to receive nuclear weapons: its planes would carry the weapons. For the Air Force, nuclear weapons would mean more resources and new advantages in its dealings with 1) other Australian services, 2) service officers from allied commands, and 3) civilian authorities and agencies. The other potential big winner would be the AAEC. A nuclear weapons program would bring resources, the ability to recruit and retain Australian scientists, and greater access to the nuclear programs of the United States and the United Kingdom.[60]

Having derived organizational interests for the relevant players, one can now proceed to test the hypothesis.

**Test 1: Proposals and Organizational Self-interest**

This first test requires a correspondence between the source of nuclear proposals and organizational interest. Organizations whose interests are maintained or enhanced by nuclear weapons will propose the acquisition of nuclear weapons, while organizations that benefit from renunciation will offer their own proposals. Of 31 known proliferation-related proposals, there is strong data concerning the origin of the proposal in 18 of the cases and incomplete data on 3 others. Box 5.6 lists the proposals, the organization or individual that sponsored it, and whether sponsorship was consistent with the organization's interest.

In this group of observations, there is a correspondence between organizational interest and nuclear weapons proposals in 17 of 21 cases. In addition, there is a correspondence between organizational interest and proposal rates: the organizations that had the most to gain made the most proposals. The Air Force was the chief proponent of atomic weapons and the service most likely to gain from their acquisition. It was the Air Service that first recommended the procurement of nuclear weapons and shepherded it through the policy process. During the procurement phase, the Ministry of Defence -- at the urging of the Air Service -- intervened on four different occasions to resuscitate the nuclear weapons proposal after it had stalled.

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[60] On the AAEC's lack of resources, see J. L. Richardson, *Sydney Morning Herald*, July 24, 1969, p. 2. Richardson describes the AAEC as "starved for money." On recruitment and brain drain problem, see *Australian Financial Review*, May 14, 1967, p. 6; Robert Sorby, "Jervis Bay's A-Day Deferred Again", *Australian Financial Review*, June 23, 1972, p. 1. On greater access to foreign programs, see Cawte, *Atomic Australia*, p. 98.

**Box 5.6. Proliferation-Related Proposals and Organizational Interest**

| # | Year | Proposals | Proposer | Corresponds w/ Interest |
|---|---|---|---|---|
| **Strong Data** | | | | |
| 1 | 56 | Request NW information from US. | Air | Yes |
| 2 | 8/56 | Seek pact on defense uses of nuc energy. | MOD | Yes |
| 3 | 11/56 | Seek NW procurement from UK officials. | Air | Yes |
| 4 | 1/58 | Seek acquisition of V-Bomber for NW. | Air | Yes |
| 5 | 2/58 | PU reactor for NW. | AAEC/ND | Yes |
| 6 | 2/58 | Seek NW procurement from UK officials. | Air | Yes |
| 7 | 2/58 | Seek NW information from UK. | MOD | Yes |
| 8 | 4/58 | Ban discussion of NW with UK officials. | PM | Not Apply |
| 9 | 60 | Seek acquisition of Bloodhound missile. | Air | Yes |
| 10 | 60 | Seek acquisition of TSR-2. | Air | Yes |
| 11 | 7/61 | Seek nuclear weapons info from UK. | Supply | Yes |
| 12 | 63 | Seek nuclear capable F111. | Air | Yes |
| 13 | 67 | Impose uranium export restrictions. | ND | Yes |
| 14 | 69 | Request support for PNE program. | AAEC/ND | Yes |
| 15 | 70 | Sign NPT. | EA | Yes |
| 16 | 71 | Reassess nuclear reactor. | Tr | Yes |
| 17 | 73 | Ratify NPT. | PM | Not Apply |
| 18 | 84 | Pursue of nuclear capability | EA | No |
| **Partial Data** | | | | |
| 19 | 59 | Establish Defence Nuclear Officer | MOD/Supply | Yes |
| 20 | 61 | Seek NW-on-demand from UK/US. | EA/PM | No |
| 21 | 69 | Seek nuclear agreement with France. | ND | Yes |

Air: Air Service
Supply: Ministry of Supply
AAEC: Aus Atomic Energy Comm
ND: Ministry of National Development
PM: Prime Minister
MOD: Ministry of Defence
Tr: Ministry of the Treasury
EA: Ministry of External Affairs

The two counter instances are both cases in which the Ministry of External Affairs sponsored a pro-nuclear proposal. Two proposals are coded as not relevant, because the sponsor was the Prime Minister, who was not acting on behalf of any one ministry or organization.[61]

**Test 2. Policy Positions and Organizational Interest**

The second test is really a test of Miles' Law, that "where you stand depends on where you sit." At issue is whether there is a correspondence between the positions held by the leaders of the relevant organizations and the interests of the organizations they represent.

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61 The 1961 weapons-on-demand proposal was offered by Menzies who, at the time, was both Prime Minister and Minister of External Affairs. The Labor government under Whitlam did away with the traditional cabinet structure, but it was clearly the PM himself who was behind the move.

In general, there does seem to be a correspondence between organizational interest and policy positions. Regarding the NPT, for example, one commentator observed that...

> Within the Department of Defence there is a school of thought which believes that in view of the great range of uncertainty in all Australia's strategic planning at present, a clear renunciation of weapons options might be unwise. The weight of opinion in the Treasury seems to be that no major expenditures in this direction are warranted; and in Foreign Affairs the dominant view is probably that moves towards a weapons option would have highly undesirable consequences vis-a-vis the US and Britain and not least, among Australia's neighbors.[62]

More specifically, one can code the nuclear preferences of policy actors and compare them with their organization's organizational interest. For the period between 1955 and 1972, it is possible to code the nuclear preferences of 20 of the 30 policy actors who served in the relevant ministries and agencies.[63] Partial data about two other ministers allows one to estimate of their preferences, although with less confidence. Measured in years of tenure, these organizational players held office for 85 out of a possible 102 years.

Box 5.7 provides the list of organizational players. Ministers whose preferences on nuclear weapons are known are in bold. Two ministers for whom there is partial information are in brackets (Henty, Anderson). Information on the others is lacking (Paltridge, Garland, Schwartz, Barwick, Fadden, Holt, Bury, and Bowen).[64]

**Box 5.7. Ministers of Nuclear-related Ministries and Director of the AAEC, 1955-1972**

| Defence | Supply | Development | External Affairs | AAEC | Treasury |
|---|---|---|---|---|---|
| **McBride 55-8** | **Beale 55-7** | **Spooner 55-64** | **Casey 55-9** | **Baxter 55-72** | Fadden 55-8 |
| **Townley 59-63** | **Townley 58** | **Fairbairn 65-9** | **Menzies 60-61** | | Holt 59-65 |
| Paltridge 64-5 | **Hulme 59-61** | Schwartz 70-2 | Barwick 62-3 | | **McMahon 66-9** |
| **Fairhall 66-9** | **Fairhall 62-5** | | **Hasluck 64-8** | | Bury 70-1 |
| **Fraser 70** | [Henty] 66-7 | | **Freeth 69** | | **Snedden 72** |
| **Gorton 71** | [Anderson] 68-71 | | **McMahon/** Bury 70-71 | | |
| **Fairbairn 72** | Garland 72 | | Bowen 71-72 | | |

62 Harry G. Gelber, "Australia and Nuclear Weapons," in Johan Jorgen Holst, ed., *Security Order and the Bomb*, (Oslo: Universitetsforlaget, 1972), p. 114.

63 When Labor entered in 1973, Whitlam substantially changed the Cabinet structure and placed most issues pertaining to foreign affairs under his direct control.

64 While there is some information on Holt, there is little direct data about his general attitude towards nuclear weapons, certainly nothing that would be the equivalent of Menzies' 1957 press conference or Gorton's many pronouncements on the issue. His position opposing the transfer of American safeguards to IAEA may indicate that he favored nuclear weapons. If so, Holt would represent another case contrary to the hypothesis.

Of the 22 organizational players that can be coded, 20 out of the 22 articulated positions on nuclear acquisition or renunciation consistent with their organization's interest. The two ministers who adopted views at odds with their organization's interest are shown in gray (Freeth, Snedden).[65] Measured in years of tenure, there is a correspondence between position and organizational interest in 83 out of 85 years.

**Test 3. Outcomes Vary with Changes in the Decision Group and Decision Set**
The third test looks a correspondence between the composition of the decision group, the decision set, and decision outcomes. For example, if at $Time_1$, two out of three organizations participating in a decision group have an organizational interest that favors the acquisition of nuclear weapons, and at $Time_2$, one of the pro-nuclear organizations does not participate, then the content of the decisions should differ, i.e., the second decision should less strongly favor the acquisition of nuclear weapons.

We can apply this test to the Australian case by looking at nuclear weapons decisions across three periods: the procurement phase (1955-1963), the indigenous option phase (1964-1967) and the NPT vs. Option phase (1968-1971).

Changes in the Decision Group and Decision Set
Box 5.8 summarizes the changing alternatives, actors, and results over a seventeen year period. The list of potential organizational players included the Ministry of Defence, the Australian Atomic Energy Commission, the Ministry of Supply, the Ministry of External Affairs, and the Ministry of Treasury. The other player of note was the Prime Minister.

In the 1950s, the primary participants were the Defence Committee, the Minister for Defence, and the Prime Minister, who had no enthusiasm for the project, but was facing a unified front from his military. The decision set included procuring nuclear weapons from allies, building a plutonium plant, and standing pat. The Defence Committee preferred procurement, because it appeared to be a more direct and less expensive route to nuclear weapons. Standing pat was rejected. Treasury was not a significant player, because procurement would not have involved large expenditures. And since the proposed transfer was from an ally, External Affairs went along with the idea. Overall, External Affairs played a skeptical, but minor, role in the policy process.

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65 The two exceptions, Freeth and Snedden, are themselves telling. Freeth, a Minister of External Affairs who was critical of the NPT, and Sneeden, a former Treasury official who supported maintaining a nuclear option, were both ministers with no prior experience in their new positions and who served comparatively brief tenures. The ill-fated Freeth served less than a year as Minister of External Affairs, after having served a stint as Minister for Air. The opposition leader provided this assessment of Freeth's qualifications: "Looking back, I can't think there was ever a minister with so little interest in the subject or (so little) seniority in the ministry to have this portfolio." Reid, *The Gorton Experiment*, p. 196. Snedden was Treasurer for roughly a year and a half, but his opposition to the NPT predated his position at Treasury by more than a year.

**Box 5.8. Decision Sets, Groups, and Results Over 3 Historical Periods.**

| | Procurement 1954-1963 | | Indigenous Option 1964-1967 | | NPT vs. Option 1968-1970 | |
|---|---|---|---|---|---|---|
| **Decision Set** | 1) Procure NW from US/UK, 2) Build Australian PU plant; Stand pat. | | 1) Conduct feasibility studies; 2) Build reactor; 3) Stand pat. | | 1) Sign the NPT; 2) Develop NW option; [Stand pat]. | |
| **Decision Group** | View of NW | Active Player | View of NW | Active Player | View of NW | Active Player |
| Defence | SF | Yes | SF | Yes | Favor | Yes |
| AAEC/ND | SF | Yes | SF | Yes | SF | Yes |
| Supply | SF | Yes | SF | Yes | SF | Yes |
| Ex Affairs | LA | No | O-SO | No | SO | Yes |
| Treasury | I | No | SO | Yes | SO | Yes |
| PM | O | Yes | O[66] | Yes | SF | Yes |
| Other | | | | | O[67] | Yes |
| **Result** | Only PM opposes bomb. PM reluctantly asks British about NW. | | Treasury and PM oppose. Paper studies; reactor rejected; no definitive commitment. | | PM supports bomb but EA, Treasury strongly oppose and Defence divided. NPT signature withheld for two years. Nuclear option pursued: PNE project, Jervis Bay reactor, French treaty. | |

SF Strongly favor F Favor LA Leaning against I Indifferent
SO Strongly oppose O Oppose LT Leaning towards NW Nuclear weapons

In the mid-1960s, the focus shifted from procurement to indigenous development. Pursuing indigenous development would require government expenditure. As a result, the Treasury became an active player. When the NPT was formerly proposed in 1968, the constellation of active participants again changed. The introduction of the NPT meant that an Australian nuclear weapons capability could no longer be defined primarily as a defense issue. The NPT was sponsored by the US and Britain, and that made nuclear weapons a matter of foreign policy, and for External Affairs, a question of Australia's relationship with its most important allies.

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66 Menzies, in this period, was Prime Minister from 1964 through 1966, when Holt took over. Holt's views of nuclear weapons are not well documented.

67 By 1968, a dissident group within Defence had begun to express reservations about purusing nuclear weapons. There were divisions of opinion between the services as well as between the top leadership and lower levels within the Ministry. During the NPT debate, some press reports even suggested that the Ministry of Defence actually supported the Treaty. Closer to the truth was Millar's observation that "officials of the Defense Department ... took a mixed and more complex view of the matter." On press reports concerning Defence and the NPT, see Ian Fitchett, "Government Split on Signing of Nuclear Agreement," *Sydney Morning Herald* , March 3, 1969 p.1; Jonathan Gaul, "Australia Holds Back on Nuclear Treaty," *Canberra Times*, March 4, 1969, p. 2; *The Bulletin* (Sydney), "Australia (At Last) Goes Nuclear," August 2, 1969, p. 23. See also Cawte, *Atomic Australia*, p. 117; *The Bulletin* (Sydney) June 29, 1968 p. 18.

Changes in Outcomes

How did the changing decision groups and decision sets affect the outcomes? During the procurement phase, the main source of resistance to nuclear acquisition was the Prime Minister. After being subjected to a sustained lobbying effort, Menzies reluctantly agreed to "explore" the issue with the British, who, in fact, were more sympathetic to the idea than the Australian leader.

In the indigenous option phase, China tested its own nuclear weapon, but opposition to nuclear weapons actually *increased* as the Treasury came on the scene as a player. The result was that Australia's nuclear decisions actually reflected a *lower* level of policy commitment. Rather than bargaining for weapons, Australian officials were now reduced to doing paper studies.

The arrival of a new Prime Minster and the NPT altered the mix once again. Gorton came to office favoring nuclear weapons, but new opposition players also entered the process. The result was a standoff over the NPT but forward progress on a reactor and other attempts to build Australia's nuclear options.[68] In 1970, an intra-party coup toppled Gorton and brought an anti-nuclear PM to office ( McMahon, the former Minister of Treasury and Minister of External Affairs). The reactor project was suspended but the NPT remained unratified.

In sum, there is a correlation between changes in the organizational composition of the decision group, decision set, and decision outcomes. During the procurement phase, all three participating organizations favored the acquisition of nuclear weapons and nuclear-related activity was intense. Only a reluctant PM held matters in check. During the early indigenous phase, a new anti-nuclear organizational player joined Menzies in opposition, and nuclear activity declined dramatically, despite the Chinese test. In the NPT period, the pro-nuclear Gorton joined the decision group but the opposition expanded as well. The result was stalemate on issues requiring consensus (e.g., the NPT), but pro-nuclear decisions in areas where pro-bomb groups had discretion (e.g., the a nuclear agreement with France) or where the opposition could be excluded (e.g., External Affairs and the decision to build a reactor).

**Test 4. Process Tracing Test**

The fourth test of the organizational politics hypothesis looks to the archival record for evidence linking organizational motivations and behavior. Evidence comes in two kinds. One is indirect. Take, for example, British descriptions of Air Marshall's Scherger's motivation for wanting nuclear weapons. They suggest that Scherger's real objective was not nuclear weapons, but rather the planes that would carry them.

> The idea stems from his own strategic thinking, i.e. that a medium bomber force is a desirable part of the Australian Defence Forces; He plans to use the prospect of obtaining the atomic bomb to persuade Australian Ministers to give him medium bombers. ...In our opinion the R.A.A.F. are serious in their intentions to press their case for a medium bomber force and, therefore, for the atomic bomb.[69]

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68 Howson, *The Life of Politics: The Peter Howson Diaries*, pp. 424-425.

69 PRO: D0 35/8287; Copy of a Note by United Kingdom Service Liaison Staff, [October 22, 1957], p. 1 (Top Secret UK Eyes Only). If true, it would be an ironic counterpoint to a position later advocated by British officials: provide nuclear weapons to the Australians, so that the UK could sell them the bombers to carry them.

There is also direct evidence. The best example is provided by Prime Minister Menzies, who complained to his British counterpart in January of 1957 that he was facing "internal pressures...e.g., from the Atomic Energy authority" to pursue nuclear weapons. In short, the most important actor in the policy process explicitly identifies a cause of action at the time at which he is acting, i.e., when he is inquiring about the procurement of nuclear weapons. Of course, he could be lying or posturing, but if that is not the case, then his statement would have to be counted as powerful evidence favoring of the organizational politics hypothesis.

**Other Available Information**

The organizational politics hypothesis is also consistent with other information about Australian nuclear decision making. There is, more specifically, striking evidence of three behaviors commonly associated with organizational politics: lobbying, alliance formation, and manipulation of information asymmetries.[70]

Of the many surprises in Australia's nuclear history, one of the more intriguing has to be the way in which Australian officials engaged in cross-national lobbying as a tactic for improving their domestic position. Air Marshall Scherger successfully lobbied British service officers, securing their support for the transfer of nuclear weapons. He then used that commitment to persuade officials back in Australia that the British were interested in the transfer of nuclear weapons, and that the Australian government should approach the UK government on the subject. The cross-national effort was such that Prime Minister Menzies felt compelled to ban the Defence Committee and the service chiefs from discussing the subject of nuclear weapons with their British counterparts.

Nuclear opponents engaged in their own lobbying efforts, but with less success. For example, a senior External Affairs official, M. R. Booker, urged the US government to "lay it on the line with Gorton" regarding the NPT, but the Nixon administration had other ideas.[71]

Closer to home, bomb advocates lobbied their Australian colleagues. When Menzies complained to Macmillan of pressure from the AAEC, he was no doubt thinking of Sir Philip Baxter, head of the atomic agency. Baxter had emerged as an influential behind-the-scenes-player, credited by friend and critic alike for his bureaucratic acumen and influence over government policy. He was said to be "the dominant bureaucratic nuclear policy advisor."[72] As Cawte describes him,

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70 During deliberations over the NPT, commentators in the press pointed to what they called a "bomb lobby" and often described the decision process as a political battle between ministries. On the "bomb lobby," see S. Encel and Allan McKnight, "Bombs, Power Stations, and Proliferation", *The Australian Quarterly*, Vol. 42, No. 1 (March 1970), p. 15 and Ball, "Australia and Nuclear Policy," p. 321. On nuclear policy as a fight between ministries, see for example, Millar, "Australia: Recent Ratification," p. 78; *Sydney Morning Herald*, February 28, 1970, p. 5; *The Bulletin* (Sydney), June 29, 1968, p. 18; Jonathan Gaul, "Politics," *Canberra Times*, March 4, 1969, p. 2.

71 NAII, Telegram from the American Embassy in Canberra to the SOS, Subject: Discussion of NPT and Atomic Energy Matters during Visit Australian Prime Minster Gorton, April 19, 1969, pp. 2 DD (Secret, Limdis), DOS Central Files, 1967-1969, Folder Pol 7, 3/1/69, Australia, Box 1842.

72 Alan Wood, "Nuclear Differences in Canberra," *Australian Financial Review*, July 15, 1969, pp. 1, 4.

> He was to prove a lobbyist par excellence. Beale had been surprised that a man of science could have Baxter's organizational abilities. A more recent commentator has suggested that such was Baxter's genius that 'If twenty years ago (he) had been put in charge of the development of poultry manure, Australians today would find it as an additive in petrol and margarine and probably using it as soap'....[73]

One way Baxter maintained his influence was through the control of information. Nuclear weapons were a technically complex subject about which few elected leaders or bureaucrats had any knowledge. The technical nature of the subject gave Baxter a decided advantage.[74] Equally important was the role of secrecy. From its inception, the AAEC had been the subject of secrecy and security laws. The purpose of the laws was to prevent sensitive nuclear information from leaking to the Soviets, but the effect was to give the AAEC a virtual monopoly on information related to nuclear technology.[75]

Bomb opponents, realizing their disadvantage, tried to counter the information asymmetry. In the early 1960s, the Ministry of External Affairs attempted to hire its own nuclear advisor, but Baxter beat back the proposal.[76]

**Assessment**

The empirical record shows strong support for the organizational politics hypothesis. As Box 5.9 indicates, the hypothesis passes all of the tests, and does so robustly. The correlations are strong, and the quality of some of the process tracing evidence is extraordinary. In addition, the results of the tests are consistent with other information about Australian nuclear decision making.

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73 Cawte, *Atomic Australia*, p. 104. One newspaper called him "an accredited and formidable builder of empires." *Australian Financial Review*, May 14, 1967, p. 6. On his effectiveness as a lobbyist, see *Sydney Morning Herald*, July 17, 1969, p. 5; *Australian Financial Review*,, July 18, 1969, p. 21; Allan Barnes, "Scientists Had a Change of Heart," *The Age*, February 23, 1970, p. 7; "About Turn, Nuclear Quick March", *The Bulletin* (Sydney), February 28, 1970, pp. 21-22; David Solomon, "N-treaty: Now Is the Time to Sign", *The Australian*, February 10, 1970, p. 9; Desmond Crowley, ed., "On the Nuclear Threshold," *Current Affairs Bulletin*, Vol. 45, No. 2, December 15, 1969, p. 26; Bellany, *Australia in the Nuclear Age: National Defense and National Development* , p. 107; Carr, "Australia and the Nuclear Question," pp. 128, 145, 159.

74 On the broader tendency for Australian political leaders to defer to civil servants or service personnel on technical matters, see Millar, "The Political-Military Relationship in Australia", in Desmond Ball, ed., *Strategy and Defense: Australian Essays* (London: George Allen & Unwin, 1982), p. 288; Desmond Ball, "Australian Defense Decision-Making: Actors and Process", in *Strategy and Defense: Australian Essays*, Desmond Ball, ed., (London: George Allen & Unwin, 1982) p. 300.

75 Crowley, "On the Nuclear Threshold," p. 28; Cawte, *Atomic Australia*, pp. 104, 110, 118; Moyal, "The Australian Atomic Energy Commission: A Case Study in Australian Science and Government," pp. 367, 370; Carr, "Australia and the Nuclear Question," pp. 169-170.

76 Carr, "Australia and the Nuclear Question," p. 109; Cawte, *Atomic Australia*, p. 118.

**Box 5.9. Summary of Organizational Politics Tests**

| Test | Pass or Fail | Comments |
|---|---|---|
| 1) Correspondence between proposals and organizational interest. | Pass | Correspondence in 17 of 21 cases. The organizations most likely to benefit offered the most proposals. |
| 2) Correspondence between policy positions and organizational interest. | Pass | Correspondence in 20 of 22 cases of organizational position taking. |
| 3) Correspondence between changes in the decision group, decision set, and changes in outcomes. | Pass | Correspondence across three phases of nuclear policy. Result particularly noteworthy in the period from 1964-1966, where organizational opposition increased and nuclear commitment declined even in the face of the Chinese nuclear test. |
| 4) Process tracing test. | Pass | Australian Prime Minister cites "pressure" from the AAEC when discussing nuclear weapons with the UK. |

These are strong results, but enthusiasm for the organizational politics hypothesis should be tempered. The results also show that the Prime Minster is often the single most important actor in nuclear decisions. It was Menzies, for example, who stood in the way of bomb procurement in the 1950s and 1960s, and it was Gorton who got the Jervis Bay reactor program going after it had been rejected three years earlier. The Prime Ministers are in a singular position to affect policy, but they are not the only actors. The ability of Prime Ministers to prevail depends on the composition and preferences of the entire decision group. Organizations can thus play a powerful role, at times even forcing the hand of a reluctant executive.

## H12. The Liberalization Hypothesis

The liberalization hypothesis maintains that as developing states seek to liberalize their economies and generate foreign investment, they will join international regimes, and in particular, the nonproliferation regime. Since Australia is not a developing country, and was already considered a member in good standing in club of industrialized nations, the liberalization hypothesis does not apply.

## H13. The Regime Hypothesis

The regime hypothesis maintains that the nonproliferation regime, and the NPT in particular, inhibit the spread of nuclear weapons. The regime is said to have a variety of effects. Members of the regime feel constrained from acquiring nuclear weapons, but the influence of the regime is said to affect non-members as well. The regime can, for example, facilitate coordination of nonproliferation policies (e.g., export controls) and encourage the belief that the pursuit of nuclear weapons is illegitimate. This analysis looks at three variations of the regimes hypothesis. The first is the simple "regimes prevent proliferation" variant. In form, it is not unlike the simple bipolarity and simple democracy hypotheses. Tests of the hypothesis are intended to establish a general relationship.

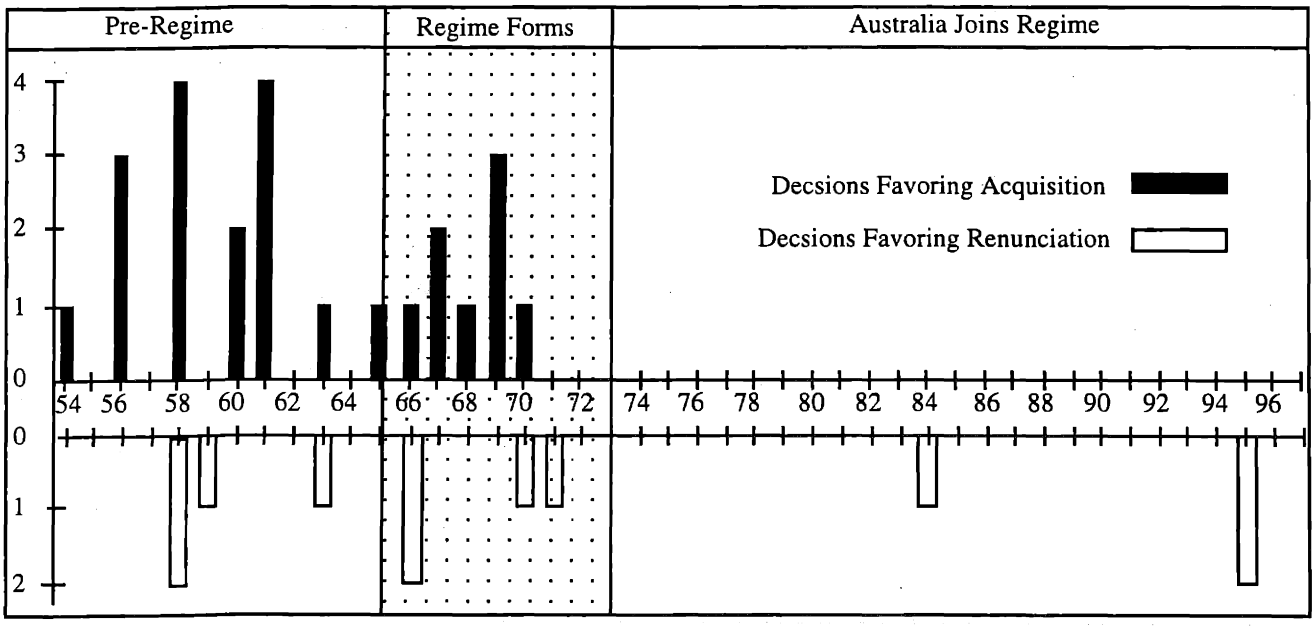
The two other variants of the regimes hypothesis are based on particular logics. The PD hypothesis is based on insights from game theory and neo-liberal institutionalism. It locates the causal power of regimes in their ability to resolve a rational dysfunctionality. The international law variant harkens back to the legal tradition in international relations and offers an explanation that focuses on states' attitudes toward their legal obligations. The simple version of regimes hypothesis is considered first.

### Test 1. Regime participation and Nuclear Decision Making

The test for the simple regimes hypothesis compares nuclear decision making under a regime and nuclear decision making when a regime is absent. The hypothesis predicts that in the absence of a regime, a state will make more frequent and more serious decisions favoring the acquisition of nuclear weapons.

Box 5.10. displays Australian nuclear decision making over three periods. The first period, beginning in the 1950s and ending in the mid-1960s, is the pre-regime period. No international regime of consequence operated during this period. The second period covers the formation of a international regime and ends on the eve of Australia's entry into the NPT in 1973. During this period, a regime is being formed and takes effect, but Australia is not yet a member. The last period begins with Australia's ratification of the NPT and continues through today.

**Box 5.10. The NPT and Nuclear Decision Making**




The results offer a compelling picture. The periods before NPT ratification are characterized by more frequent and more serious decisions favoring nuclear weapons. Indeed, *all* pro-nuclear decisions fall to the left of the NPT line. After NPT ratification, pro-renunciation decisions continue, and if anything, increase in intensity. A similar picture emerges when one analyzes the pattern of *proposals*. After 1973, there is only one proposal favoring nuclear weapons -- the 1984 suggestion by Bill Hayden, the Australian Minister of the Department of Foreign Affairs and Trade, to explore a nuclear weapons capability.

The chart does not reveal much of a difference between the first two periods, i.e., pre-regime versus a regime without Australia. Even after 1968, when the NPT opened for signature, Australian officials were still looking to develop an indigenous capability.

**Assessment**

The results would appear to support the simple regimes hypothesis, at least for states that join the regime. Regime effects on non-members would appear to be negligible. The strong results for regime members has to be taken with some caution, however. First, there are more decision points on the left side of the chart, in part, because we know more about that time period. Archival material is largely unavailable for the post-1973 period.

Second, there is the issue of scope. The regime hypothesis may explain nuclear restraint after 1973, but it cannot account for similar behavior prior to 1973. In short, regimes were not a factor in the vast majority of decision outcomes.

Third, the regimes hypothesis does not anticipate that regimes can have perverse effects, i.e., stimulating decisions that favor the acquisition of nuclear weapons. In response to the Nuclear Test Ban Treaty, Australia sought nuclear-weapons-on-demand; in response to the 1965 NPT draft, the Australian cabinet commissioned a study on the feasibility of an indigenous nuclear weapons program. As the draft became a reality, Australia's officials reacted with a second weapons study and a secret nuclear cooperation agreement with France, the self-styled leader of an alternative nuclear bloc.

The fourth and final issue concerns the difference between correlation and causality. Are regimes a cause or a marker? Do the dramatic results from the congruence test indicate that regimes determine outcomes, or are regimes simply a sign that something else has happened? If the regimes hypothesis could specify precisely how regimes come to have a restraining effect, the results of the congruence test would have greater credibility. In the sections, the two more specific variants of the regime explanation are tested.

## H14. The Prisoner's Dilemma Hypothesis

The PD hypothesis contends that states would prefer not to develop nuclear weapons, but that they find themselves in a prisoner's dilemma that forces them down the nuclear path in order to avoid a worst case scenario -- an enemy "going nuclear" while they exercise restraint. According to the PD hypothesis, the nonproliferation regime, and the NPT in particular, allow states to escape the dilemma. Adversaries can simultaneously or reciprocally renounce nuclear weapons and be assured that all parties achieve their second most preferred outcome, i.e., that no state acquires nuclear weapons.

Two tests of the PD hypothesis are considered. The first is that none of the states in the PD can be a nuclear weapons state. The second test predicts that signature and ratification of the NPT will be roughly reciprocal. As regards Australia, neither condition holds. The country about which Australia had the most concern was China, and China acquired nuclear weapons long before Australia signed and ratified the treaty.

The hypothesis fails the second test as well. The two non-nuclear countries of most interest to Australia were Indonesia and Japan. These countries' signature of the NPT appears, in fact, to

conform with the expectations of the PD hypothesis. Japan first signed the treaty. It was quickly followed by Australia, which cited the Japanese example when it signed, and only days after the Australian signature, Indonesia also signed the treaty. The problem is ratification. The Labor government ratified the treaty in 1973. Japan did not ratify the treaty until 1976. Indonesia waited even longer, ratifying the treaty in 1979. The timing suggests a lack of reciprocity. This conclusion is corroborated by the circumstances of Australia's ratification. Labor intended to ratify the treaty *irrespective* of the behavior of Japan and Indonesia, not because there was some advance understanding that all three countries would soon join the treaty.

## H15. The International Law Hypothesis

The international law hypothesis asserts that nonproliferation regimes restrain states from seeking nuclear weapons, because countries take their legal obligations seriously. Having committed to a international treaty, a state is unlikely to violate its pledge, even when a change in government brings pro-nuclear officials into power. A state's motivations for keeping its commitments may vary -- from international norms to calculated self-interest. For advocates of the international law hypothesis, what is important is that states abide by their legal commitments.

To assess the strength of these claims, three tests are applied. The first two are based on the observable implications of the hypothesis. If states take their international legal commitments seriously, then one can expect that 1) they have not have violated similar treaty commitments in the past and 2) that they will pay costs to avoid unwanted treaty obligations. If treaties are not a constraint, then there should be no reason for a country to pay costs to avoid them.

### Test 1. Treaty Violations

Has Australia violated previous treaty commitments? To answer that question, one first needs an appropriate set of treaties. ACDA, the UN, and Multilaterals Project at Tufts University have compiled lists of treaties in the field of arms control and disarmament.[77] Of the three, the ACDA list is the best suited for this exercise, because it contains the largest number of nuclear-related treaties.[78] After removing bilateral and NATO treaties from the list, the ACDA treaty set contains 14 treaties related to arms control and disarmament, 9 of which have to do with nuclear weapons.

**Box 5.11. ACDA List of International Arms Control Treaties**

| | |
|---|---|
| Geneva Protocol | Environmental Modification Convention |
| The Antarctic Treaty | Nuclear Material Convention |
| Limited Test Ban Treaty | South Pacific Nuclear Free Zone Treaty |
| Outer Space Treaty | Missile Technology Control Regime |
| Non-Proliferation Treaty | Chemical Weapons Convention |
| Seabed Arms Control Treaty | The African Nuclear-Weapon-Free Zone Treaty |
| Biological Weapons Convention | Comprehensive Nuclear Test-Ban Treaty |

[77] The Multilaterals Project is housed at the Fletcher School of Law and Diplomacy at Tufts University. It can be found at http://www.tufts.edu/fletcher/multilaterals.html. The United Nations Treaty Series can be found at http://www.un.org/Depts/Treaty/collection/series/search.htm.
[78] On the ACDA list, see http://www.acda.gov/treaty.htm.

Australia is a party to all of the treaties except for the African NWFZ. So far, it does not appear that Australia has violated any of these commitments. The UN, the Red Cross, SIPRI, and ACDA do not report any allegations of treaty violations by Australia.

**Test 2. Paying costs to avoid unwanted legal obligations.**
Has Australia paid costs to avoid treaties it did not like? On occasion. A review of the ACDA list suggests that in most cases, Australia's treaty obligations have only obliged it to refrain from what it had no intention of doing. So, for example, it signed and ratified the Antarctic Treaty, the Outer Space Treaty, and the Seabed Arms Control Treaty, almost immediately but, of course, Canberra had no plans to put nuclear weapons in outer space or in similar venues. Two other treaties were quickly signed and ratified, the South Pacific NWFZ Treaty and the CTBT. In both cases, Australia was a leading sponsor, not a reluctant joiner.

In two cases, the NPT and the Nuclear Materials Convention, Australia was slow to join, taking five and seven years, respectively, to ratify. More is known about the NPT case, where the government publicly articulated its opposition to the treaty. Australia wanted to keep open the nuclear option and saw the NPT as threatening that possibility. In other words, the Australian government took the NPT quite seriously. The NPT was, in fact, the last in a series of arms control treaties that Australia had opposed precisely, because it was feared that the treaties would inhibit the development of nuclear weapons. In 1961, in response to the NTBT talks, Prime Minister Menzies sought a nuclear weapons-on-demand agreement. In 1966, the Holt government was willing to shut down Lucas Heights reactor facility -- a sizable cost -- rather than submit to an IAEA inspections system that would foreclose Australia's bomb option.

In all three cases -- NPT, NTBT, and IAEA -- Australian officials took action on the presumption that the unwanted treaty obligation would limit Australian nuclear options. Each of these cases supports the general proposition that Australia took its international legal obligations seriously -- a result consistent with the international law hypothesis.

Test 3. Process Tracing
Data for process tracing is limited, since most documents related to NPT ratification remain classified. Two pieces of evidence do suggest, however, that a sense of legal obligation may have influenced nuclear decision making. The first is a letter to the editor written by a former Prime Minister, William McMahon.

In 1975, McMahon wrote to the *Sydney Morning Herald*, to complain about an article concerning the demise of the Jervis Bay reactor under McMahon's administration. McMahon explained that the project had been killed for two reasons. One was the Treasury Department's "nagging doubt relating to the economic viability of the project."[79] The Prime Minister's other reason was rather curious. McMahon wrote that he stopped Jervis Bay, in part, because "my Government had signed the Nuclear Non-Proliferation Treaty." The claim was noteworthy because, at the time, Australia had signed but not ratified the NPT, and in any case, the NPT certainly permitted Australia to acquire a nuclear reactor. Most commentators take McMahon's statement to mean that Jervis Bay was intended to serve several purposes, including the development of a weapons option. If this interpretation is correct, then McMahon's intervention, and the subsequent death of the reactor project, could be attributed, in part, to the force of international law.

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79 "No Plans for Plutonium Says Ex-PM," Letter to the Editor, William McMahon, *Sydney Morning Herald*, September 3, 1975, p. 6.

The second bit of process tracing data comes from an interview with Malcolm Fraser, former Minister of Defense under Gorton, and later Prime Minster between 1975 and 1983. When asked about nuclear weapons policy in his post-NPT administration, Fraser replied that the issue of nuclear weapons never came up -- "no question, not an agenda item."[80] Fraser went on to explain, that Australia had ratified the NPT. Fraser's point was that Australia's treaty commitments had decided the matter.

**Assessment**

The international law hypothesis appears to pass several tests, but few of the tests are demanding or passed with decisiveness. Australia has not violated a relevant treaty, so the hypothesis is not disconfirmed, but passing this test does not add strong support for the hypothesis. Comments by Prime Ministers McMahon and Fraser also support for the hypothesis, but the evidence is thin. The strongest evidence comes from Australia's efforts to avoid various nonproliferation obligations. Here, the record is quite strong that Australian officials believed, and acted as if they believed, that international legal obligations were sufficiently strong that they would prevent Australia from being able to acquire nuclear weapons.

# III. Summary: Comparing Hypotheses on Ideas and Institutions

This chapter analyzed the test results for the eight hypotheses having to do with ideas and institutions. As Box 5.12 indicates, some hypotheses fail outright, including democracy (H9), a liberalizing economy (H11) and the Prisoner's Dilemma (H6). Two other hypotheses perform poorly overall, but may explain particular decisions: norms (H8) and electoral politics (H10). Three hypotheses -- organizational politics (H12), the simple regimes hypothesis (H13), and the international law variant of the regimes hypothesis (H15) -- perform very well.

80 Interview with Malcolm Fraser, April 8, 1999.

**Box 5.12 Summary of Results: Hypotheses on Ideas and Institutions**

| Hypothesis | Tests | Results |
|---|---|---|
| **Ideas** | | |
| **H8. Norms** | 1) States will not seek, possess, or use stocks of chemical or biological weapons. | Fails Test<br>Australia was interested in CW until at least 1964. Norms may have contributed to nonproliferation activism in the 1990s, but the decision to renounce nuclear weapons precedes the establishment of a anti-nuclear norm. |
| **Institutions** | | |
| **H9. Democracy** | 1) Correspondence b/t level of democratic development and NDM. | Fails Test<br>Democracy is a constant and thus cannot explain variation in outcomes. Democracy does not inhibit Australia's interest in seeking nuclear weapons. |
| **H10. Electoral Politics** | 1) Correspondence b/t public opinion and NDM.<br>2) Ruling party includes nuclear stance in campaign.<br>3) Ruling party includes nuclear stance in platform.<br>4) Coalition partners include nuclear stance in platform or campaign. | Fails Tests<br>Hypothesis fails most of the tests for most of the observations. Intra-party politics helps explain ratification of the NPT by Labor in 1973. |
| **H11. Liberalizing Economies** | 1) Correspondence b/t level of liberalization and NDM.<br>2) States will join comparable regimes. | Fails Tests<br>Hypothesis not apply, since Australia is not a developing country. |
| **H12. Organizational Politics** | 1) Nuclear proposals made by organizations likely to benefit.<br>2)Policy positions consistent with organizational interest.<br>3) Correspondence b/t in decision group or decision set and NDM.<br>4) Process tracing | Passes Tests.<br>Hypothesis passes all the tests with strong results, though the PM, not organizations, appears to be the single most important player. Outcomes affected by changing composition of the decision group. Very strong process tracing evidence citing pressure by AAEC. |
| **H13. Regimes** | 1) Correspondence b/t presence and participation in regime with NDM. | Passes Test.<br>Striking correspondence between NPT ratification and changes in nuclear behavior. |
| **H14. Solving a Prisoner's Dilemma** | 1) No state will be a NWS.<br>2) Signature and ratification of NPT among PD players will be reciprocal. | Fails Tests<br>Hypothesis fails both tests. |
| **H15. Force of International Law** | 1) States do not violate other WMD treaties.<br>2) States will pay costs to avoid unwanted treaty obligations. | Passes Tests.<br>Some evidence that sense of legal obligation constrains state behavior. Australia was willing to pay costs to avoid treaties it feared would constrain its nuclear options |

NDM = nuclear decision making PD = Prisoners dilemma

Nasser went on to describe the UAR's military buildup as a response to Israeli moves. He said, for example, that we know of one BW laboratory in Israel so we have two BW installations here. He said Israel started down the path of nuclear development, therefore we have had to follow. He pointed out that the Israelis had held the first missile test in the area and that the UAR program was similarly a response. He said he had evidence that the Israelis were planning to use radioactive products in warheads; that the UAR knew about the Israeli nuclear installation. Nasser implied, without saying so directly, that the UAR was moving into military applications of nuclear energy because it was convinced that the Israelis were doing so."

Memorandum of conversation, President Nasser and Robert Komer, 1963[1]

How do I know? Maybe it [Israel] will strike me tomorrow. It may use chemical weapons. It may use nuclear weapons against me for any reason. Therefore, a balance of power is a must and a big guarantee for the peace process.

It does not make any sense that I do not have any nuclear, chemical and biological weapons, while the other side [Israel] is doing what it wants with no one telling it anything. Therefore, I am worried.

President Mubarak, 1998[2]

# Chapter 6. Egypt, 1954-1967

In the next two chapters, we look in detail at Egypt's nuclear history. This tour of Egyptian nuclear decisions and outcomes will, by necessity, differ from the Australian story. The difference is mainly one of data: Egyptian archival documents on nuclear decision making are scarce. The lack of documents requires alternative sources and strategies. For source material, this case relies on interviews of Egyptian officials and archival documents from the United States and Britain. It also seeks to compensate for a lack of Egyptian documents by expanding the range of data that is analyzed. For each period examined in the Egyptian case, there is a review of nuclear decision making, but also a review of the civilian nuclear program and the broader domestic and international context. One consequence is that the Egyptian case is longer -- two chapters compared with the one case chapter for Australia.

Two periods are the focus of this chapter. The first, the "Early Years," covers the period from 1954, when Gamal Abdel Nasser assumed the presidency of Egypt, to the end of 1960, just before Israel confirmed the existence of its Dimona nuclear reactor. The second period, the "Nuclear Window," begins with the Dimona revelations and continues until the eve of the Six Day War in 1967. This is *the* crucial period in Egyptian nuclear history, and as such, it receives the most detailed examination.

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[1] Airgram from Amembassy Cairo to the DOS, Memcon with President Nasser, April 18, 1961; GRDOS; RG 59; Pol 63-66; Box 1888; File: Pol Affairs and Relations 1/1/65, Arab-Israel; NAII.

[2] "President Mubarak Grants Interview on October War Anniversary;" Egyptian Space Channel, Cairo, in Arabic 0900 gmt, October 6, 1998; *BBC Summary of World Broadcasts* (Part 4 The Middle East; IRAN; ME/D3352/MED); October 8, 1998 [Lexis-Nexis].

# I. The Early Years: 1954-1960

In this section, we look at the origins of Egypt's nuclear program -- the actors, motivations, and outside contributors that set the stage for Egypt's entry in the nuclear era. This is a period when the Egyptian nuclear program is but one of several government enterprises intended to advance the development and reputation of the new Egypt. Nuclear weapons were not a focus, but as it turns out, neither were they absent from consideration.

The chapter begins with A) an overview of the political and military context, and from there, proceeds to B) the founding of the Atomic Energy Establishment, C) the role of foreign countries in Egypt's nuclear development, and D) Egypt's ambitions for a broad-based nuclear program.

## A. The Setting: New Government, New Enemy

The origins of Egypt's nuclear program roughly coincide with the founding of the post-monarchical Egyptian state. In 1952, Gamal Abdel Nasser and his fellow Free Officers led an a virtually bloodless coup that toppled King Farouk.[3] The King's reign was widely perceived as corrupt, decadent, and inept. Unhappiness with the regime reached its acme following a clash between British troops and Egyptian police in Ismailia that left 115 Egyptians dead or wounded. Anger spilled onto the streets the next day, Black Saturday, and Cairo was left burning. Seven months later, in July of 1952, Nasser and the Free Officers made their move. The King capitulated and literally sailed off into the horizon (on the royal yacht), leaving a committee of military officers to form a new government. Two years later, in 1954, Nasser formally took the reins of power, and became Egypt's first president.[4]

The young nation faced a host of problems, including organizing a government, negotiating with a foreign power that had a thousand troops on its territory, and attending to long ignored problems of economic development. Nasser and his colleagues also had to confront another issue: an increasingly hostile relationship with Israel.

Both Nasser and the Israeli leadership had signaled early on that they were interested in reaching some kind of *modus vivendi*. Despite the good intentions, relations soon soured. From the Egyptian perspective, the final straw came in 1955, when Israel launched a military raid against the Egyptian Army Headquarters in Gaza. Egyptian and American commentators alike cite the Gaza raid as the real beginning of Egyptian-Israeli animosity.[5] Sammi Sharaf, Nasser's Minister of

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[3] On the Free Officer Revolution, Nasser's rise to power and the evolution of Egyptian governance, see Kirk J. Beattie, *Egypt During the Nasser Years*, (Boulder: Westview Press, 1994), pp. 66-111; P. J. Vatikiotis, *Egypt Since the Revolution*, (New York: Frederick A. Praeger, 1968); P. J. Vatikiotis, *The Egyptian Army in Politics*, (Bloomington: Indiana University Press, 1961).

[4] For a general introduction to Nasser and this period, see Robert Stephens, *Nasser: A Political Biography*, (New York: Simon and Schuster, 1971); Anthony Nutting, *Nasser*, (London: Constable, 1972); Mohamed Hassanein Heikal, *The Cairo Documents*, (New York: Doubleday) 1973; Abdel Magid Farid, *Nasser The Final Years*, (Ithaca: Ithaca Press, 1994); Peter Mansfield, *Nasser's Egypt*, (Harmondsworth: Penguin, 1969), and *Nasser--A Personal View*, (Cairo: Luxorfilm), VHS, 152 min., 1988. The figure of 115 dead and wounded comes from Nutting, *Nasser*, p. 31.

[5] Of course, one might cite the 1948 war with Israel as the beginning of Egyptian-Israeli animosity or Egyptian-assisted Palestinian raids in 1954. It is not the objective of this study to apportion blame in the Arab-Israeli dispute, but rather to understand Egyptian motivations and behavior. In

Presidential Affairs, recalled that Gaza "turned everything upside down." "Changed everything," said former American Ambassador to Egypt, Herman Eilts. Ahmed Fahkr, the former director of the National Center for Middle East Studies in Cairo, was a young Egyptian officer at the time of the Gaza raid. He described how before the raid, the daily training of the Egyptian military focused on the British threat. After Gaza, Egyptian military officers increasingly spoke of a new enemy: Israel.[6]

The following year, Egyptians saw their suspicions confirmed with the outbreak of the Suez War. After Nasser had nationalized the Suez canal, Israel joined Britain and France in a coordinated attack. A scant three years after having thrown out its monarch, the Egyptian government faced a major war, one in which it fared poorly. Indeed, the battlefield outcome would have been worse had the superpowers not intervened to end the conflict. What Gaza had started, Suez finished. For Egyptians, Israel had become a fully minted military threat and an increasingly prominent political issue.

The military threat posed by Israel acquired a new dimension in 1959. Israel, it appeared, wanted the bomb.[7] An Egyptian physicist working at the Argonne Lab wrote to his government in 1959, warning that he had observed four Israeli scientists working in a classified section of a nuclear metallurgy lab -- the plutonium group. The work of the Israelis and comments by his American colleagues led the young physicist to conclude that Israel was pursuing a nuclear weapons capability, and that individual Americans were contributing to the effort.[8]

A more concrete indication of Israel's intentions was the construction site for the Dimona nuclear reactor. Amin Howeidy, a former Minister of Defense and Vice Chief of Intelligence, claims that he was the first person to see Egypt's aerial photographs of Dimona. After hearing suspicious reports about the facility, Howeidy ordered four planes to take pictures of Dimona. He ended the flights in 1959, after Israel had turned the site into a "citadel." The photographs convinced Howeidy that Israel was lying about Dimona, and furthermore, that Israel had started down the path to nuclear weapons.[9]

As 1959 became 1960, the Egyptian-Israeli relationship only worsened. February saw repeated clashes between Israel and Egypt.[10] That same month, France detonated its first nuclear device in

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any event, when Nasser took power, Israel was *not* a top military priority. On the Gaza raid and Egyptian-Israeli relations in the 1950s, see Beattie, *Egypt During the Nasser Years*, p. 114-115 and Nutting, pp. 90-109.

[6] Interviews with Sammi Sharaf, January 6, 1997; Herman Eilts, September 10, 1993; Ahmed Fahkr, April 20, 1995/ December 30, 1996.

[7] For a history of Israel's nuclear program see Avner Cohen, *Israel and the Bomb*, (New York: Columbia University Press, 1998); Shlomo Aronson, with Oded Brosh, *The Politics and Strategy of Nuclear Weapons in the Middle East*, (Albany: State University of New York, 1992); Seymour M. Hersh, *Samson Option : Israel, America and the Bomb*, (London: Faber, 1993).

[8] Interview with Mohamed Ezzat Abdelaziz, February 13, 1995, April 27, 1995. Abdelaziz went on to have a distinguished career at the AEE, serving as its director and receiving the country's highest medal for civilian service in the nuclear field.

[9] Interview with Amin Howeidy, April 26, 1995, and January 1, 1997.

[10] Indeed, some US reports suggested that Egypt was expecting a full-scale attack from Israel and was mobilizing men and supplies in anticipation of the fighting. Throughout the year there were

North Africa, and throughout the year, Egyptian and Israeli officials exchanged barbs over a variety of issues.

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Overall, the period from 1952 to 1960 had been an exhilarating if difficult time for Nasser and his country.[11] There was the humiliation of the Gaza raid and the military defeat in Suez. Still, the political victory in the Suez War more than compensated for the battlefield losses. After Britain, France, and Israel were forced to withdraw, Nasser won international acclaim, particularly in the Arab world. The leading monarchies of the Middle East -- Saudi Arabia, Jordan, and Iran -- may have viewed Nasser as a new threat, but among the Arab masses, a new hero was born. Flush with the success of Suez, Nasser reached still further. In 1958, he announced the creation of the United Arab Republic.[12] The UAR -- the formal merging of Egypt and Syria -- represented the height of pan-Arabism, and a tremendous personal victory for Egypt's president.

## B. The Founding of Egypt's Nuclear Program: Rahman and Nasser

Within Egypt, a small group of scientists and other professionals had been following developments in the nuclear field since the early 1950s, but it was not until the fall of King Farouk that the government showed an interest in nuclear research. Among those serving in the new government was Ibrahim Hilmy Abdel Rahman, the secretary of the cabinet.[13] On his own initiative, the

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small-scale exchanges between the rival air forces. On the border clashes, see Memo from G. Lewis Jones, NEA to the SOS, Your Appointment with Israel Ambassador, February 1, 1960; General Records of the Department of State, Central Decimal File, 1960-1963; 684A.86/18-2860 (6); Box 1385; NAII; Foreign Service Dispatch from American Embassy Cairo to the DOS, Joint WeekA NO. 5, February 6, 1960; GRDOS; CDF 1960-1963; 786B, 1-860; Box 2073; NAII. On the fear of war, see : Incoming Airgram from AmConGen, Alexandria, to SOS, February 17, 1960; GRDOS; CDF 1960-1963; RG 59; B2071/7866.00/2-160; Box 2071; NAII; Outgoing Telegram from the DOS to Amembassy Tel Aviv, February 17, 1960; GRDOS; CDF 1960-1963; RG 59; 684A.86/18-2860 (6); Box 1385; NAII; Foreign Service Dispatch from American Embassy Cairo to the DOS, Joint WeekA NO. 7, February 20, 1960; GRDOS; CDF 1960-1963; RG 59;786B, 1-860; Box 2073; NAII; Incoming telegram from Cairo to the SOS, February 21, 1960, GRDOS; CDF 1960-1963; RG 59; 684A.86/18-2860 (6); Box 1385; NAII; Outgoing Telegram DOS, February 26, 1960; GRDOS; CDF 1960-1963; RG 59; 684A.86/18-2860 (6); Box 1385; NAII; Foreign Service Dispatch from American Embassy Cairo to the DOS, Joint WeekA NO. 8, February 27, 1960; GRDOS; CDF 1960-1963; RG 59; 786B, 1-860; Box 2073; NAII. On the small scale exchanges, see in general, GRDOS; CDF 1960-1963; RG 59; 786B, 1-860; Box 2073; NAII.

[11] Left undiscussed here are a variety of events, including the Baghdad and Arab Solidarity Pacts (1955), the arms shipments from the USSR via Czechoslovakia (1955), and economic nationalization at home.

[12] Among other successes, one would have to count the High Dam at Aswan, Nasser's entry onto world stage at the Bandung Conference in 1955, and his subsequent leadership role in the Non-Aligned Movement.

[13] Rahman served as cabinet secretary from 1952 to 1958. He claims to have attended every cabinet meeting and signed every directive issued during this period. Interview with Ibrahim Hilmy Abdel Rahman, February 16, 1995. On Rahman's reputation within Egyptian scientific circles, see Shyam Bhatia, *Nuclear Rivals in the Middle East*, (London: Routledge, 1988), p. 50-51. Bhatia provides one of the few surveys of Egyptian nuclear policy. Others include Taysir N. Nashif, *Nuclear Warfare in the Middle East: Dimensions and Responsibilities*, (Princeton: Kingston Press, 1984); Khalil Shikaki, "The Nuclearization Debates: The Cases of Israel and Egypt," *Journal of*

energetic and well respected Rahman set out to establish a program of nuclear research, and in 1955, Egypt founded the Atomic Energy Establishment (AEE).[14]

Rahman's interest in promoting science -- and in particular, nuclear research -- found ready support from Nasser. Nasser confident Mohammed Hassanein Heikal reports that the Egyptian president was "completely interested" in nuclear technology, an interest fed by foreign visitors such as Homi Bhabha, India's most dedicated proponent of all things nuclear. According to Heikal, Nasser believed that Egypt had to pursue nuclear technology to avoid lagging behind other countries. Nasser, himself, declared that, "We missed out in the steam age, and also in the electricity age, but we ought not allow ourselves under any circumstances to be left behind in the atomic age."[15]

At this point, Egypt's interest in nuclear research was animated by the allure of peaceful applications of nuclear science -- nuclear medicine, power generation, large-scale engineering projects, and the like. The development of nuclear technology for military purposes was "further down the list of priorities."[16] Nevertheless, the issue of nuclear weapons arose even in these early years. In 1954, a year before the founding of the AEE, Rahman was contacted by army and intelligence officials. A group of foreign experts had approached the Egyptian army and offered to help establish a nuclear weapons program. This same group later approached Egyptian officials with an offer to "sell a box of uranium," presumably for bomb-related work. The government rejected both offers. Rahman maintains that the first offer was rejected, as a matter of principle, because any Egyptian bomb

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*Palestine Studies*, Vol. 14, No. 4, pp. 77-9; Mohammad El-Sayed Selim, "Egypt," in *Nuclear Power in Developing Countries: An Analysis of Decision Making*, James E. Katz and Onkar S. Marwah, editors, (Lexington: Lexington Books, 1982); Gregory H. Kats, "Egypt," in *Non-proliferation: The Why and the Wherefore*, Edited by Jozef Goldblat, SIPRI, (London: Taylor and Francis, 1985), pp. 185-195; Frank Barnaby, *The Invisible Bomb: The Nuclear Arms Race in the Middle East*, (London: I. B. Tauris, 1989), pp. 77-99.

[14] Along with the AEE, the government created the Egyptian Board of Atomic Energy (EBAE) to oversee AEE programs. The first reported government expenditure for nuclear research took place in September, 1955. See Nashif, *Nuclear Warfare in the Middle East: Dimensions and Responsibilities*, p. 35.

[15] On Nasser being "completely interested," his meeting with Bhabha, and not wanting to lag behind other countries, see interview with Mohammed Hassanein Heikal, January, 6, 1997. The Nasser quotation comes from *Al-Ahram*, "Cairo Draws Up Plan for the Construction of the First Atomic Reactor in the Middle East and the Eleventh in the World," December 6, 1960, Translation by DOS Division of Language Services; GRDOS; Lot Files: Atomic Energy, 1944-1963; RG 59; 21.88; Country File UAR; c. Reactor, 1961; Box 439; NAII. The same article reports that Kamel al Din Hussein, the Minister of Education and Chair of the EABE told a meeting of the board that "Nasser was anxious for earnest efforts to be made so that we might catch up with those who had gone ahead of us in the field of atomic research." There are also less grand explanations for Nasser's interest. One AEE official contends that Nasser's interest can be traced back to the time when a popular Egyptian singer developed throat cancer and was successfully treated with radiation therapy -- an outcome that was said to have impressed the Egyptian President. In any event, several nuclear officials claim that Nasser backed Rahman's efforts.

[16] Interview with Tahseen Basheer, December 29, 1996.

program would have to be run by Egyptians.[17] He speculates that the government declined the box of uranium because of doubts about the reliability of these nuclear entrepreneurs.[18]

The issue of nuclear weapons came up again a year later, in 1955, with the founding of the AEE. The AEE's governing council had five members, with Rahman serving as its Secretary General. One of the five members was an army officer; a second was an intelligence officer. When the program was just getting under way, Rahman asked these two board members whether the nuclear program should be set up to pursue weapons or peaceful uses. Rahman's inquiry moved up the chain of command. He was later told that, for the time being, the focus should be on peaceful applications, but that the program should be organized in a way that would preserve a military option.[19]

With a mandate in hand, Rahman set about the task of organizing the AEE. It started out modestly enough, comprising six rooms in the National Research Center and a total of less than twenty staff.[20] Few of the new hires had specialized in nuclear physics or engineering. Most were researchers drawn from conventional sciences, who were then trained in nuclear-related fields.[21] The AEE was organized based on an academic model, with groups that later grew into departments.[22]

## C. The AEE: Foreign Contributions and New Leadership

As Rahman moved to organize the AEE, he found support not only from Nasser but from the outside world as well.[23] Two years earlier, in December of 1953, President Eisenhower had

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[17] The requirement that an Egyptian nuclear weapons program be directed by Egyptians is at least consistent with Nasser's broader platform of anti-imperialism and self-sufficiency. An oft quoted slogan extolled Egyptians to master indigenous production, "from the needle to the rocket." Interview with Ahmed Fahkr, April 20, 1995, and December 30, 1996; On Nasser's anti-imperialism and inclination towards autarky, see Peter Mansfield, *Nasser's Egypt*, (Harmondsworth, Middlesex: Penguin Books, 1969).

[18] Interview with Ibrahim Hilmy Abdel Rahman, February 16, 1995. Rahman described the group as "mostly Germans."

[19] Interview with Ibrahim Hilmy Abdel Rahman, February 16, 1995.

[20] Interview with Ibrahim Hilmy Abdel Rahman, February 16, 1995.

[21] Interview with Mohamed Ezzat Abdelaziz, February 13, 1995 and April 27, 1995.

[22] The groups included physics, medicine, safety, geology, reactors, and instruments. Radiochemistry, the foundation for chemical reprocessing, would have to wait. In 1958, Rahman recruited Abdel Maaboud El Guibaily, a graduate of France's Curie Laboratory, to head Egypt's radiochemistry section, but had to appoint him without a lab in which to work. On the organization of the AEE, see interviews with Ibrahim Hilmy Abdel Rahman, February 16, 1995 and Mohamed Ezzat Abdelaziz, February 13, 1995 and April 27, 1995. On the lack of radiochemistry labs, see interview with Ibrahim Hilmy Abdel Rahman, February 16, 1995, and April 20, 1995.

[23] On the importance of the international community as a catalyst for Egypt's nuclear program, see Selim, "Egypt." When discussing the mid-1960s, Kats goes so far as to argue that Egypt's interest in a civilian nuclear energy program "...to a large extent... reflected outside influences – primarily those of the US AEC and the IAEA. Both these bodies promoted nuclear power in Egypt...." Kats,

proposed to the UN General Assembly his new international initiative to share America's atomic wealth. "Atoms for Peace" would work to insure that "all of the world's scientists and engineers had adequate amounts of fissionable material."[24] Eisenhower's announcement was followed by the First UN International Conference on the Peaceful Uses of Atomic Energy in 1955 -- just as the Egyptian program was getting off the ground.

Rahman swiftly put together a group of twenty people, mostly students, to attend the Geneva conference and worked them night and day to collect as much information as possible. Rahman credits the Geneva conference with providing the Egyptians with a crash course in nuclear technology, which in turn became the foundation for negotiating a series of bilateral nuclear cooperation agreements with foreign countries.[25]

Indeed, it was the willingness of other countries to provide nuclear technology and training that allowed Egypt to build a research program. The most important of these early cooperative ventures involved the Soviet Union The Soviet and Egyptian governments signed two nuclear cooperation agreements, one in 1956 and another in 1958.[26] The former obliged the USSR to train Egypt's best and brightest young students in nuclear-related sciences, and to provide a Vandergraaf accelerator and related lab equipment. Under second agreement, the Soviet Union constructed a 2 MW research reactor, fueled with low enriched uranium from the Soviet Union.

The Egyptian program was making rapid progress, and it was this rapid progress that contributed to Rahman's decision in 1958 to leave the AEE. Rahman felt that the agency was off to a good start and that he should focus his energies where they were most needed, the field of national

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"Egypt," p. 186. That claim is over-stated, but it does point to the mindset of the Atoms for Peace period, one in which states were more concerned with promotion than proliferation.

[24] DOS Publication no. 5314 (Washington: US GPO, 1953 ), in *The Nuclear Age Reader*, Jeffrey Porro, Carl Kaysen, Jack Ruina, and Paul Doty, eds., (New York: Alfred A. Knopf, 1989), p. 268.

[25] Interview with Ibrahim Hilmy Abdel Rahman, February 16, 1995. See also Bhatia, *Nuclear Rivals in the Middle East*, pp. 49-50. Scheinman describes how, "These conferences opened a floodgate of technical and scientific information about virtually every aspect of the civil nuclear fuel cycle with the exception of uranium enrichment...." An Egyptian delegation also participated in the first meeting of the UN Scientific Committee on the Effects of Atomic Radiation in 1956. Two years later, its scientists attended the Second UN International Conference on the Peaceful Uses of Atomic Energy where Egyptian researchers presented five scientific papers. Lawrence Scheinman, *The International Atomic Energy Agency and the World Nuclear Order*, (Washington: Resources for the Future, 1987), p. 19. On the UN conference on radiation, see *U.S. Nuclear Non-Proliferation Policy, 1945-1991*, National Security Archive, Virginia Foran, Editor, (Alexandria: Chadwych-Healey, 1991), p. 63. (From this point forward, the National Security Archive's *U.S. Nuclear Non-Proliferation Policy, 1945-1991* will be abbreviated *NSA*.) On the Second UN Conference, see *Proceedings of the Second UN International Conference on the Peaceful Uses of Atomic Energy*, September 1-13, Volume 14, Nuclear Physics and Instrumentation, (Geneva: UN, 1958).

[26] United Arab Republic (Egypt), Problem 4, Summaries of Energy Programs Abroad, Committee on Nonproliferation, August, 1964; NSF, Committee File; Committee on Nonproliferation; Boxes 1-2, LBJPL; Interview with Ibrahim Hilmy Abdel Rahman, February 16, 1995; *Middle East Journal Chronology*, June 16, 1961-September 15, 1961, p. 441. From this point, the *Middle East Journal Chronology* will be abbreviated *MEJC*.

planning.[27] Rahman's departure from the AEE came on the eve of the program's expansion. As a consequence, his responsibilities were divided between two people: El Sayed Amin al Khashab, the Secretary General of the AEE and Salah Hedayat, the Director General of the AEE.

## D. Building a Broad-Based Nuclear Program

Rahman's successors followed his example and sought foreign assistance to bolster the program. They hoped to establish a number projects, including the mining and processing of local ores for use as nuclear fuels, the production of heavy water, the use of peaceful nuclear explosions (PNEs), and most significantly, the ability to reprocess plutonium from spent fuel. In short, the Egyptians aimed to develop a broad-based nuclear program that would permit the construction of an indigenous fuel cycle.

The AEE's first moves focused on training. Having arranged to send students to the Soviet Union for training, the AEE next signed a nuclear cooperation agreement with India that provided for the training of nuclear scientists and technicians.[28] The AEE also signed an agreement with Norway for construction of a isotope production unit.[29] For help with mining thorium and various radioactive ores, the AEE enlisted the assistance of Yugoslavia. In 1956, the AEE began a series of surveys to assess possible deposits of radioactive minerals. One survey suggested that some 370,000 tons of thorium oxide and 28,000 tons of uranium oxide might be harvested from Egypt's mineral sands.[30]

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[27] Rahman had come under fire for holding four different government positions. He gave up his positions as secretary general of the AEE, cabinet secretary, and head of the science council. Interview with Ibrahim Hilmy Abdel Rahman, February 16, 1995 and April 20, 1995.

[28] Bhatia, *Nuclear Rivals in the Middle East*, p. 59. The year before, an American official had observed that, "...the Indians have had a continuing interest in the atomic energy effort of the Egyptians." On India's interest, see Draft Memo from J. Robert Schaetzel, Office of the Special Assistant to the Secretary, DOS to [an inter-agency committee], Expanded Atomic Energy Training Facilities in the Middle East, August 24, 1956, p. 2; GRDOS, Lot Files: Atomic Energy, 1944-1963, 19.16 Regional Programs: ME general, 55-58 and 61, Box 378; NAII. On the 1961 agreement, see United Arab Republic (Egypt), Problem 4, Summaries of Energy Programs Abroad, Committee on Nonproliferation, August, 1964; NSF, Committee File; Committee on Nonproliferation; Boxes 1-2, LBJPL. Yair Evron, "The Arab Position in the Nuclear Field: A Study of Policies Up to 1967," *Cooperation and Conflict*, Vol. 8 (1973), p. 20; PRO: Egypt Atomic Energy Matters, September 13, 1963; FO 371/171010.

[29] Norway completed its work in the summer of 1962; and in 1963, the center was renamed the Afro-Asian Center for Radio-Isotope Research and administered in cooperation with the IAEA. Harvey H. Smith et al, *Area Handbook for the United Arab Republic* (Egypt), (Washington: American University, 1970), p. 472; United Arab Republic (Egypt), Problem 4, Summaries of Energy Programs Abroad, Committee on Nonproliferation, August, 1964; NSF, Committee File; Committee on Nonproliferation; Boxes 1-2, LBJPL; PRO: Egypt Atomic Energy Matters, September 13, 1963, FO 371/171010; J. R. Barrow, Outline of Topics for Meeting Regarding U.A.R. Request for Atomic Energy Program, DOS (NEA:NE), June 15, 1961; GRDOS; Lot Files: Atomic Energy, 1944-1963; RG 59; 21.88; Country File UAR; c. Reactor, 1961; Box 439; NAII.

[30] Nashif, *Nuclear Warfare in the Middle East: Dimensions and Responsibilities*, p. 30. In 1957, Egypt's National Research Council sponsored small projects related to the prospecting of thorium, and in 1961, the Egyptian and Yugoslav governments signed an atomic cooperation agreement for joint work on the exploration of radioactive minerals. The agreement was superseded by a second

For help with heavy water, Egypt went to the IAEA and then West Germany. In 1959, IAEA conducted a study on the viability of heavy water production in Egypt. Despite the doubts of the US consultant sent by IAEA, Egypt moved ahead and contracted with a West German firm, Hoechst Farben Werke, to begin work on the project.[31]

Beginning in 1959, West Germany was also actively involved in plans to exploit peaceful nuclear explosives at the Qattara Depression in Egypt's Western Desert. The idea was to open a canal between the Mediterranean Sea and Qattara -- which sits some 440 feet below sea level -- and use the difference in elevation to produce hydro-electric power. The plan had first been proposed back in 1933, but had been considered too difficult. With the possibility of nuclear explosives, senior UAR officials now believed that the project was worth pursuing and commissioned a team of West German engineers to study the project.[32]

The Germans were also at the center of yet another project -- the construction of a power reactor -- or more precisely, a natural uranium, heavy water moderated power reactor.[33] Egyptian newspapers reported as early as July, 1960, that AEE officials had announced their intention to build at least one large power reactor. Not long after, on December 11, 1960, the Chair of the AEE reportedly issued a statement indicating that an agreement had been reached with West Germany for the construction of a new power reactor. The announcement was premature. American documents from that period

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agreement reached by the two countries in May of 1963. On the research Council, see A. B. Zahlan, *Science and Science Policy in the Arab World*, (New York: St. Martin's Press, 1980), p. 46. On the Yugoslav agreement, see J. R. Barrow, Outline of Topics for Meeting Regarding U.A.R. Request for Atomic Energy Program, DOS (NEA:NE), June 15, 1961; GRDOS; Lot Files: Atomic Energy, 1944-1963; RG 59; 21.88; Country File UAR; c. Reactor, 1961; Box 439; NAII. On the 1963 agreement, see PRO: Egypt Atomic Energy Matters, September 13, 1963; FO 371/171010.

31 Nashif, *Nuclear Warfare in the Middle East: Dimensions and Responsibilities*, p. 28. On plans for a heavy water facility, see also J. R. Barrow, Outline of Topics for Meeting Regarding U.A.R. Request for Atomic Energy Program, DOS (NEA:NE), June 15, 1961; GRDOS; Lot Files: Atomic Energy, 1944-1963; RG 59; 21.88; Country File UAR; c. Reactor, 1961; Box 439; NAII; *Al-Ahram,* "Cairo Draws Up Plan for the Construction of the First Atomic Reactor in the Middle East and the Eleventh in the World," December 6, 1960; GRDOS; Lot Files: Atomic Energy, 1944-1963; RG 59; 21.88; Country File UAR; c. Reactor, 1961; Box 439. The *Al-Ahram* article also suggested that there were plans for a graphite production plant.

32 For a description of the project and Germany's contribution, see Memo from Armin H. Meyer, NE to Mr. Lewis Jones, NEA, Qattara Depression Project, January 8, 1960; GRDOS; Bureau of Near East and South Asian Affairs, Office of Near Eastern Affairs, Records of the UAR Affairs Desk, 1956-1962; UAR Qattara Depression Project; 3-B/1 1960; Box 2; NAII; Memo from Armin H. Meyer, NE to Mr. Lewis Jones, NEA, Qattara Depression Project, March 11, 1960; GRDOS; Bureau of Near East and South Asian Affairs, Office of Near Eastern Affairs, Records of the UAR Affairs Desk, 1956-1962; UAR Qattara Depression Project; 3-B/1 1960; Box 2; NAII; Memo from Robert W. Stookey, NEA/NE, to Armin H. Meyer et al, Qattara Depression Project, March 17, 1960; Lot Files Pertaining to the Near and Middle East; Bureau of Near East and South Asian Affairs, Office of Near Eastern Affairs, Records of the UAR Affairs Desk, 1956-1962; UAR Qattara Depression Project; 3-B/1 1960; Box 2; NAII. See also, *MEJC*, February 25, 1960.

33 This type reactor was considered a particularly good producer of plutonium, and thus a good candidate for a nuclear weapons program.

make plain that while the Germans had actively sought to sell a reactor, no final agreement had yet been reached.[34]

Egypt had successfully interested a number of foreign countries in training, a research reactor, isotopes, heavy water, PNEs and power reactor. One area in which they did not make progress, however, was in the field of chemical reprocessing. During the negotiations on the second atomic agreement with the USSR, the Egyptians requested chemistry labs for reprocessing. The Soviets declined the request, saying that Egypt was not yet technically ready to take on reprocessing, but Rahman speculates that Soviet reticence had more to do with proliferation concerns than Egypt's technical abilities. According to Rahman, reprocessing would have put Egypt one step away from the bomb and the Soviets knew it. Of equal importance is the fact that the Egyptians knew it. It is clear that Rahman sought a reprocessing capability, in part, because it would have allowed Egypt the option to pursue nuclear weapons.

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This initial period in Egypt's nuclear history is was noteworthy in two respects. First, the nuclear program enjoyed early success. It had not received everything it had hoped for, but it had done quite well by its foreign sponsors. The Soviet Union, India, Norway, Yugoslavia, West Germany, the IAEA, and others were helping Egypt build its nuclear capacity.[35] Its nuclear program was still modest by international standards, but in six short years, the government had managed to establish a new agency, begin construction of a small research reactor, and start work on a number of related projects. Still, it would be a mistake to describe the nuclear program as a priority. It was no more or less important than any number of other government initiatives.

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[34] On the search for a power reactor, see *Al-Ahram,* "Cairo Draws Up Plan for the Construction of the First Atomic Reactor in the Middle East and the Eleventh in the World," December 6, 1960, GRDOS; Lot Files: Atomic Energy, 1944-1963; RG 59; 21.88; Country File UAR; c. Reactor, 1961; Box 439; NAII; Memo from Armin H. Meyer, NE to Mr. Lewis Jones, NEA, Reported U.A.R. Interest in Atomic Power Reactor, January 11, 1961; GRDOS; Lot Files: Atomic Energy, 1944-1963; RG 59; 21.88; Country File UAR; b. General, 1959-62; Box 439; NAII; J. R. Barrow, Outline of Topics for Meeting Regarding U.A.R. Request for Atomic Energy Program, DOS (NEA:NE), June 15, 1961; GRDOS; Lot Files: Atomic Energy, 1944-1963; RG 59; 21.88; Country File UAR; c. Reactor, 1961; Box 439; NAII; and especially Memo for Fred Dutton through McGeorge Bundy, Status of UAR Nuclear Development, July 7, 1961, Secret; Lot Files Pertaining to the Near and Middle East, Bureau of Near East and South Asian Affairs, Office of Near Eastern Affairs, Records of the Director, 1958-1963; Memoranda to [WH]; Box 4; NAII.

[35] But what of the United States? The country that brought the world Atoms for Peace was, in principle, favorably inclined to providing Egypt with nuclear assistance. In the mid-1950s, the US engaged in bi-lateral nuclear negotiations, but as one official put it, the talks were "overtaken and submerged" by the 1956 Soviet-Egyptian nuclear cooperation agreement. One contribution the US did make was to put Cairo on the list of cities hosting its nuclear road show, "Atoms in Action." In May of 1960, visited Egypt's capital city before departing for stops in Pakistan, Argentina, and Brazil. On the early US-Egyptian talks, see Draft Memo from J. Robert Schaetzel, Office of the Special Assistant to the Secretary, DOS to [an inter-agency committee], Expanded Atomic Energy Training Facilities in the Middle East, August 24, 1956, p. 2; GRDOS, Lot Files: Atomic Energy, 1944-1963, 19.16 Regional Programs: ME general, 55-58 and 61, Box 378; NAII. On Atoms in Action, see USAEC, "Atoms in Action," 2nd Edition, Revised, 1967, pp. 1, 5-6; WHCF, AT, AT3 Peace Promotion, Box 3, Nixon Presidential Materials Project [NA]. See also PRO: Egypt Atomic Energy Matters, September 13, 1963; FO 371/171010.

Second, nuclear weapons had already become an issue requiring governmental consideration. Nuclear weapons had come up on at least three occasions -- first with the offer of nuclear weapons assistance and material, then with the founding of the AEE, and finally with the discovery of Dimona. Egypt's response to these events was to think of nuclear weapons as an option but not a priority.

# II. The Nuclear Window: 1961-1967

This second stage in Egypt's nuclear history begins with Israel's public confirmation of the Dimona reactor and ends with the Six Day War. It is a period filled with complexities and contradictions. On the one hand, Egypt made serious efforts to expand its nuclear options. The public disclosure of Dimona provided a boost to Egypt's nuclear program and to the aspirations of its leader, Salah Hedayat. It also led Egypt to approach the Arab League, the USSR, India, and China for help with nuclear weapons. On the other hand, Nasser's government never fully committed to a nuclear program, even when foreign governments made generous offers of assistance.

Delay and indecision, fueled by the program's own internal turmoil, inhibited progress towards a nuclear capability. By 1965 and 1966, as Israel's atomic accomplishments became more evident and the threat of conflict seemed more likely, Nasser seemed to have acquired a renewed sense of urgency about nuclear weapons, but by that point, the window was already starting to close. The economy was faltering, the head of Egypt's nuclear program had departed under unhappy circumstances, and the country was drifting towards war.

This survey of Egypt in the 1960s begins with a description of the scene -- the regional and domestic context in which Nasser operated. The focus then turns to Dimona and its effect on Egypt's nuclear program. Following that, attention is directed to the internal politics of the AEE, and various attempts to procure nuclear weapons. The section ends with a brief look at Egypt's response to American arms control efforts in this period.

## A. Setting: A Busy Time at Home and Abroad

In the early years, Nasser and his new nation rode a roller coaster of events -- revolution, nation-building, war, and union with Syria. This second period in Egyptian history was equally eventful. The next few pages survey Egypt's relations with Israel, the other Arab states, and the superpowers. It concludes with a brief look at key domestic events.

### A1. The Region

During this period, Egyptian-Israeli relations continued to deteriorate. The general decline in relations was aggravated by specific events, most notably Israel's decision to divert water from the Jordan River. Israel began the first phase of diversion in October of 1964, and for a while it appeared as if the two countries would again take to the battlefield.[36] A scant six months later, in March of 1965, it again looked like war, as reports surfaced that Egypt was calling up its reservists

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36 On the beginning of diversion, see *MEJC*, October 5, 1964. On fear of war that same month, see Airgram from Edward H. Springer, [American Consul Port Said], to DOS, Military Buildup Produces War Fever in Port Said-Port Fuad, October 20, 1964; NAII; Airgram from Edward H. Springer, [American Consul Port Said], to DOS, Increased UAR Defensive Military Activity near Gaza, October 29, 1964; NAII.

and that Israel was preparing for a pre-emptive attack.[37] In the midst these recurrent bouts of "war fever," Israel's nuclear reactor came on line and began to produce plutonium for nuclear weapons.

Relations between Egypt and Israel were tense, but Egypt's relations with other Arab states were hardly more congenial.[38] In September of 1961, pro-Nasser forces in Syria were toppled, and the new leaders announced they were quitting the UAR. The formation of the United Arab Republic had been a great personal triumph for the Egyptian leader, and its dissolution was no less a personal setback.[39] A year later, in Yemen, a group of dissidents overthrew the ruling Imam -- a leader with a particularly colorful history.[40] A new government was established, but it quickly came under counter-attack by royalist forces and their Saudi supporters. Nasser intervened on the side of the new government, and in time, as much as a third of the Egyptian army was fighting in the Yemeni civil war. The war -- which began in 1962 and did not end until after the onset of the '67 War with Israel -- came to be known as "Nasser's Vietnam."[41]

### A2. The Domestic Context

At home, Nasser faced the first real threat to his authority, though few observers knew it at the time. Since assuming the Presidency in 1954, Nasser had enjoyed broad political support from the "Arab in the street." Some elements within Egyptian society were disgruntled with Nasser's policies, but public protest was not a prominent feature of Egyptian politics. After 1964, particularly as the economy worsened, protests increased, as did rumors of attempted assassinations, but the real challenge to Nasser came early and from close quarters.

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37 Incoming Telegram from Amembassy Paris to SOS, NAC Meeting, March 10-Israeli/Arab Relations, March 10, 1965, pp. 2-3; NAII.

38 See, for example, Malcolm Kerr, *The Arab Cold War: Gamal 'Abdel Nasser and His Rivals*, (London: Oxford University Press, 1971) and Stephen M. Walt, *The Origins of Alliances*, (Ithaca: Cornell University, 1987).

39 Incoming Telegram from John S. Badeau, Ambassador, Amembassy Cairo, to DOS, October 2 1961, GRDOS; CDF 1960-1963, 786B00/9-261; Box 2071; NAII; Airgram from Donald C. Bergus, Amembassy Cairo, to DOS, UAR Mid '62: The New Normalcy, July 3, 1962; GRDOS; RG 59; CDF 1960-1963; 786B00/5-362, Box 2072; NAII.

40 Former Assistant Secretary of State Phillips Talbot recounts how he "called once on the Crown Prince for a post-midnight meeting at his house. When we left, [at] 3 AM, [my] embassy escort asked if I heard any sounds. I asked what they were, and he said they were the rattling of the chains of the prisoners kept in the room below... It was a very primitive place...." Interview with Phillips Talbot, September 30, 1993. See also Heikal, *Cairo Documents*, pp. 212-213.

41 At the time, the conflict in Yemen was the largest, modern inter-Arab war on record. In addition to sending troops and materiel, Nasser also supplied financial aid to shore up the new Yememi government. For a discussion of the Egyptian role in the Yemen civil war see, Ali Abdel Rahman Rahmy, *The Egyptian Policy in the Arab World: Intervention in the Yemen 1962-1967 Case Study*, (Washington: University Press of America, 1983). On Egyptian troop levels, John S. Badeau, *The American Approach to the Arab World*, (New York: Harper & Row),1968, pp. 123-151; the Institute for Strategic Studies, *The Military Balance*, 1965-1966, (London: IISS, 1966); Nadav Safran, *From War to War: The Arab-Israeli Confrontation 1948-1967*, (New York: Pegasus, 1969), p. 156.

Field Marshal Abdel Hakim Amer was a fellow Free Officer and a close friend of the president. One observer, commenting on their bond, called them "the twins."[42] Amer was in charge of the military and internal security, and proved quite popular with his fellow officers. He was also responsible for overseeing the administration of Syria. When Syria broke away from the UAR in 1961, many blamed Amer. In the wake of the Syrian humiliation, Nasser attempted more than once to rein in the Field Marshall. With each attempt, pro-Amer forces in the military began organizing a coup, and on each occasion, Nasser backed down. From 1961 on, the relationship between Nasser and Amer was increasingly hostile, and the Egyptian government became progressively bifurcated. Nasser handled foreign policy, while Amer had his way with the police and the military. This two headed arrangement continued until after the '67 War, when Amer was sacked, imprisoned, and allegedly committed suicide.[43]

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It is in this context -- an Israeli bomb program, unsettled regional relations, and challenges at home --that Nasser considered his nuclear options. Nuclear weapons had not been a focus during the early years of the Nasser government, but public revelations about Israel's Dimona reactor meant the issue could no longer be avoided.

## B. Dimona Revealed

On December 21, 1960, Israel's Prime Minister officially confirmed what his government had previously denied: Israel was constructing a nuclear reactor near Dimona.[44] Ben-Gurion's admission immediately raised suspicions about Israel's intentions. Despite claims that the reactor was designed for purely civilian research, many observers concluded -- correctly, as it turns out -- that Israel was going for the bomb.

This view was particularly strong in the Arab world, which was "agitated with alarm over the possibility of an Israel armed with nuclear weapons."[45] The day after Ben Gurion's announcement, Egyptian officials in Washington met with their State Department counterparts and "manifested almost an hysterical attitude concerning Israel's atomic capabilities."[46]

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[42] Interview with Tahseen Basheer, December 29, 1996;

[43] On coups and other intrigue, see [Withdrawal Sheet], RE Hakim Amir Suspected Coup, November 2, 1961; RG 59, Cairo - 1961; Box 4; Incoming telegram from John S. Badeau, Amembassy Cairo, to the DOS, October 23, 1961; GRDOS; RG 59; CDF 1960-1963; 786B00/10-162, Box 2072; NAII; *MEJC*, March 24, 1964, and Beattie, *Egypt During the Nasser Years*, pp. 159-162.

[44] American spy planes had earlier photographed Dimona, and intelligence analysts concluded that a reactor was being built. On December 19, the story appeared on the front page of the *New York Times*, and Ben-Gurion was forced to make an announcement two days later. On the Dimona revelations, see "US Hears Israel Moves Towards A-Bomb Potential," *New York Times*, December 19, 1960, p. 1; "US Misled at First on Israeli Reactor," *New York Times*, December 20, 1960, p. 1. See also, Telegram from US Embassy in Tel Aviv to SOS, December 22, 1960: 1, in which the reactor is described as a "metallurgical research facility," in *NAS* fiche number 00723.

[45] On the Arabs as "agitated with alarm," see Arthur Krock, "In the Nation: The Proof Is Available to Israel," *New York Times*, December 23, 1960.

[46] The American Ambassador serving in Cairo cited the "profound emotions and fears aroused in the UAR and other Arab countries." Egyptian officials privately discussed the issue of Dimona

The day after that, Nasser addressed the issue in his annual "Victory Day" speech at Port Said. He warned that an atomic bomb would mean "the beginning of a war between us and Israel." The Egyptian President further vowed that Egypt would "get one, too, at any price."[47] When the Canadian Ambassador to Egypt paid his farewell call on Nasser a week later, the Egyptian President seemed "particularly bitter about the Israeli reactor...."[48]

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with American officials on at least three other occasions that year (1961). The Egyptian Ambassador to the US, Mostapha Kamel, broached the topic on February 4th and the Charge d'Affaires again addressed the issue on June 1st, after Ben Gurion's visit to the US. Egypt's Foreign Minister, Mahmoud Fawzi, also expressed suspicion about Israel's intentions in September of 1961, after having received a report on the first American inspection of the reactor. Publicly, leading members of the Egyptian press downplayed the reports of Israel's nuclear program, and suggested that Israel lacked the resources to pursue such a course. On the State Department meeting, see Memcon, Armin H. Meyer (NE/NEA), Salah El Abd and A. Aziz Allouni, Counselors, Embassy of the UAR, Israel's Atomic Energy Activities, December 22, 1960; NAII. On the American Ambassador's view, see Incoming Telegram from Rhinehardt to the SOS, January 1, 1961; NAII. See also, Talking Outline for Subjects to Be Raised by the President, in Memo from the SOS to the President, Your Meeting with Israeli Prime Minister Ben-Gurion, May, 1961, p. 2; GRDOS, RG59, CDF, 1960-1963, 17, Visits Missions Tours, 6 Ben-Gurion Visit to US, 1961, Box 334; NAII. Regarding other discussions with Egypt concerning the nuclear issue, see Memcon, SOS and Mostapha Kamel, Israeli Reactor (Three of three), February 7, 1961; GRDOS, RG59; Lot Files: Atomic Energy, 1944-1963; 21.50, Country file Israel, F Reactor 1961, pt. 1 of 2, Box 418; NAII: Memcon, Armin H. Meyer, NEA and Salah el-Abd, UAR Interest in Ben-Gurion Visit (3 of 3), June 1, 1961; GRDOS, RG59, CDF, 1960-1963, 17, Visits Missions Tours, 6 Ben-Gurion Visit to US, 1961, Box 334; NAII; Foreign Service Dispatch from Amembassy Cairo to the DOS, Reply of Foreign Minister Fawzi to the Secretary's letter on Israel's atomic development plans, September 18, 1961; GRDOS; CDF, 1960-1963; 784A 5611/7-761; Box 2059; NAII. On the Egyptian press, see Foreign Service Dispatch from American Embassy Cairo to the DOS, Joint WeekA NO. 51, December 23, 1960; GRDOS; CDF, 1960-1963; 786B, 9-260; Box 2073; NAII.

[47] On the Port Said speech, see "Nasser Threatens Israel on A-bomb," *New York Times*, December 24, 1961, p. 1; NAII: Foreign Service Dispatch from American Embassy Cairo to the DOS, Joint WeekA NO. 52, December 31, 1960, p. 1; GRDOS; CDF, 1960-1963; 786B, 9-260; Box 2073; NAII.

[48] Subsequent events probably did little to assuage Egyptian concern. Soon after, it was revealed that funding for Dimona came from the Ministry of Defense. (An exchange between Knesset members highlighted the point: "Mr. Shmuel Mikunis (Communist), recalled the Prime Minister's statement that the reactor near Beersheba was built for peaceful purposes only. 'That being the case, the expenditure involved should not be included in the secret defence budget, but in the open ordinary budget or the development budget.'") In the summer, Israel tested a space rocket, setting off concerns among Arab governments that Israel's nuclear and rocket programs were linked. Indeed, Ben Gurion's own remarks -- public and private -- invited doubt about the peaceful intent of the program. Despite those suspicions, Israel continued to receive international assistance for its civilian nuclear program. On Nasser's meeting with the Canadian Ambassador, see Memo from Armin H. Meyer, NE to Lewis Jones, NEA, Canadian Ambassador's Farewell Call on Nasser, January 4, 1960; Lot Files Pertaining to the Near and Middle East; RG59; Bureau of Near East and South Asian Affairs, Office of Near Eastern Affairs, Records of the Director, 1958-1963; 1961 Chron Inter-office Memoranda (Folder 2 of 2); Box 3; NAII. On Dimona as a Defense project, see Information Report, Office of Naval Intelligence, Israel: Atomic Reactor, February 21, 1961;

During the first period in Egypt's nuclear history, from 1954 to 1960, the nuclear program had developed in response to a combination of indigenous scientific interest and outside encouragement. After 1960, or more precisely, after Israel publicly confirmed the existence of the Dimona reactor, Nasser's government took a new interest in its atomic program. Nasser promoted the director of the AEE, Salah Hedayat, to head the newly created Ministry of Science. The former ordinance officer was now in charge every institution having to do with nuclear development. While the AEE and its programs did not have an explicit military objective, it is clear that Hedayat hoped to build a nuclear capability to match that of Israel.[49] Indeed, it is fair to say that Egypt's most intensive efforts to acquire nuclear weapons (or the capability to produce them) occurred during this phase -- that is, just after the disclosure of the Dimona reactor, but before the 1967 Arab-Israeli war.[50]

## C. The Rise and Stall of Atomic Energy Establishment

Dimona gave the Egyptian Atomic Energy Establishment a new prominence, but news about Israel's nuclear program did not alter the AEE's basic plan for atomic development. The 2MW Inchas research reactor begun in 1956 was completed and started operation in July of 1961. The radioisotope center, begun in 1960, opened in 1962. Though it became an IAEA regional facility in 1963, it continued to be dominated by Egyptian nationals.[51]

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GRDOS; RG59; Lot Files: Atomic Energy, 1944-1963; 21.50, Country file Israel, F reactor 1961, pt. 1 of 2, box 418; NAII. On the rocket test, see Incoming Telegram from McClintock, Amembassy Beirut, to the SOS, July 7, 1961; GRDOS; RG59; CDF 1960-1963; 784A 5611/7-761; Box 2059; NAII; Memcon, Phillips Talbot, NEA and Amb. Yusuf Haikal, Jordan, Israeli Rockets and Aspects of the Palestine Question, July 7, 1961; GRDOS; RG59; CDF 1960-1963; 784A 5612/3-2560; Box 2059; NAII. On Ben-Gurion's remarks, see Memcon, Armin H. Meyer, Deputy Assistant Secretary, NEA, and Wndelgard von Neurath, First Secretary, GDR Embassy, Ben-Gurion Visit - Uncommitted Nations Conference - UAR-USSR Relations - Soviet Arms for Sudan, June 2, 1961; Lot Files Pertaining to the Near and Middle East; RG59; Bureau of Near East and South Asian Affairs, Office of Near Eastern Affairs, Records of the Director, 1958-1963; 1961 Chron Memoranda of Conversations; Box 4; NAII; C. L. Sulzberger, Foreign Affairs The Little Old Man in the Desert," *New York Times*, November 16, 1963, p. 26. On continued nuclear assistance to Israel, see "Israel Gets Atom Aid," *New York Times*, January 27, 1961, p. 6. See also Talking paper [for US delegation to the IAEA], Israeli Beersheba Reactor, January 18, 1961; RG 59; Lot Files: Atomic Energy, 1944-1963; IO P IAEA Board of Gov; 1H USDEL Position Papers, 1956-62, Pt. 2 of 2; Box 116; NAII.

[49] Some scientists did engage in individual work relating to military applications, though no official work of the AEE was bomb related. In addition, individual scientists and engineers -- those with an interest in metallurgy and radiochemistry, for example -- were aware of the military dimensions of the technology they sought. In general, there was agreement among the AEE staff that Egypt should match Israel's nuclear weapons capability. On Hedayat's views and those of other scientists, see interviews with Salah Hedayat, February 16, 1995, and April 26, 1995 and Ali Saidi, September 30, 1996.

[50] Bhatia, *Nuclear Rivals in the Middle East*, pp. 55-56.

[51] On the opening of Inchas, see *MEJC*, July 19, 1961. On the regional isotope center, see PRO: Letter from J. McAdam Clark, British Embassy, Vienna, to B.C. Peatey, Office of the Minister for Science, September 10, 1963; FO: 371/171010. Clark concluded that "the national character is far from being subsumed in the regional."

The AEE also pursued previously planned efforts to develop Egypt's indigenous resources -- human, mineral, and otherwise. It expanded the training of Egyptian nuclear scientists and engineers, both at home and abroad. It went forward with programs to mine native radioactive ores[52] for use as reactor fuel[53] and plans for heavy water production at Aswan.[54]

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[52] The Egyptian Black Sands Company was to oversee the mining operations, while the AEE's responsibilities included surveying and the identification of promising sites. Several years into the work, it became clear that "Egyptian ore deposits at Kosseir and the black sands in the Delta are not as fruitful as had been anticipated...." On the Egyptian Black Sands Co., see J. R. Barrow, Outline of Topics for Meeting Regarding U.A.R. Request for Atomic Energy Program, DOS (NEA: NE), June 15, 1961; GRDOS; Lot Files: Atomic Energy, 1944-1963; RG 59; 21.88; Country File UAR; c. Reactor, 1961; Box 439; NAII. On AEE attempts to obtain IAEA and American assistance for the program, see Letter from A. A. Wells, Dir., Division of International Affairs, USAEC, to S. A. El-Khashab, AEE, June 27, 1962; GRDOS; Lot Files: Atomic Energy, 1944-1963; RG 59; 21.88; Country File UAR; b. General, 1959-62; Box 439; NAII. On the surveys, see Airgram from J. C. Clark, Scientific Attache, American Embassy Cairo to the DOS, UAR Atomic Energy Press Reports, October 4, 1963; GRDOS; RG 59; Central Policy Files; 1963, AE; AE: UAR; Box 4164; NAII. On overestimating the deposits, see PRO: Letter from M. P. V. Hannam, British Embassy, Cairo, to D. A. S. Gladstone, FO, February 24, 1965; FO 371-183315.

[53] A small group of scientists in the radiochemistry section devoted their attention to fuel fabrication. The concept of a wholly Egyptian fuel cycle required the ability to process ore into $U_3O_8$ and then convert the $U_3O_8$ to $UF_6$. From that point, the uranium powder had to 1) be converted to $UO_2$ and fabricated into metal or pellets for natural uranium reactors or 2) enriched and cintered into ceramic pellets for fuel rods in a light water reactor. AEE chemists worked on the problem of refining $U_3O_8$, while the metallurgists tackled the fabrication of metal and pellets from uranium oxide. The metallurgy group had very limited funds and often had to build their own equipment from scrap, but they did manage to buy a few grams of uranium oxide, and they succeeded at making make uranium metal and pellets. A member of the metallurgy group, Fawzi Hammad said that his group was "able to buy uranium, no problem" for laboratory level research, including uranium oxide and $UF_4$ from Canada. AEE officials expressed interest in building a fuel fabrication plant, and British officials made it clear that they would happily help with the project, particularly if it were linked with the purchase of a magnox reactor. Talks on a British fuel fabrication plant did not progress, but the UKAEA did loan the AEE an expert to help with the "metallurgy of uranium from $UF_4$ and $UO_2$ to fuel pellets." Overall, however, fuel fabrication and nuclear metallurgy were not a priority for the AEE. On the AEE's metallurgy group, see interview with Dr. Hammad Fawzi, January 2, 1997. See also "Financing Balks Cairo on Reactor," *New York Times*, August 1, 1965, p. 22; and *MEJC*, January 7, 1964. On the British talks, see PRO: Letter from A. H. K. Slater, UKAEA, to R. C. Hope-Jones, FO, October 2, 1963; FO 371/171010; PRO: Letter from S. A. El-Khashab, Secretary General, AEE, to D. E. H. Peirson, Secretary, UKAEA, November 13, 1963; FO 371/171010; PRO: Letter from J. C. Walker, UKAEA, to D. A. S. Gladstone, FO, November 28, 1963; FO 371 171010.

[54] Plans for heavy water production paired KIMA, the state-owned Egyptian Chemical Industries company, and AEE scientists. KIMA already owned a fertilizer plant at the Aswan Dam, and the AEE believed it could use the excess electrical capacity to isolate heavy water. By the beginning of 1963, the project was still in the planning stages, but Rahman reports that Egypt had "started in a small way to produce heavy water at Aswan" before the program ended. In 1963, during a visit to Washington. AEE officials expressed interest in building a heavy water plant with a capacity of 20 tons per year. The Egyptians asked if the US might help with the project, but American officials

The AEE also attempted to acquire capabilities in nuclear chemistry and peaceful nuclear explosives. In 1962, it approached the United States for assistance with establishing a "hot radiochemical and metallurgical laboratory" for research on "the chemical and metallurgical problems of reprocessing."[55] The year after that, in 1964, the Egyptians went back to the Soviets, who they had first approached in the 1950s, and asked for a complete radiochemistry laboratory.[56] AEE officials, in particular Hedayat, continued to express an interest in peaceful nuclear explosives, which they discussed with the German and American governments.[57]

Though the AEE took initiative in each of these areas -- training, medical isotopes, ores, heavy water, reprocessing, and peaceful nuclear explosives -- its major ambition throughout this period was the acquisition of a large reactor. Before Dimona came to light, the government had begun discussions with the West Germans for a power reactor. In January of 1961, on the heels of the Dimona revelations, a two-person technical team from West Germany visited Cairo and later submitted a proposal. Six months later, in July of 1961, the German government was still waiting for a reply.[58]

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did not respond favorably to the idea. On heavy water, see J. R. Barrow, Outline of Topics for Meeting Regarding U.A.R. Request for Atomic Energy Program, DOS (NEA:NE), June 15, 1961; GRDOS; Lot Files: Atomic Energy, 1944-1963; RG 59; 21.88; Country File UAR; c. Reactor, 1961; Box 439; NAII; Bhatia, *Nuclear Rivals in the Middle East*, p. 55; PRO: Memo from Herman Arz, Embassy of the FRG, to D. T. West, FO, February 4, 1963; FO 371/172904; Interview with Ibrahim Hilmy Abdel Rahman, February 16, 1995 and April 20, 1995; Memcon, Discussions with Technical UAR Team Concerning Costs and Other Aspects of U.S.-Provided Nuclear Materials and Equipment, September 13, 1963, p. 4; Central Policy Files; 1963, AE; AE: UAR; Box 4164; NAII.

55 On the request for a hot lab, see letter from S. A. El-Khashab, Secretary General, AEE, to the Chairman, USAEC, in memo from R. N. Slawson, USAEC to C. W. Thomas, S/SA, DOS, August 17, 1962; GRDOS; Lot Files: Atomic Energy, 1944-1963; RG 59; 21.88; Country File UAR; b. General, 1959-1962; Box 439; NAII.

56 On the approach to the Soviets, see Bhatia, *Nuclear Rivals in the Middle East*, p. 55.

57 Hedayat himself inquired about the Ploughshare program in 1963, and Glenn Seaborg raised the issue when he visited Cairo in September of 1965. On German-Egyptian discussions of PNE's and the Qattara project, see Memo from Randall S. Williams, NE, to Lewis Jones, NEA, Status of Qattara and other Major Planned Development Schemes in the UAR, March 23, 1961; Lot Files Pertaining to the Near and Middle East; Bureau of Near East and South Asian Affairs, Office of Near Eastern Affairs; Records of the Director, 1958-1963; 1961 Chron Inter-office Memoranda (Folder 2 of 2); Box 3; NAII; PRO: FO Minute, D. A. S. Gladstone, FO, October 14, 1963; GN 104116/23; PRO: Letter from P. R. H. Wright, British Embassy, Washington, to R. C. Hope-Jones, FO, November 8, 1963; FO 371/171010; Incoming Telegram from Amembassy London to the SOS, April 9, 1965, Central Foreign Policy Files, 1964-1966, Political and Defense; Def Chicom-UAR; Box 1616; NAII; and *MEJC*, August 12, 1964, which reported West Germany aid for the Qattara project. On Hedyat's inquiry and Seaborg, see Airgram to Amembassy Cairo from DOS, 1. Nuclear Power Safeguard Agreement 2. Project Chariot, September 17, 1963; GRDOS; RG 59; Central Policy Files; 1963, AE; AE: UAR; Box 4164; NAII; Trevor Findlay, *Nuclear Dynamite*, (Rushcutters Bay, NSW: Brassey's Australia, 1990), pp. 97-8; Glenn T. Seaborg, *Stemming the Tide*, (Lexington: Lexington Books, 1987), pp. 323-324.

58 On Egyptian-German negotiations, see Nashif, *Nuclear Warfare in the Middle East: Dimensions and Responsibilities*, p. 27, who cites various newspaper reports. *Al Ahram* reports

Egypt also approached the USSR for a large reactor, but the Soviets declined to make an offer.[59] The Egyptian government may -- or may not -- have approached the US about help with a large reactor. Egypt's ambassador to the IAEA did call on the US representative and inquire "whether the US would help the UAR with a large scale atomic energy program." The Egyptian diplomat declared that "his government is determined to enter the power field, that external financing will be needed and that the UAR is shopping for the most favorable terms, beginning with Germany, Canada and the US...." The US government took the inquiry quite seriously, even to the point of President Kennedy and his Ambassador to Egypt discussing what to say to Nasser. In the end, however, US officials concluded that the Egyptian representative was freelancing.[60]

The Egyptian ambassador may have acted on his own because he was "seeking to enhance his own position," but US confusion about Egyptian objectives was understandable.[61] When the Director General of the AEE met with a representative from an American reactor company, he "dismissed suggestions that it would be appropriate to install a small power reactor as a first step toward a large program. He seemed intent on developing a large scale nuclear program and indicated that nothing less be satisfactory." Similarly, the American Embassy reported that "the UAR wants to obtain a complete nuclear power station is range from 75-120 megawatts." Meanwhile, the UAR Minister of Presidential Affairs told the American Chargé that the UAR is "initially considering a 20-megawatt power reactor...."[62]

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that a German mission visited Cairo in August to again discuss plans for a reactor. Information Report, Office of Naval Intelligence, UAR/Egypt/Atomic Energy Developments, August 14, 1961; GRDOS; Lot Files: Atomic Energy, 1944-1963; RG 59; 21.88; Country File UAR; c. Reactor, 1961; Box 439; NAII.

[59] On the request to the Soviets, see Bhatia, *Nuclear Rivals in the Middle East*, p. 54.

[60] See Memo for Fred Dutton through McGeorge Bundy, Status of UAR Nuclear Development, July 7, 1961, Secret; Lot Files Pertaining to the Near and Middle East, Bureau of Near East and South Asian Affairs, Office of Near Eastern Affairs, Records of the Director, 1958-1963; Memoranda to [WH]; Box 4; NAII; Memo, Summary of My Near East Trip - August 1961, August 25, 1961, p. 2, [Secret]; Lot Files Pertaining to the Near and Middle East; RG 59; Bureau of Near East and South Asian Affairs, Office of Near Eastern Affairs, Records of the Director, 1958-1963; ME Gen Jan-Dec 1961; Box 5; J. R. Barrow, NEA:NE, Outline of Topics for Meeting Regarding U.A.R. Request for Atomic Energy Program, June 15, 1961; GRDOS; Lot Files: Atomic Energy, 1944-1963; RG 59; 21.88; Country File UAR; c. Reactor, 1961; Box 439; NAII.

[61] On enhancing his "own position," see Memo, Summary of My Near East Trip - August 1961, August 25, 1961, p. 2, Secret; Lot Files Pertaining to the Near and Middle East; RG 59; Bureau of Near East and South Asian Affairs, Office of Near Eastern Affairs, Records of the Director, 1958-1963; ME Gen Jan-Dec 1961; Box 5.

[62] Geoffery Kennedy, one of the principles of the Kennedy and Donkin, later commented that Egypt had "played with the idea of a nuclear plant" in 1961. On the desire for a large reactor, see Letter from Neal F. Lansing, Advanced Technology Laboratories, to P. J. Farley, DOS, August 8, 1961; Lot Files Pertaining to the Near and Middle East; RG 59; Bureau of Near East and South Asian Affairs, Office of Near Eastern Affairs, Records of the Director, 1958-1963; ME Gen Jan-Dec 1961; Box 5. On the smaller reactor, see Memo for Fred Dutton through McGeorge Bundy, Status of UAR Nuclear Development, July 7, 1961, Secret; Lot Files Pertaining to the Near and Middle East, Bureau of Near East and South Asian Affairs, Office of Near Eastern Affairs, Records of the Director, 1958-1963; Memoranda to [WH]; Box 4; NAII. On Kennedy's remarks, see

As it turned out, Egypt acquired neither a large nor a small power reactor. Despite discussions with a number of countries, no action was taken. Indeed, it was not until two years later, in 1963, that Egyptian officials again raised the issue of a a nuclear power plant. In January of 1963, the AEE hired a British consulting firm, Kennedy and Donkin, to assist in running bids for a new reactor. The move led British observers in Vienna to comment that Egypt "was at last seriously getting down to business."[63]

The AEE hoped to finish construction of a reactor, preferably a natural uranium reactor, in three to four years.[64] They enlisted the help of the IAEA, which conducted an energy survey and convened a site selection panel.[65] In mid-1963, the government announced an increased budget for the Ministry of Science, including money for a new reactor.[66] That fall, AEE officials toured over half a dozen countries in Europe and North American, visiting reactors and conducting talks with government and business representatives.[67]

## D. Troubles Inside the AEE

On the surface, it appeared that the AEE was well on the way to obtaining a new reactor. Behind the scenes, however, the program was in turmoil. Hedayat -- Minister of Science, head of the AEE, and Egypt's most vocal advocate of nuclear development -- was under fire on two fronts. Higher up the political chain, Hedayat had run into political problems with Ali Sabri, the Minister for Presidential Affairs and an increasingly important figure in Nasser's government. These problems reached their climax in late March of 1964, when Hedayat was forced out of his position as Minister of Science and replaced by Riad el-Turki.[68]

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"Egypt to Build 30m. Nuclear Plant," *Sunday Telegraph* (London), reproduced in PRO: Memo from Herman Arz, Embassy of the FRG, to D. T. West, FO, February 4, 1963; FO 371/172904.

[63] On the consultancy, see PRO: Letter from A. H. K. Slater, UKAEA, to Anne E. Stoddard, FO, January 4, 1963; FO 371/171010. On getting down to business, see PRO: Letter from J. McAdam Clark British Embassy Vienna, to A. H. K. Slater, UKAEA, January 7, 1963; FO 371/171010.

[64] On the UAR's preference for natural uranium reactors, see PRO: Letter from M. P. V. Hannam, British Embassy Cairo, to D. A. S. Gladstone, FO, August 21, 1963; FO 371/171010; PRO: Cable from Vienna to FO, from McAdam Clark to Jones, Office of Minister for Science, February 26, 1963; FO 371/171010. On the construction timetable, see PRO: Egypt Atomic Energy Matters, September 13, 1963; FO 371/171010.

[65] On the IAEA-related efforts, see Bhatia, *Nuclear Rivals in the Middle East*, p. 55; PRO: I.A.E.A. Siting Panel - United Arab Republic, June 21, 1963; FO 371/171010.

[66] On money for a reactor in the budget, see *MEJC*, June 30, 1963.

[67] On the tour by AEE officials, see Airgram from J. C. Clark, Scientific Attache, American Embassy Cairo to the DOS, UAR Nuclear Power Committee Activities, August 16, 1963; Central Policy Files; 1963, AE; AU: UAR; Box 4164; NAII. For a minutes of the American and British meetings, see Memcon, Discussions with Technical UAR Team Concerning Costs and Other Aspects of U.S.-Provided Nuclear Materials and Equipment, September 13, 1963; GRDOS; Central Policy Files; 1963, AE; AE: UAR; Box 4164; NAII; NAII; PRO: Note for the Record, Meeting with UAR Power Committee held at UKAEA 25 September 1963, in memo from A. K. H. Slater, UKAEA, to Gladstone, FO, September 25, 1963, FO 371/172904.

[68] Hedayat describes the differences between the two as a disagreement over science policy, rather than anything having to do with the AEE. On Hedayat's political problems, see Interview with Salah

Hedayat retained his position as head of AEE and Nasser's personal scientific adviser, but Hedayat's departure from the Ministry of Science did not end his problems. He was also facing criticism from within the AEE. A vocal minority of scientists and engineers disapproved of Hedayat's leadership. The anti-Hedayat group looked with disdain on Hedayat's lack of an advanced education and resented his military style of program administration. Hedayat disapproved of the dissidents, who he thought were too academic and who refused to carry out his orders. Hedayat had a particularly bitter feud with Abdel Maaboud El Guibaily, the head the AEE's radiochemistry section. The AEE found itself divided into two groups, one led by Hedayat and another led by El Guibaily. Relations deteriorated to the point where the dissident group took the unprecedented action of putting their complaints in writing, which they forwarded to Hedayat's superiors.[69]

Complaints by the dissident group may or may not have had an impact on Hedayat's continued tenure.[70] What is certain is that Hedayat was forced out the following year, in 1965. He was replaced by El Guibaily, his chief rival within the AEE.[71]

In the period between Hedayat's demotion from Minister of Science and his departure from the AEE, work continued -- albeit slowly -- on plans for the new reactor. With the help of Kennedy and Donkin, the AEE finally put the project out to bid in September, 1964. It called for a medium-

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Hedayat, February 16, 1995 and April 26, 1995; Amin Zaki El-Behay, April 23, 1995 and January 1, 1997; Sayed Amin El Khashab, January, 5, 1997. On Sabry, see Incoming Telegram from John S. Badeau to the SOS, Section one of two, March 3, 1963; National Security Files NSAM 262;Yemen disengagement; Folder 1, Box 342; JFKPL; Incoming Airgram from Donald C. Bergus, Amembassy Cairo, to the SOS, The Rise of Ali Sabri, March 7, 1963; GRDOS; RG 59; Central Policy Files; Pol, 1963; Pol 15 Gov. UAR 2/1/63; Box 4076; NAII; Beattie, *Egypt During the Nasser Years*, pp. 172-173, 183. On Turki and his appointment, see *MEJC*, March 25, 1964; Incoming Airgram from Stephen E. Palmer, Amembassy Tel Aviv, to the SOS, April 10, 1964; NAII; Bhatia, *Nuclear Rivals in the Middle East*, p. 50.

[69] It has been suggested that Hedayat's political problems with Sabri and his removal from the Ministry of Science emboldened the dissidents, who became increasingly vocal. On the internal factions and fighting within the AEE, see Interview with Salah Hedayat, February 16, 1995 and April 26, 1995; Interview with Amin Zaki El-Behay, April 23, 1995 and January 1, 1997; Mohamed Ezzat Abdelaziz, February 13, 1995 and April 27, 1995; Sayed Amin El Khashab, January, 5, 1997; Ali Saidi, September 30, 1996; Ibrahim Hammouda, April 29, 1995 and January 5, 1997; Mohammed Masoud, December, 31, 1996; Ahmed Esmat Abdel Meguid, April 28, 1995.

[70] One observer believes that the internal revolt led to Hedayat's ouster. Others are skeptical, pointing out that in a military government, no one was interested in whether people like their boss. Another observer suspects that Hedayat's departure was the result of disagreements with a military officer who was the Chair of the AEE's board (the EBAE). Interviews with Mohamed Ezzat Abdelaziz, February 13, 1995 and April 27, 1995; Amin Zaki El-Behay, April 23, 1995, and January 1, 1997; Kamal Effat, February 14, 1995, and April 22, 1995.

[71] Hedayat formed his own firm -- Design Consultants Association -- and met regularly with the AEE staff who were still loyal to him. Under his guidance, they worked on plans for an Egyptian-Libyan project for the construction of a complete fuel cycle. See Interview with Amin Zaki El-Behay, April 23, 1995, and January 1, 1997; Bhatia, *Nuclear Rivals in the Middle East*, pp. 56-57.

sized power reactor (150-210 MW) to be located at Borg El-Arab near Alexandria. The plant was to provide electrical power and desalinated irrigation water for a new development district.[72]

The AEE preferred a natural uranium reactor. A natural uranium reactor -- like the Canadian CANDU reactor, the British magnox reactor, and a German model built by Siemens -- would allow Egypt to make use of indigenous fuels. When coupled with a reprocessing plant, it would also provide the most direct route to nuclear weapons.[73]

Bids were encouraged from several countries, including West Germany, the US, the UK, Canada, France, and the USSR.[74] Of these five countries, only two submitted bids. British, French and Canadian firms declined to participate, which meant no CANDU or magnox reactors. Four firms from the US and West Germany did tender offers. Three of the four -- Westinghouse, General Electric, and Allgemeine Elektricitats-Gesellschaft (AEG) -- proposed building light water reactors. The Siemens proposal called for a natural uranium, heavy water moderated reactor, complete with a fuel fabrication plant.[75] All the bidders made generous offers, but Siemens and Westinghouse tendered the best offers.[76]

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[72] Bids closed on March 1, 1965. On the timetable and objectives, see PRO: Brief for Lord Snow's Meeting with Mr. Geoffrey Kennedy on April 9, 1965; April 7, 1965, FO 371/183315.

[73] The American Embassy in Cairo commented that it was "well aware of UAR preference for natural versus enriched uranium reactor since the former would make bomb production much easier than latter." Incoming Telegram from Lucius Battle, Ambassador, Amembassy Cairo, to the SOS, March 31, 1965; NSF; Country Files, File: UAR cables, V. 3, 11/64-6/65; Box 159; LBJPL. On Egyptian interest in the magnox and CANDU reactors, see Interview with Hammad Fawzi, January 2, 1997. Both models used natural uranium and were thought to be plutonium producers, compared with light water reactors.

[74] On possible British, French, and Soviet proposals, see: PRO: Brief for Lord Snow's Meeting with Mr. Geoffrey Kennedy on April 9, 1965, April 7, 1965; FO 371/183315 (UK); Yair Evron, "The Arab Position in the Nuclear Field," p. 20 and Barnaby, *The Invisible Bomb: The Nuclear Arms Race in the Middle East*, p. 81 (France); Interview with Salah Hedayat, February 16, 1995, and April 26, 1995 (USSR). France and Egypt did sign an atomic cooperation agreement sometime later. *MEJC*, October 22, 1965.

[75] On the Seimens proposal, see PRO: J. K. Snape, Kennedy and Donkin, Sidi Kreir Power Station, Visit of AEG, January 30, 1965 attached to letter from M. P. V. Hannam British Embassy, Cairo, to D. A. S. Gladstone, February 24, 1965; FO 371-183315; PRO: Brief for Lord Snow's Meeting with Mr. Geoffrey Kennedy on April 9, 1965, April 7, 1965; FO 371/183315.

[76] According to a Kennedy and Donkin official, AEG's proposal was, on its face, "an unsatisfactory one." On the bids, see interviews with Mohamed Ezzat Abdelaziz, February 13, 1995, and April 27, 1995; Kamal Effat, February 14, 1995, and April 22, 1995; Salah Hedayat, February 16, 1995, and April 26, 1995; Ibrahim Hammouda, April 29, 1995, and January 5, 1997. See also Incoming Telegram from Lucius Battle, Ambassador, Amembassy Cairo, to the SOS, March 31, 1965; NSF; Country Files, File: UAR cables, V. 3, 11/64-6/65; Box 159; LBJPL; "Financing Balks Cairo on Reactor," *New York Times*, August 1, 1965, p. 22; Bhatia, *Nuclear Rivals in the Middle East*, p. 55. On the AEG proposal, see Letter from M. P. V. Hannam, British Embassy, Cairo, to D. A. S. Gladstone, FO, February 24, 1965; FO 371-183315. Effat rejects the claim by Bhatia that the Seimens offer was ever treated seriously, and maintains instead, that the Westinghouse bid was preferred. Interview with Kamal Effat, February 14, 1995 and April 22, 1995.

According to Bhatia, an agreement was concluded with Siemens. Bhatia goes on to suggest that the deal was canceled by Egypt in 1965 after a nasty dispute with West Germany over the sale of tanks to Israel. Following that, the AEE then turned to the American bidders.[77] Facts surrounding this episode are less than clear, but it appears that Egypt and Germany were engaged in negotiations *after* the tank controversy and rupture in relations.[78] What is known is that Hedayat left the AEE before a final decision on the bids was made.[79]

In the end, Egypt announced that Westinghouse was the winner. AEE officials found its bid the most financially attractive.[80] Back in 1963, when work on a formal bidding process began, Egyptian representatives acted "as if money is not the deciding factor."[81] By the end 1965, however, Egypt's most vocal nuclear advocate had left the program and the economy had hit the

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[77] Bhatia, *Nuclear Rivals in the Middle East*, p. 55. Bhatia goes on to suggest that Egyptian-Soviet plans for hot labs were suspended after the Seimens deal fell through.

[78] West Germany established relations with Israel the first week of March, 1965, but Egyptwas still negotiating with Germany over a nuclear reactor almost a month later. The details surrounding the tank controversy are complex. Egypt was purportedly angry with West Germany for secretly supplying Israel with American-made tanks and for the FRG's subsequent diplomatic recognition of Jewish state. West Germany was equally unhappy with Egypt's overtures to East Germany. According to a *New York Times* report at the time, however, the tank sale to Israel was not the reason for the West German-Egyptian falling out. The article rightly points out that Nasser knew of the West German-Israeli deal back in the fall of 1964 but said nothing. It goes on to suggest that the real cause of the dispute was Egypt's move toward closer relations with East Germany, a step taken in response to mounting Soviet pressure. West German anger over Egyptian overtures to East Germany does not explain why *Egypt* was the one that canceled the deal. One report at time cited talk in "diplomatic circles" that Egypt was not really concerned about Israel's acquisition of new tanks. Instead, they believed that "fear of Israel's development of an atomic bomb far overshadows any present irritation over the tank sale." On the break in relations, see *MEJC*, March 7, 1965. On the continuing negotiations, see Incoming Telegram from Lucius Battle, Ambassador, Amembassy Cairo, to the SOS, March 31, 1965; NSF; Country Files, File: UAR cables, V. 3, 11/64-6/65; Box 159; LBJPL. For the *New York Times* report, see Hendrick Smith, "Ulbricht Visit to Cairo Today Said to Have Been Urged by Soviet," February 24, 1965, p. 2. On fear of nuclear weapons being worse than the anger over tanks, see Hendrick Smith, "Warning on Bomb Given by Nasser" *New York Times* , February 21, 1966, p. 8.

[79] See interview with Salah Hedayat, February 16, 1995, and April 26, 1995.

[80] This was the view offered by all AEE officials interviewed for this study.

[81] On money not being the deciding factor, see PRO: Letter from M. P. V. Hannam, British Embassy Cairo, to D. A. S. Gladstone, FO, August 21, 1963; FO 371/171010.

skids.[82] A letter of intent was signed a year later in 1966.[83] That same year, Egypt requested a $100 million loan from the United States for the purchase of the plant. The US declined the request.[84] Soon 1966 became 1967, and in June, Israel launched what became known as the Six Day War. After Egypt's crushing defeat, the Westinghouse commitment was shelved and all plans for nuclear development frozen.

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In this period, Egypt's nuclear program was a series of false starts. The project first lost momentum in mid-1961. The Inchas reactor had come on line, and Germany had submitted a proposal for a new reactor, but no action was taken. In 1963, Egypt again took up the reactor project. At the time, "...the Egyptians were wanting tenders to be received and... assessed within the space of a year." That schedule went quickly "by the board."[85] Under the revised schedule, the tender process was

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82 The country had enjoyed several years of robust growth, particularly in the industrial sector, but this growth had been financed by foreign aid and deficit spending. By 1965, the effects of these policies -- exacerbated by natural disasters and the nationalization of the economy -- became acute, and the government moved to limit expenditures. In particular, Egypt was suffering a scarcity of foreign exchange and having problems establishing new lines of credit. On Cairo's economic problems in this period, see "Financing Balks Cairo on Reactor," *New York Times*, August 1, 1965, p. 22. Regarding the effect on nuclear program, see Interviews with Hammad Fawzi, January 2, 1997; Amin Zaki El-Behay, April 23, 1995, and January 1, 1997.

83 On the letter of intent, see interview with Kamal Effat, February 14, 1995, and April 22, 1995.

84 Nasser's request for the $100m followed U.S.-Israeli negotiations for a nuclear desalinization plant in January of 1966. President Johnson had earlier offered nuclear assistance under the President's "Water for Peace" (WFP) initiative, which was announced in October of 1965. The WFP concept had originated with the Eisenhower administration, was picked up by Kennedy and revived, albeit briefly, by Johnson. It was similar to Atoms for Peace in that it offered participating countries access to nuclear desalinization in return for inspections of their nuclear facilities. It was also aimed at relieving the tension over Israel's plans to divert the Jordan River for irrigation. The US-Israeli plan angered Nasser, who was increasingly persuaded that Johnson was secretly supporting Israel's nuclear weapons program. In a CIA cable from the UAR dated February 9, 1964, an intelligence official reports that Nasser "seems genuinely convinced that President Johnson intends to help Israel develop nuclear weapons." In February of 1966, and then again in April and in May, Nasser publicly warned Israel that Egypt would not stand idly by as Israel built a nuclear weapon. On the offer to Israel, see John Finney, "U.S. and Israel Agree on Feasibility of Mediterranean Desalting Plan," *New York Times*, January 12, 1966, p. 13. On Water for Peace, see John Finney, "Atoms, Water and Politics," *New York Times*, March 6, 1966, p. IV, 4. On the CIA cable, see CIA, Intelligence Information Cable, Nasir's reaction to President Johnson's Speech at the Weisman Institute, February 9, 1964, pp. 1-2; NSF; Country Files, File: UAR cables, Vol. 1, 11/63-5/64; Box 158; LBJPL. On Nasser's warnings to Israel about its nuclear development, see Hendrick Smith, "Waring on Bomb Given by Nasser," *New York Times*, February 21, 1966, p. 8; "Nasser Threatens to War on a Nuclear-Armed Israel," *New York Times*, April 18, 1966, p. 6; James Feron "Mideast Atom Curb Is Urged by Eshkol," *New York Times*, May 19, 1966, pp. A1, A14.

85 On the schedule going "by the board," see PRO: Note for the Record, H. Cartwright, Reactor Group, UKAEA, United Arab Republic, June 17, 1963; FO 371/171010.

to begin in September 1963, with a six month application period.[86] Instead, the project was not put out to bid another year, and then the Egyptians "requested an extension of time from all bidders."[87] The pattern of delay continued until the program was frozen in 1967.

## E. The Military and Weapons of Mass Destruction

So far, the focus of attention has been the Atomic Energy Establishment, but Egypt's efforts in the nuclear field were not limited to the AEE. Within the military, for example, there appears to have been a "special projects group" that explored the acquisition and development of a variety of exotic weapons. The person coordinating these activities, General 'Isaam al-Din Mahmoud Khalil, was in charge of "armaments production" and reported directly to Nasser.[88] Khalil and an assistant, Colonel Nadim, had interests in a variety of projects, mostly focusing on the production of rockets. In the early 1960s, however, Khalil's efforts most likely included biological weapons, radiological weapons, and possibly nuclear weapons as well.[89]

Egypt's various atomic cooperation agreements provided for the acquisition of nuclear materials, and a number of press accounts at the time suggested that Egypt was purchasing radioactive materials from India and Germany for use in radiological weapons.[90] Nasser, himself, had

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[86] On the revised schedule, see PRO: Letter from M. P. V. Hannam, British Embassy Cairo, to D. A. S. Gladstone, FO, August 21, 1963; FO 371/171010.

[87] On the bid and request for an extension, see Summary of Desalting Cooperation with Israel, Saudi Arabia and the UAR, [Undated], p. 4; RG 59; Israel Lot Files, Folder: S/S memos, Israel, 1965; Box 9; NAII.

[88] Memorandum of conversation, Mr. Arthur von Magnus, German Embassy, UAR Rocket Program, August 15, 1963; Lot Files Pertaining to the Near and Middle East; RG 59; Bureau of Near East and South Asian Affairs, Office of Near Eastern Affairs; Records of the Director, 1958-1963; Cairo 1963; Box 7; NAII. There is some ambiguity regarding Khalil's role. He was described as in charge of the rocket program, as was Brigadier General Kamal Azab and the Chief of the Air Force, Aziz Sidqi. Other reports link him to radiological and nuclear weapons. On Khalil, see also Memorandum of conversation, Walter Zable, Cubic Corporation, and Roger Davies, NE, Cubic Corporation Activities in the UAR, January 4, 1965, p. 5; GRDOS; RG 59; Def 12 UAR; NAII; Airgram form Stephen E. Palmer, Amembassy Tel Aviv, to DOS, Alleged "Cubic" Participation in Tests of UAR Missiles, June 19, 1965; GRDOS; RG 59; Def 12 UAR; NAII; "Nasser's Nuclear Breakthrough," *The Guardian*, May, 4, 1963, p.1.

[89] Radiological weapons do not result in a nuclear explosion. Instead, they use conventional explosives to scatter radioactive material.

[90] On reports of radiological weapons, see "Nasser's Nuclear Breakthrough," *The Guardian*, May, 4, 1963, p.1; John Maddox, "Nasser's Thwarted Hopes," *The Guardian*, May, 8, 1963; *Parade Magazine*, June 2, 1963; *Washington Post*, June 11, 1963, p. 1; C. L. Sulzberger, "Foreign Affairs, The Problem of the Garbage Bomb," *New York Times*, November 20, 1963. The week before the *Guardian* article, British Foreign Minister John Butler suggested that Egypt was working on radiological weapons. Butler's remarks drew press attention, and his government quickly distanced itself from the comments. "We have no information that governments of the UAR or Israel have decided to produce or are about to produce nuclear weapons of any kind," the Prime Minister told the House of Commons. See Incoming Telegram from Amembassy London to the SOS, May 8, 1964; GRDOS; RG 59; Central Policy Files, 1964-1966, Political and Defense; Def Def Affairs 12 Armaments 1/1/64 Israel; Box 1643; NAII.

privately told American officials that "had evidence that the Israelis were planning to use radioactive products in warheads." He went on to say that Egypt had built two biological weapons laboratories in response to Israel's BW lab.[91]

No Egyptian official interviewed for this study denied that there was work on radiological weapons. One person, when asked about radiological weapons, responded that "naturally," Egypt had looked at a "trash bomb." He explained that "in every military there are dreamers or exploiters" who convince their bosses to back some scheme.[92] By late 1963, however, interest in biological and radiological weapons appears to have subsided. General Itzhak Rabin, then Deputy Chief of Staff of the Israeli Defense Forces, told the Director of the US Defense Intelligence Agency that Egypt had "shelved its plans" for radiological weapons. American intelligence estimates had arrived at similar conclusions.[93]

Putting radioactive materials in a warhead is one thing; building a nuclear weapon is quite another. Still, there is some reason to believe that the special projects group not only played with biological, chemical, and radiological weapons, but sought nuclear weapons technology as well. The main basis for speculation comes from two articles that appeared in the *Guardian* newspaper in May of 1964. John Maddox, the *Guardian* science correspondent, wrote a front-page report that appeared as "Nasser's Nuclear Breakthrough." It made attention grabbing claims about Nasser's nuclear ambitions, and was accompanied by a *Guardian* editorial. Maddox's report was based on an interview with a German engineer who had worked for the Egyptians. It claimed that Nasser had two dozen German scientists that were working on radiological and nuclear weapons and that the had achieved a "breakthrough" in "minor" nuclear missiles.

Three days later, the paper printed what amounted to a lengthy retraction. There was a follow-up article by Maddox, with an editorial preface explaining that the original report of a breakthrough "overstated the situation." Maddox's follow-up report, headlined "Nasser's Hopes Thwarted," focused on the shortcomings of radiological weapons -- a position at odds with the thrust of the original report. At the end of the article, however, Maddox reports that in a subsequent interview with his principle source, his informant...

> ...was explicit about the details of plans he says were being followed in the development of actual nuclear weapons which explode after the fashion of the Hiroshima bomb. The Egyptians, he said, had obtained drawings of the mechanism of a bomb, and indeed had tried to buy six versions of it from West Germany and had also intended to obtain from the same source centrifuge machines for obtaining enriched or fissile uranium.[94]

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91 On Nasser's remarks, see Airgram from Amembassy Cairo to the DOS, Memcon with President Nasser, April 18, 1961; GRDOS; RG 59; Central Policy Files, 1964-1966; Pol 63-66; Pol Affairs and Relations 1/1/65, Arab-Israel; Box 1888; NAII.

92 Interview with source. He went on to suggest that between the dreamers and the exploiters, the exploiters are more common.

93 Memo for McGeorge Bundy, Summary of Transcript of November 12-13 US-Israeli Talks, November 23, 1963; GRDOS, RG 59; Is Lot files; White House Correspondence, 1963; Box 9; NAII

94 "Nasser's Nuclear Breakthrough," *The Guardian*, May, 4, 1963 p.1; John Maddox, "Nasser's Thwarted Hopes," *The Guardian*, May, 8, 1963.

Press reports concerning WMD in the Middle East were often questionable, and the *Guardian*, in particular, frequently printed exaggerated claims. Still, there are reasons to believe the Maddox reports as far as they go, i.e. as a description of an ad hoc procurement program. These efforts suggest an intention to acquire nuclear weapons, but something that was far short of a national program.

## F. Attempted Procurement and Joint Ventures

As the military dabbled in exotic weapons and the AEE attempted to build a nuclear infrastructure, Nasser turned directly to other countries for assistance with nuclear weapons or nuclear weapons-related technology. The first of these efforts occurred in January, 1961 -- soon after the Dimona revelations. The occasion was a previously scheduled meeting of the Arab League's Foreign Ministers. Dimona was a prominent agenda item, complete with a report by the Secretary General on Israel's nuclear capability. The report concluded that Israel would be able to build a nuclear weapon within a "few years."[95] According to an Egyptian diplomat present at the meeting, Egypt proposed a pan-Arab nuclear program to match the Israeli effort. The program would be hosted by Egypt and receive financial support from the other Arab states.[96] Nasser's Arab neighbors, particularly the monarchies, had little enthusiasm for the idea. Sammi Sharaf, Nasser's secretary, maintains that similar proposals were made at "every meeting" of the Arab League that followed.[97]

Sometime before 1962, Egypt also approached India for help, most likely in the area of reprocessing. There had been close cooperation between the two non-aligned countries since the 1950s, and Homi Bhabha -- the head of the Indian program -- had good relations with Nasser, Rahman, and Hedayat.[98] In yet another irony of the nuclear age, India's Prime Minster Nehru told Nasser that India was not seeking nuclear weapons and advised Nasser to go slow in the nuclear field, given the history of conflict in the Middle East. Nehru went on to say that India "did not have these problems" and was thus free to pursue nuclear development. On the question to aid to Egypt, Nehru explained that India's program depended on Canadian assistance and that as a consequence,

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[95] Telegram Information Report, CIA, Arab League Report on Israeli Nuclear Capability, January 25, 1961; GRDOS, RG 59; Lot Files: Atomic Energy, 1944-1963; 21.50, Country file Israel, f. reactor 1961, pt 1 of 2, Box 418; NAII.

[96] Interview with Tahseen Basheer, December 29, 1996.

[97] Interview with Sammi Sharaf, January 6, 1997. It may be that Sharaf exaggerates the number of times a nuclear program was proposed at Arab League meetings, but he was insistent that Egypt tried repeatedly. One could surmise that, at a minimum, a pan-Arab nuclear program was proposed at least four times before the '67 war: 1961, 1964, 1965, and 1966. At each of these Arab League meetings, the Israeli nuclear program was a central topic of discussion. On the '64, '65 and '66 meetings, see Incoming Telegram from Amembassy, Cairo to the SOS, August 28, 1964; GRDOS, RG 59; Central Policy Files; Political and Defense; Def Def Affairs 12 Armaments 1/1/64 Israel; Box 1643; NAII; Outgoing Telegram from DOS, September 9, 1965; NAII; Incoming Telegram from Amembassy, Rabat to the SOS, US Arms Sale to Israel; Israel Nuclear Potential, March 1, 1966; GRDOS, RG 59; Central Policy Files; Political and Defense; Def-Defense Affairs Israel 12 Armaments 1/1/65; Box 1643; NAII.

[98] Interview with Ibrahim Hilmy Abdel Rahman, February 16, 1995.

the Indian government could not transfer certain sensitive nuclear technologies.[99] India did assist Egypt with its nuclear program, however. India was described as being "very helpful," but after 1965, Indian-Egyptian cooperation began to wane.[100]

The most serious discussions of nuclear weapons took place with the Soviet Union and the People's Republic of China. Senior Egyptian officials confirm that Nasser discussed nuclear weapons with both countries, first approaching the Soviets and then the Chinese. In both cases, Egypt came up empty, though Nasser was able to parley the Sino-Soviet competition into help with reprocessing technology.

Precise details about the requests are lacking, but it appears that nuclear weapons were a topic of conversation with the Soviets in 1963. According to Heikal, Nasser secretly flew to Moscow to meet with Khrushchev. Egyptian-Soviet relations had been deteriorating, and both leaders hoped the meeting might put relations back on track. Nasser went to Moscow with various agenda items, among them a request for a Soviet reactor.

During Nasser's stay, his hosts showed a military film describing the effect of a Soviet nuclear strike on the American 6th fleet. Heikal claims that the Egyptian president was deeply affected by the film, so much so that he said he said he had no appetite for the dinner that was scheduled to follow the film. At one point, Khrushchev asked if the reactor was for nuclear weapons. Nasser replied by saying that his answer would astonish the Soviet leader, but "I don't think I will do it." Nasser went on to say that he knew Israel was working on nuclear weapons, but thought Israel would not use them unless attacked by Egypt. Nasser neatly summarized Egypt's policy: "position in nuclear technology - yes, nuclear bombs - no."[101]

The following year, in 1964, the White House had unconfirmed reports that Egypt attempted to purchase nuclear weapons from the USSR.[102] About a year later, the *New York Times* reported in a front page story that Egypt tried to buy nuclear weapons from the Soviets during a visit to Cairo by Marshall Grechko, First Deputy Minister of Defense.[103] These last two reports deserve to be

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[99] Interviews with Sammi Sharaf, January 6, 1997 and Mohammed Hassanein Heikal, January, 6, 1997.

[100] Interviews with Sammi Sharaf, January 6, 1997; Mohammed Masoud, December, 31, 1996; Nabil Fahmy, April, 21, 1995.

[101] Interview with Mohammed Hassanein Heikal, January, 6, 1997.

[102] On reports of an Egyptian attempt to buy Soviet nuclear weapons, see Background Paper on Factors Which Could Influence National Decisions Concerning Acquisition of Nuclear Weapons, December 12, 1964, p. 24; NSF, Committee File, Committee on Nonproliferation, Box 1-2; LBJPL.

[103] The article reported that Grechko offered a nuclear security guarantee in lieu of weapons. The *Jewish Observer* and *Middle East Review* later carried a similar story. It alleged that the Soviets refused to provide non-conventional weapons but offered to provide "scientists to help him develop this kind of weapon" as well as a security guarantee. In return, Egypt supposedly signed a protocol providing the Soviet Union with bases on Egyptian territory. For the *Times* article, see Hedrick Smith, "Soviet Said to Offer Cairo Atom Defense," *New York Times*, February 4, 1966, p. 1. On the *Observer* and other stories, see Airgram from the DOS to Amembassy Cairo, Reported USSR-UAR Agreement for Soviet Bases in UAR, March 21, 1966; NAII. Smith later described the report as being based on diplomatic sources in Cairo, and that Egyptian officials did nothing to discourage

treated skeptically, but at some point, Nasser did discuss the acquisition of nuclear weapons or weapons-related technology with the Soviet Union -- this according to five sources, including Egypt's former ambassador to the Soviet Union.[104]

China and Egypt discussed nuclear weapons during Chou En-Lai's visit to Cairo in December of 1963. According to Heikal, Nasser asked Chou about acquiring nuclear weapons technology. At the time, China had been campaigning against the Partial Test Ban Treaty, which it viewed as a Soviet-American plot to maintain nuclear hegemony and contain China. Chinese leaders had, in fact, declared that "the greater the number of socialist countries possessing [...nuclear weapons], the greater the guarantee of world peace."[105]

Nevertheless, when asked about nuclear weapons by Nasser, Chou responded by saying that no country would share its nuclear weapons. Egyptian officials then pointed out that Canada had agreed to provide India with a reprocessing facility. Chou was skeptical of the extent of Indian-Canadian cooperation. He went on to argue that nuclear weapons were very costly and of limited value, since it was doubtful they could be used."[106]

The issue of nuclear cooperation came up again in 1965, soon after China's October, 1964 detonation of an atomic device. According to Heikal, "Nasser was enthusiastic about China's atomic success."[107] After the Egyptian leader sent a message of congratulations, Chou replied with his own message. The message is said to have promised that "China would not be like others and keep a monopoly on its scientific achievements, but would throw it knowledge open to everyone."[108]

China and the UAR then signed a nuclear cooperation agreement in January of 1965. In April of 1965, a delegation of AEE officials visited China seeking assistance, and in particular, a

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the conclusion that Cairo and Moscow had arrived at some kind of arrangement. Interview with Hedrick Smith, June 30, 1998.

[104] On seeking nuclear weapons assistance from the USSR and the PRC, see interviews with Sammi Sharaf, January 6, 1997; Mohammed Hassanein Heikal, January, 6, 1997; Mourad Ghaleb, January 5, 1997; Mohamed Ezzat Abdelaziz, February 13, 1995, and April 27, 1995; and another source. Chou, himself, declared that in September of 1965 -- not long after a visit to Cairo -- that "China has already been approached by several countries" for help in the nuclear field. In that same press conference, Chou went on to express the hope that "China hopes that Afro-Asian countries will be able to make atom bombs themselves and it would be better for a greater number of countries to come into possession of atomic bombs. Chen Yi, "China Is Determined to make All Necessary Sacrifices for the Defeat of U.S. Imperialism, Vice Premier and Foreign Minister Chen Yi's Press Conference for Nearly 300 Chinese and Foreign Correspondents," *Beejing Review*, VIII/41, October 8, 1965, pp. 7-14, cited in Chih-chiang Hu, "Arms control policy of the People's Republic of China, 1949-1978," Unpublished Ph. D. Thesis, University of Oxford, 1984, pp. 125-6.

[105] Interview with Mohammed Hassanein Heikal, January, 6, 1997; "A Betrayal of the Soviet People," originally appeared in the *People's Daily* under a different title, reprinted in the *Beijing Review*, VI/32, August 9, 1963, pp. 10-11, cited in Chih-Chiang Hu, *Arms Control Policy of the People's Republic of China, 1949-1978*, p. 125.

[106] Interview with Mohammed Hassanein Heikal, January, 6, 1997.

[107] Heikal, *The Cairo Documents*, p. 305; Interview with Mohammed Shaker, February 10, 1995.

[108] Heikal, *The Cairo Documents*, pp. 304-5.

reprocessing laboratory suitable for the production of fissile material.[109] Later that same month, Chou was in Cairo for a day of talks, and returned again in June for a longer visit. Over the course of these discussions, the Chinese promised to help with reprocessing, but the promise turned out to be more talk than action. According to Rahman, China provided some assistance with radiochemistry "to snub the Russians," but substantive help was not forthcoming.[110] If China was intending to show up the Soviets, their rivals got the message. Following the Chinese talks, the USSR approved the transfer of "their own chemical facility."[111]

In the end, however, neither the USSR nor the PRC provided nuclear weapons or weapons-related technology. Both provided assistance with radiochemistry, but neither country transferred a complete, high-level waste reprocessing facility.

## G. Response to Arms Control Initiatives

Throughout this period, as Nasser sought help from the USSR, China, India, and other Arab states, he also discussed arms control with the United States. American policy makers worried about Israel's growing nuclear capability, and they also worried about Egypt's likely response -- be it preventive war, an alliance with the Soviet Union, or an Egyptian bomb.

The Kennedy administration, after two years of internal discussions, put together a secret arms control proposal. Israel would receive a US security guarantee in return for not attacking its neighbors and not developing nuclear weapons. Egypt would refrain from developing missiles or seeking military applications of nuclear technology. In return, Egypt would receive assistance with its space and civilian nuclear programs. Both Israel and Egypt would also enjoy the benefit of knowing that its adversary was not developing nuclear weapons.[112]

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[109] On the delegation's visit, see *MEJC*, April 8, 1965; Incoming Telegram from Amembassy London to the SOS, Egypt-Chicom Nuclear Weapons Cooperation, April 9, 1965; GRDOS; RG 59; Central Foreign Policy Files, 1964-1966; Political and Defense; Def Chicom-UAR; Box 1616; NAII; Incoming Telegram from Amembassy Cairo to the SOS, Egypt-Chicom Nuclear Weapons Cooperation, April 21, 1965; NAII; Evron, "The Arab Position in the Nuclear Field: A Study of Policies Up to 1967," pp. 21, 30; interview with Ibrahim Hilmy Abdel Rahman, February 16, 1995. On the request for weapons-related nuclear technology, see interviews with Mohammed Shaker, February 10, 1995 and Mohamed Ezzat Abdelaziz, February 13, 1995, and April 27, 1995; Mohammed Hassanein Heikal, January, 6, 1997; and another source. On Chou's visit, see *MEJC*, June, 19, 1965.

[110] On the China's lack of follow-through, see interviews with Mourad Ghaleb, January 5, 1997; Ibrahim Hilmy Abdel Rahman, February 16, 1995, and April 20, 1995; Mohammed Masoud, December, 31, 1996.

[111] Interview with Ibrahim Hilmy Abdel Rahman, February 16, 1995, and April 20, 1995. Press reports at the time suggested that Egyptian scientists were to be sent to China for nuclear training. See Hu, "Arms control policy of the People's Republic of China, 1949-1978," pp. 129-130.

[112] Letter from Phillips Talbot, DOS, to Ridgway B. Knight, Damascus, May 27, 1963; Lot Files Pertaining to the Near and Middle East; RG 59; Bureau of Near East and South Asian Affairs, Office of Near Eastern Affairs; Records of the Director, 1958-1963; Letters from the Field 1963; Box 7 NAII; Incoming Telegram from John McCloy to the SOS, Section three of three, June 28, 1963; Interview with Herman Eilts, September 10, 1993.

In 1963, Kennedy sent Nasser a series of personal letters and special representatives on the issue of arms control.[113] In April of 1963, the White House sent Robert Komer to Cairo. Komer worked for McGeorge Bundy, the President's National Security Advisor. Nasser met with Komer and US Ambassador John Badeau, and much of the conversation focused on weapons of mass destruction.[114] According to Komer, Nasser "implied without saying so directly that the UAR was moving into military applications of nuclear energy, because it was convinced that the Israelis were doing so."[115]

Two months after Komer's visit, Kennedy sent his special emissary, John McCloy, to present the administration's proposal.[116] According to McCloy, Nasser gave the plan a polite but cool response. He promised to think about it and discuss it with the American ambassador.[117] According to McCloy, "the main motivation of [Nasser's] attitude toward our proposal was based on political sensitivities as he sensed them both in the Egypt and in the Arab countries. Sheer military considerations were not the main factors."[118]

The next stop on McCloy's trip was supposed to be Israel, where the proposal was to be presented to Prime Minister Ben-Gurion. In a surprise turn of events, however, Ben-Gurion resigned days

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113 Kennedy developed a personal correspondence with Nasser beginning in 1961. Kennedy's April, May, and June letters in 1963 raised the issue of arms control and requested that Nasser meet with special envoy John McCloy. One letter even warns Nasser that "Israel could have the capability to develop nuclear weapons in the next few years...." Outgoing Telegram from DOS to Amembassy Cairo, April 18, 1963; NAII; Outgoing Telegram from DOS to Amembassy Cairo, May 27, 1963; GRDOS; RG 59; Central Policy Files 1960-1963; Pol 1963; Pol 15 Gov. UAR 2/1/63; Box 4076; NAII; Outgoing Telegram from DOS to Amembassy Cairo, June 15, 1963; GRDOS; RG 59; Central Policy Files 1960-1963; Pol 1963; Pol 15 Gov. UAR 2/1/63; Box 4076; NAII.

114 Komer was not the first Kennedy representative to talk arms control with the Egyptians. Both Ambassador Badeau, who had extraordinary access to Nasser, and Chester Bowles, a US undersecretary of state, had earlier raised the issue with the Egyptian president . Badeau describes Nasser as "gloomy and unenthusiastic" about the prospects of arms control. Incoming Telegram from Badeau to the SOS, August 24, 1962; GRDOS; RG 59; CDF 1960-1963; 684A.86/1-262; Box 1385 NAII. On the Bowles meeting, see Incoming Telegram from Bowles to the President and SOS, Section one of two, February 19, 1962; GRDOS; RG 59; CDF 1960-1963; 786B.11/1-262; Box 2074; NAII.

115 Airgram from Amembassy Cairo to the DOS, Memcon with President Nasser, April 18, 1961; GRDOS; RG 59; Central Policy Files 1960-1963; Pol 63-66; Pol Affairs and Relations 1/1/65, Arab-Israel; Box 1888; NAII. According to Komer, Nasser "was very friendly. And we talked about a lot of things, we talked about his nuclear capability. He said, 'Sure I'll show it to you.' He calls up the Minister of Scientific Coordinations and says, 'I want you ...to take Komer out to see our Inshas reactor this afternoon.'" Interview with Robert Komer by Avner Cohen and Virginia Foran, June 11, 1992.

116 Incoming Telegram from McCloy to the SOS, Sections one, two, and three, June 28, 1963.

117 Herman Eilts, who sat in one of the meetings with Nasser and McCloy believes that McCloy was overly negative in his assessment of Nasser's reaction. Eilts believed that Nasser's lack of enthusiasm was simply an opening posture in what could have developed as a negotiation. Interview with Herman Eilts, Herman Eilts, September 10, 1993.

118 Incoming Telegram from McCloy to the SOS, Section three of three, June 28, 1963, p. 2.

before McCloy was to present the plan. Given Nasser's response and the change of government in Israel, the administration decided to step back. The Secretary of State told Ambassador Badeau the it did "not favor pressing immediately for written statement from Nasser re his intentions on nuclear weapons and eschewing attack on Israel."[119] Kennedy did not give up completely on arms control, however. In October, the American ambassador in Cairo was instructed to approach his Soviet counterpart in Cairo and discuss a possible Soviet-American collaboration to prevent "the dissemination of nuclear weapons in the Middle East"[120]

Kennedy did not live long enough to pursue the idea. Following his assassination, and the succession of Lyndon Johnson, there was a marked a decline in American-Egyptian relations. Before that decline, however, there was an effort was to continue the arms control initiative begun under Kennedy. In May of 1964, Johnson wrote to Nasser, expressing his concern about a nuclear and missile arms race in the Middle East. The White House also began preparations for sending McCloy on a second mission to discuss arms control with the Egyptian president.[121]

Before McCloy could be dispatched, Nasser responded to Johnson's letter with one of his own. In the letter, Nasser declared that the UAR "does not think of bringing that terrifying danger (nuclear terror) to the region she lives in."[122] White House officials were pleased with Nasser's response: "In our view, Nasser's letter together with the OAU resolution satisfy our requirements so far as UAR intentions toward nuclear weapons are concerned."[123] White House officials decided to go forward with plans for the McCloy mission, but with one change: "[i]n view of satisfactory

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[119] Outgoing Telegram from DOS, to Amembassy Cairo, July 4, 1963. Kennedy also abandoned the idea of a security guarantee for Israel. Interview with Herman Eilts, September 10, 1993.

[120] Letter from John D. Jernegan to John S. Badeau, October 14, 1963; Lot Files Pertaining to the Near and Middle East; RG 59; Bureau of Near East and South Asian Affairs, Office of Near Eastern Affairs, Records of the Director 1958-1963; ME Arms Race 1963; Box 7; NAII.

[121] Memo from Dean Rusk for the President, Request for Appointment for the U.A.R. Ambassador, July 31, 1964; NSF; Country Files, File: UAR cables, Vol. 2, 6/64-12/64; Box 159; LBJPL; Memo from McGeorge Bundy to the President, August 3, 1964; NSF; Country Files, File: UAR cables, Vol. 2, 6/64-12/64; Box 159; LBJPL; Outgoing Telegram from DOS, to Amembassy Cairo, Near East Arms Control, May 28, 1964; NSF; Country Files, File: UAR cables, Vol. 1, 11/63-5/64; Box 158; LBJPL; Outgoing Telegram from DOS, to Amembassy Cairo, Near East Arms Control, May 29, 1964; NSF; Country UAR; Cables Vol. I, 11/63-5/64; Box 158.

[122] Memo for the President from McGeorge Bundy, August 3, 1964; NSF; Country Files, File: UAR cables, Vol. 2, 6/64-12/64; Box 159; LBJPL; Outgoing Telegram from DOS, to Amembassy Cairo, Near East Arms Control, May 28, 1964; NSF; Country Files, File: UAR cables, Vol. 1, 11/63-5/64; Box 158; LBJPL.

[123] Memo from Dean Rusk for the President, Second McCloy Mission on Near East Arms Control, August 12, 1964; NSF; Country Files, File: UAR cables, Vol. 2, 6/64-12/64; Box 159; LBJPL. The OAU resolution related to the nonproliferation of nuclear weapons in Africa, but the Johnson White House may have made too much of the OAU resolution. See Incoming Telegram from Amembassy Cairo to the DOS, OAU Conference, July 18, 1964; NSF; Country Files, File: UAR cables, Vol. 2, 6/64-12/64; Box 159; LBJPL; Background Paper on Factors Which Could Influence National Decisions Concerning Acquisition of Nuclear Weapons, December 12, 1964, p. 24; NSF, Committee File; Committee on Nonproliferation; Box 1-2; LBJPL.

response on nuclear weapons, McCloy would concentrate in this probe primarily on surface to surface missiles."[124]

In hindsight, it appears that the Americans were overly optimistic in their assessment. The following year, in 1965, Nasser sought nuclear assistance from China. In private discussions with the US, Nasser continued to say the right things -- that Egypt would accept IAEA safeguards, that there was no Soviet nuclear deal, that Egypt had not even decided whether to build a large reactor.[125] On the other hand, Egypt did not join the safeguards regime, and Nasser's public statements became increasingly ominous. By May of 1966, Nasser was telling the BBC that Egypt was "thinking of developing nuclear weapons to match Israel."[126] By this time, the Egyptian-American relationship had reached a new low, and the Israeli nuclear weapons program had gained a new prominence.

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This chapter has followed the trail of Egyptian nuclear decision making though the 1950s and 1960s. The historical record leaves little doubt that the government repeatedly sought the acquisition of nuclear weapons, and yet it never made the kind of national commitment that would have made the bomb a reality. There was no equivalent to the Manhattan Project or even to Egypt's own High Dam project. Instead, there was drift, delay, and missed opportunities. Perhaps the Egyptians thought that the passing of another day or another year might not matter. If so, they were wrong. Six days in June would radically alter their position in the world.

In the next chapter, the story of Egypt's nuclear decision making continues. It begins with the Six Day War and chronicles a remarkable and unexpected shift in Egyptian policy. Despite new vulnerabilities, Egypt gave up its nuclear ambitions and went on to become the region's strongest advocate for nuclear abstinence. Indeed, by the 1990s, Egypt could rightly claim a place alongside Australia as an international leader in efforts to stop the spread of nuclear weapons.

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[124] Outgoing Telegram from DOS, to Amembassy Cairo, August 7, 1964; NSF; Country Files, File: UAR memos, Vol. 1, 11/63-5/64; Box 158; LBJPL.

[125] Memorandum of Conversation, President Nasser, Lucius Battle, Phillips Talbot, April 18, 1965; NAII.

[126] "Nasser Cites Need for Nuclear Arms," *New York Times*, May 9, 1966, p. 8.

# Chapter 7. Egypt, 1967-1990

This chapter follows Egypt through the next two periods in its nuclear history. The first is defined by war, the second by peace. The tour of the "War Years" begins with the Six Day War in 1967, the most traumatic event in country's post-revolution history. Two wars and a change of leadership later, it comes to a close with Sadat's historic trip to Jerusalem in 1977. The story continues with a look at the "Cold Peace." This period covers the Camp David accords, Egypt's ratification of the NPT, the Iran-Iraq War, and ends in 1990, just before the Gulf War. Post-1990 events are briefly surveyed in a closing epilogue.

## I. The War Years: 1967-1977

On June 4, 1967, officials at Egypt's nuclear program went to work as they always had. Some were no doubt frustrated by the slow pace of progress. Almost seven years had passed since the first reactor talks, and still no construction had begun. Still, there were reasons for optimism. Egypt had signed a letter of intent with Westinghouse; the AEE had trained a large number of nuclear scientists; and the program's internal squabbles were finally over. As Egyptian officials left work that day, there was every reason to believe that the next few years would bring new successes in the nuclear field. By the time they returned to work the following morning, everything had changed.

The Six Day War fundamentally altered Egypt's status and strategy.[1] The Arab forces were completely routed, and the effects were felt throughout -- in foreign policy, in security policy, and in the nuclear program. This look at the War Years begins with a brief survey of events immediately following the '67 debacle, including Nasser's attempt to procure nuclear weapons. The scene then shifts to Sadat, the '73 War, and the subsequent revival of its civilian nuclear program.

### A. The Aftermath of the 1967 War

Defeat in 1967 War represented a tremendous humiliation for Egypt, the leading state of the Arab world. It also had a devastating effect on Egypt's economy. Failure on the battlefield meant the loss of oil wells in the Sinai and Red Sea as well as the closure of Suez Canal, which were key sources of foreign exchange. No less important was the loss of foreign aid. Several nations suspended aid during the war, and some continued to withhold aid after the fighting stopped. This loss of revenue came at a time when Egypt faced new demands, including the replacement of lost of soldiers and materiel.[2]

The impact on the nuclear program was immediate. The government froze funding for the AEE, and all AEE capital projects were canceled. Officials confined themselves to planning and paper studies.[3]

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[1] For a recent review of the competing explanations for Nasser's actions leading up to the Six Day War, see Ben D. Mor, "Nasser's Decision-making in the 1967 Middle East Crisis: A Rational-choice Explanation," *Journal of Peace Research*, Vol. 28, No. 4 (1991), pp. 359-375; Richard B. Parker, ed., *The Six-Day War: a Retrospective*, (Gainesville: University Press of Florida, 1996).

[2] On the economic impact, see Dana Adams Schmidt, "$500 Million Deficit Foreseen for Egypt This Year," *New York Times*, July 22, 1967, p. 2, which referred to the Egyptian situation as "desperate" and a "financial disaster." Lost revenue from the Suez Canal was projected to be $230 million a year. Juan de Onis, "U.N. Gets Report of War Impact on Arab Economy," *New York Times*, May 23, 1968, p. 4. The war had indirect economic effects as well, most of which exacerbated existing weaknesses in Egypt's economy. See also Farid, *Nasser The Final Years*, p. 9.

[3] On the funding freeze, see Bhatia, *Nuclear Rivals in the Middle East*, p. 57-58; Interview with Hammad Fawzi, January 2, 1997; Kamal Effat, February 14, 1995 and April 22, 1995; Ibrahim

The Six Day War led to a suspension of Egypt's civil nuclear program, but it may have also forced Nasser to reconsider a nuclear weapons option. Gen. Hasan al Badri, who served as a military adviser to Nasser from 1967 until his death in 1970, reports that nuclear weapons -- and in particular Israel's development of nuclear weapons -- were "discussed in the high counsel of war many times."[4]

More specifically, there are two events, whose confirmation would be evidence that Nasser still harbored an interest in nuclear weapons. First, Nasser is alleged to have met with a group of nuclear scientists to discuss whether Egypt could pursue the bomb.[5] According to Badri, the Egyptian President concluded that Egypt could go nuclear, but only "if the national budget is cut in half to devote to the bomb." Badri believed that Nasser wanted nuclear weapons, but was unwilling to inflict further economic hardship on his people.[6]

Second, Heikal and Bhatia both claim that a delegation of AEE officials went to China soon after the '67 War with the hope of purchasing nuclear weapons technology. The Chinese reportedly demurred, instead urging their Egyptian visitors to rededicate themselves to self-reliance.[7]

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Hammouda, April 29, 1995. In 1970, the AEE and the Ministry for Electricity commissioned an energy survey, which recommended the construction of new nuclear power plants. That same year, Egypt and India signed an atomic cooperation agreement that included projects related to mining, fuel fabrication, and the production of heavy water. In March, Egyptian scientists participated in the IAEA conference on Peaceful Uses of Nuclear Explosions. It was also in 1970 that Hedayat attempted to revive plans for a joint Libyan-Egyptian nuclear project, but the plan never got off the drawing board. Inexplicably, Lewis Strauss, chairman of the U.S. Atomic Energy Commission, visited Egypt soon after the war and proposed a new nuclear desalinization project for Egypt, Israel, and Jordan. Egypt, however, was is no position to launch a new project, and so the proposal went the way of the numerous proposals that had proceeded it. On the survey and the Indian agreement, see Bhatia, *Nuclear Rivals in the Middle East*, pp. 58-59. See also *MEJ*, April, 23, 1967. On the Conference on Peaceful Uses of Nuclear Explosions, see *U.S. Nuclear Non-Proliferation Policy, 1945-1991*, National Security Archive, Virginia Foran, Editor, (Alexandria: Chadwych-Healey, 1991), p.93 (abbreviated hereafter as *NSA*). PNEs or peaceful nuclear explosions were also discussed by the Egyptian delegation to the 1971 Fourth UN International Conference on the Peaceful Uses of Atomic Energy. See Bhatia, *Nuclear Rivals in the Middle East*, pp. 58-59. On Egyptian-Libyan joint venture and the falling out, see Bhatia, *Nuclear Rivals in the Middle East*, p. 66. On Strauss' visit and proposal, see H. S. Rowen and R. Brody, 'The Middle East', in Joseph A. Yager, ed., *Non-Proliferation and US Foreign Policy* (Washington: Brookings Institution, 1980), pp. 212-15.

[4] Interview with Hasan Al Badri, April 20, 1995.

[5] Massoud and Hammouda report hearing of such a meeting, but I have not yet interviewed anyone who has claimed to have attended the meeting. Interviews with Mohammed Masoud, December, 31, 1996 and Ibrahim Hammouda, January 5, 1997.

[6] Interview with Hasan Al Badri, April 20, 1995. Badri claims that he was so close to Nasser that he "knew what was in his mind." He maintains that Nasser viewed nuclear weapons as "decisive weapon" and a "terrible threat." If Nasser "had the budget and had the people - he would have done it." It is worth noting that defense budgets did, in fact, rise considerably, and that Egyptian citizens bore this cost as well as the economic costs associated with the War of Attrition.

[7] Bhatia, *Nuclear Rivals in the Middle East*, p. 56. Kamal Effat, one of the three people who went to China, denies any discussion of weapons or military applications. China had tested its first hydrogen bomb soon after the Six Day War, and the Soviets expressed concern that China might provide nuclear weapons to Egypt. Interviews with Kamal Effat, February 14, 1995 and April 22,

In either case, the result was the same: no nuclear weapons. The following year, in August of 1968 Egypt signed the NPT, one of sixty-one countries that signed on the day the treaty opened for signature. Egypt refused to ratify the treaty, however, and would not do so for another thirteen years.

## B. Sadat, the October War, and the Revival of a Civilian Nuclear Program

### B1. New Leader, New War

In September of 1970, the army colonel who led his country through the turbulent 1950s and 1960s, who experienced dizzying success and bitter defeat, died an exhausted man. Nasser's departure brought a very different leader to power, Anwar Sadat. Sadat focused on the main challenge at hand – the return of Egypt's lost territory, including the Sinai and Suez Canal.

Sadat inherited Nasser's War of Attrition, a war of hit-and-run harassment. The strategy managed to inflict pain on the casualty sensitive Israelis, but it also plunged the Egyptian economy into further distress without changing the reality on the ground.[8] Sadat abandoned the War of Attrition, and thought anew about Egypt's predicament. He realized that Egypt was overmatched militarily, but felt he had to take some action or risk the permanent loss of Egyptian territory. After diplomatic efforts failed to produce results, Sadat settled on a strategy of limited war. Its purpose was essentially political: a limited war would force the superpowers to address the Egyptian-Israeli dispute.[9] After several delays, Egypt launched a surprise attack on Israeli forces in the fall of 1973.

The October War began with great success for the Egyptians, but the battle soon turned, and Egypt found itself facing yet another major military defeat. The United States and Soviet Union intervened and ended the conflict before Israel was able to finish off Sadat's forces. Despite losses on the battlefield, Sadat's strategy was ultimately successful. The war returned the Middle East to the forefront of the international agenda. The great powers were once again willing to invest political and financial resources in the region, and in time, Egypt negotiated the return of the Suez and Sinai.

### B2. Boost for Nuclear Program

One consequence of the '73 War was a renewed interest in Egypt's nuclear program. The superpowers and the Europeans were looking for ways to re-engage Egypt, and several settled on a strategy that included offering nuclear power plants. Between 1974 and 1977, the United States, the

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1995. See also James Reston, "China Is a Factor in Soviet Position," *New York Times*, June 23, 1967, p. 1.

[8] On the recapture of lost territory as Egypt's primary objective, see, for example, R. D. McLaurin, Mohammed Mughisuddin, and Abraham R. Wagner, *Foreign Policy Making in the Middle East*, (New York: Praeger, 1977), p. 70. On the effects of the War of Attrition, see Yaacov Bar-Siman-Tov, *The Israeli-Egyptian War of Attrition, 1969-1970*, (Columbia: Columbia University Press, 1980); Jonathan Shimshoni, *Israel and Conventional Deterrence: Border Warfare from 1953 to 1970*, (Ithaca: Cornell University Press, 1988), p. 129.

[9] On Sadat's limited war aims, Saad Shazly, *The Crossing of the Suez*, (San Francisco: American Mideast Research, 1980), p. 25; Hasan Badri, *The Ramadan war, 1973*, (Dunn Loring, Va.: T. N. Dupuy Associates; New York: distributed by Hippocrene Books, 1978), p. 15, John J. Mearsheimer, *Conventional Deterrence*, (Ithaca: Cornell University Press, 1983), pp. 156-7; Shimshoni, *Israel and Conventional Deterrence: Border Warfare from 1953 to 1970*, p. 211; D. K. Palit, *Return to Sinai: the Arab offensive, October 1973*, (Dehra Dun, Palit & Palit Publishers, [1974]), p. 40; Avraham Tamir, *A Soldier in Search of Peace: an Inside Look at Israel's Strategy*, (New York: Harper & Row, 1988), p. 195.

USSR, India, France, and West Germany each offered to form partnerships with Egypt for the construction of large nuclear reactors.

The major player during this period was the United States. In January of 1974, Egypt's Minister of Electric Power wrote to the US expressing interest in a nuclear power project. The governments began talks on the sale of two 600 MW pressurized water reactors. In April and May of that year, plans for an enrichment services contract were discussed, and in June, during a successful visit by President Nixon to Cairo, the two governments issued a joint statement announcing plans for the sale of the US reactors and a nuclear cooperation agreement.[10] Egypt sent letters to Westinghouse seeking bids for the construction of a plant, and before the year was out, an American consulting firm was in Egypt planning the project. In November of 1975, Presidents Ford and Sadat initialed an preliminary agreement for sale of the 600 MW reactors.[11] Despite good will on both sides, however, progress slowed and the agreement was set aside.[12]

In the years immediately following the '73 War, Egypt's first preference was for American nuclear technology, but it sought other options as well. Even before the American negotiations, Sadat went to the Indian government and asked for help with building a 50 MW nuclear desalinization plant. Five months after Nixon's visit, the Soviet Union offered to sell new power reactors. That same

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[10] For a general chronology of the events leading up to the June announcement, see *US Foreign Policy and the Export of Nuclear Technology to the Middle East*, Hearings before the Subcommittee on International Organizations and Movements and on the Near East and South Asia of the Committee on Foreign Affairs, US House of Representatives, 93 Congress, Second Session, June 25, July 9, 18, and September 16, 1974 (Washington: GPO), p. 50. See also Gregory H. Kats, "Egypt," in *Non-proliferation: The Why and the Wherefore*, Jozef Goldblat, ed., SIPRI, (London: Taylor and Francis, 1985), pp. 186. On Nixon visit, see William B. Quandt, *Peace Process*, (Berkeley: University of California Press, 1993), pp. 215-16. On the joint statement, see *NSA Chronology*, p. 86.

[11] Westinghouse later received a signed letter of intent from the Egyptian government in 1976. On the original letters to Westinghouse, see Kats, "Egypt," p. 186. On the Ford-Sadat agreement, the US consulting firm, and the 1976 letter, see Bhatia, *Nuclear Rivals in the Middle East*, p. 60 and Taysir N. Nashif, *Nuclear Warfare in the Middle East: Dimensions and Responsibilities*, (Princeton: Kingston Press, 1984), p. 28.

[12] It was not until 1981 that an full agreement was finally signed. There were several reasons for the delay, not the least of which was the Indian detonation of a nuclear device in May of 1974. The Indian test resulted in a heightened concern about nonproliferation and new legislation that required renegotiation of bilateral nuclear agreements. Other explanations have been offered, including 1) Congressional opposition to helping Egypt, 2) opposition by Israel (which feared it would come under increasing pressure to place Dimona under international inspection), 3) new conditions on the deal requested by the Egyptians, 4) the change in administrations from Nixon to Ford to Carter, and 5) lack of financing. Though an agreement was finally signed in 1981, no power reactors have actually been sold to Egypt, either by the US or by any other country. On the Indian detonation, see *NSA Chronology*, p. 96; Bhatia, *Nuclear Rivals in the Middle East*, p. 60. On Egypt as the *cause* for tighter nonproliferation restrictions, see Paranjpe Shrikant, *US Nonproliferation Policy in Action, South Asia*, (New Delhi: Sterling Publishers, 1987), pp. 37, 49; Mahmoud Karem, *A Nuclear-Weapon-Free Zone in the Middle East*, (New York: Greenwood Press, 1988), p. 94. On the Congressional attitude toward Egypt, see Ashok Kapur, "Nuclear Energy, Nuclear Proliferation and National Security: Views from the South," in *Nuclear Exports and World Politics*, Robert Boardman and James F. Keeley, eds., (New York: St. Martin's Press, 1983), p. 169; Frank Barnaby, *The Invisible Bomb: The Nuclear Arms Race in the Middle East*, (London: I. B. Tauris, 1989), p. 84. On Israeli opposition, see Steve Weissman and Herbert Krosney, *The Islamic Bomb*, (New York: Times Books, 1981), p. 322. On Egypt's new bargaining conditions and the cost, see Barnaby, *The Invisible Bomb*, p. 84; Bhatia, *Nuclear Rivals in the Middle East*, p. 60.

year, Canada signed a nuclear cooperation agreement with Egypt and a deal for the sale of a nuclear power plant.[13]

For virtually the entire period of the American talks, Egypt also carried on secret negotiations with France. In January of 1975, discussions focused on the possible construction of two power stations. In 1976, a proposal was developed with the French company Technicatome to upgrade the Inchas reactor to 10 MW.[14] The French proposal also included plans for a fuel fabrication facility. AEE scientists working in the metallurgy group had approached the French about building a pilot plant for metallurgy and ceramic fuels and a hot cell. France submitted "good offers" and in time, the heads of the AEE divisions met to consider the French proposals. According to Fawzi Hammad, the other divisions within AEE rejected the plan. They believed their younger colleagues in metallurgy were getting too big, too quickly and wanted them to focus more on science and less on applications.[15]

Egyptian officials also renewed discussions with West German firms regarding the use of peaceful nuclear explosions at Qattara. By 1975, a West German consulting company had conducted a feasibility study that recommended against the use of nuclear devices for demolition. Ignoring the recommendation, Egyptian officials turned to the US and then Soviet Union for help with the project. In the United States, the AEC and the State Department were not averse to the idea, but the project never progressed past the planning stage.[16]

The AEE did make progress in the field of radiochemistry. The 1976 deal with France's Technicatome fell through, but Egypt was able to sign a deal with another French company, Robatel, for two hot cells. The cells were installed at Inchas in 1982.[17]

**B3. Changes at the AEE**

AEE officials had to be pleased when Presidents Nixon and Sadat initialed their 1974 proposal promising the construction of new reactors. Little did they know that the American proposal had set in motion a series of changes that, four years later, would mean the end of the Atomic Energy Establishment.

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[13] On the negotiations with India, see Bhatia, *Nuclear Rivals in the Middle East*, p. 59. On the Soviet offer, see Nashif, *Nuclear Warfare in the Middle East*, p. 28. On Canada's involvement, see *Technology Transfer to the Middle East OPEC Nations and Egypt, 1970-1975*, Background Study prepared for the Subcommittee on Domestic and International Scientific Planning and Analysis of the Committee on Science and Technology, US House of Representatives, 94th Congress, (Washington: GPO, 1976), p. 29.

[14] On the French negotiations, see Nashif, *Nuclear Warfare in the Middle East*, p. 28. According to Nashif, there was a possibility of Saudi or Iranian financing for the deal. On the upgrade project, see Bhatia, *Nuclear Rivals in the Middle East*, p. 60. Egypt's director of the Nuclear Power Plant Authority later reported that Sadat had made a "decision to buy from France" and that they were "very serious" about the project. Interviews with Mohamed Ezzat Abdelaziz, February 13, 1995 and April 27, 1995.

[15] Interview with Hammad Fawzi, January 2, 1997. Having been stymied by their colleagues, the metallurgy section resolved to pursue these projects on their own. By the end of the 1970s, it was becoming clear that ceramic fuel would be the fuel of choice for power reactors, and so a German company was contacted regarding a pilot plant for the production of fuel pellets. A contract was signed, and the plant was completed in the 1980s.

[16] On Qattara, see Nashif, *Nuclear Warfare in the Middle East*, p. 29; Bhatia, *Nuclear Rivals in the Middle East*, pp. 58-59; Trevor Findlay, *Nuclear Dynamite*, (Rushcutters Bay, NSW: Brassey's Australia, 1990), p. 249.

[17] Bhatia, *Nuclear Rivals in the Middle East*, p. 61.

The Sadat-Nixon reactor deal represented a project worth millions of dollars. The most obvious candidate for managing the project was the AEE, but the Ministry of Electricity persuaded Sadat to award it the project. The AEE suffered a final blow in 1978, when it was subsumed under the Ministry of Electricity.[18] The AEE, which had began as an autonomous organization that reported directly to the president, was now a department buried deep inside a large ministry.

These changes were not well received by AEE's scientists. They viewed AEE as an organization dedicated to science and research. The Ministry of Electricity was a utility -- an entity with a "different attitude and orientation."[19]

**B4. Giving Up the Bomb**

As Egypt and Israel moved from one war to the next, a growing mountain of evidence indicated that Israel had developed nuclear weapons.[20] Israel constructed its first nuclear weapon sometime before the '67 War, but at the time, Egyptian leaders were unsure as to Israel's precise status.[21] By the '73 War, however, Egyptian officials had concluded that Israel possessed nuclear weapons, and this assumption was incorporated into military planning.[22]

Yet even as it became increasingly apparent that Israel had the bomb, Egyptian policy moved in an opposite direction, toward a purely civilian nuclear program. Unlike his predecessor, Sadat was more interested in nuclear power[23] than in nuclear weapons.[24] The preference for energy over

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[18] Bhatia, *Nuclear Rivals in the Middle East*, p. 53.

[19] Interviews with Mohamed Ezzat Abdelaziz, February 13, 1995 and April 27, 1995.

[20] Throughout this period, a number of news reports and analyzes suggested the existence of an Israeli bomb. There were the NUMEC and Plumbatt affairs, in which nuclear materials mysteriously disappeared and allegedly ended up in Israel, and the *Time* magazine report that Israeli panic in the first two days of the '73 War led to preparations for the use of nuclear weapons. Israeli President Katzir, himself, declared that "It has always been our intention to develop a nuclear potential. ...If we should have need of such arms, we would have them." Weissman and Krosney, *The Islamic Bomb*, p. 107. Khalil Shikaki, "The Nuclearization Debates: The Cases of Israel and Egypt," *Journal of Palestine Studies*, Vol. 14, No. 4, pp. 77-91. On various news reports, see Mitchell Reiss, *Without the Bomb: The Politics of Nuclear Nonproliferation*, (New York: Columbia University Press, 1988), p. 145 and "Israel Said to Plan to Make Bomb," *New York Times*, June 14, 1967, p. 16. On Numec and Plumbatt, see *NSA Chronology*, p. 91; and Reiss, *Without the Bomb: The Politics of Nuclear Nonproliferation*, pp. 145-146.

[21] On the timing of Israel's bomb, see Avner Cohen, *Israel and the Bomb*, (New York: Columbia University Press, 1998), pp. 231-232, 239.

[22] On the assumption of an Israeli arsenal, see interviews with Hasan Al Badri, April 20, 1995; Gabr Aly Gabr, April 28, 1995. See also interviews with M. Kandib, April 24, 1995; Tahseen Basheer, December 29, 1996; and Ahmed Fakhr, April 20, 1995 and December 30, 1996. Fakhr goes on to say that the Egyptian military was concerned about a possible Israeli chemical attack and established a special department to train personnel about chemical weapons.

[23] Two groups encouraged Sadat's interest in nuclear power: 1) countries like the US, France, Germany that saw nuclear projects as a vehicle for rebuilding relations and 2) domestic advisers who believed in a link between nuclear energy and economic development. The position of the latter group may have been bolstered by two energy surveys conducted in 1973, one by IAEA and one by Egyptian analysts. Kats argues that these wildly optimistic studies "helped to convince Egyptian leaders of a need for nuclear energy," and that it was this conviction that guided their efforts through the 1970s and beyond the NPT. On the perceived link between energy and development, see Kats, "Egypt," pp. 184-185; interview with Ali Saidi, September 30, 1996. On the September, 1973 IAEA survey, see Kats, "Egypt," p. 186. On the Egyptian government's forecast,

weapons was evident in Egypt's new attitude towards safeguards, which it now accepted.[25] It is also reflected in Sadat's approval of the aforementioned plan to put the AEE under the control of the Ministry of Electricity. In endorsing this change, Sadat signaled that nuclear policy was no longer an issue that required the direct involvement of the president. Instead, nuclear policy would be handled by civilian bureaucrats.

The '73 war marks a decisive turn in Egyptian policy away from nuclear weapons, but the story does not end here. As the next section makes clear, Egypt's political leadership may have opted for a strategy based on a rejection of nuclear weapons, but the military had other ideas.

# II. Cold Peace, Hot Region: 1977-1990

In the twenty-five years that followed the Free Officers revolution, Egypt had fought five wars. In this fourth period of Egyptian nuclear history, not single war was fought. The Cold Peace begins with Sadat's trip to Jerusalem and continues until the eve of the Gulf War in 1991. This survey begins with a description of A) the setting. It then turns to the Camp David negotiations, Egypt's decision to ratify the NPT in 1981, and concludes with a sketchy, but intriguing, tale of the military's flirtation with nuclear weapons in the 1980s.

## A. Setting: Israel, Iraq, and Mubarak

Sadat's visit to Jerusalem began a process that ultimately ended in a peace treaty with Israel. From that point forward, violent conflict between the two countries ended, but not concern about Israeli's nuclear arsenal. A CIA estimate inadvertently released in 1978 further substantiated what most everyone believed: Israel had nuclear weapons. The following year, a mysterious flash over the South Atlantic stimulated specualtion that South Africa and Israel had cooperated on a clandestine nuclear test.

For Egyptians, the most troubling reports came in 1986, when Mordechai Vanunu claimed that Israel had a large and sophisticated nuclear weapons program. His subsequent kidnapping and solitary confinement by Israeli authorities did nothing to quell suspicion. After twenty years of living under the cloud of Israeli nuclear weapons, some Egyptian security elites were willing to tacitly accept an Israeli "bomb in the basement," at least until broader peace arrangements could be

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see Nashif, *Nuclear Warfare in the Middle East*, p. 28. For a contrary view, see former Prime Minster Khalil, who described Sadat as skeptical of nuclear power and Mubarak as even more so. Interview with Mustapha Khalil, January 5, 1997. There has also been some suggestion that Sadat believed that nuclear technology would bring prestige or status, that would translate into political or military leverage. Interview with Ali Saidi, September 30, 1996.

[24] Interviews with Ahmed Fakhr, April 20, 1995 and December 30, 1996. Fakhr claims that Sadat never asked the Egyptian military to look at a nuclear weapons option. See, for example, interviews with Ali Saidi, September 30, 1996; Abdel Monem Said Aly, February 14, 1995 and April 27, 1995 and December 30, 1996; Hafez Ismail, April 24, 1995.

[25] Though Nasser had repeatedly promised to open Egyptian facilities to regular inspection, it was Sadat that made the formal commitment to safeguards, which came as part of the 1974 US-Egyptian nuclear cooperation agreement. At the time, even those who opposed nuclear transfers to the Middle East admitted that the proposed agreement set a new standard for stringency. David Fischer, for example, told Congress that "intellectual candor requires me to admit that this is a tighter agreement that the average agreement. It is the tightest agreement I think there is." Testimony of David Fischer, *Export Reorganization Act of 1976*, Hearings before the Committee on Government Operations, US Senate, 94th Congress, Second Session, January 19, 20, 29, 30, March 9, 1976, (Washington: GPO), p. 158. See also the testimony of Warren Donnelly, *Export Reorganization Act of 1976*, p. 146.

worked out. The Vanunu revelations challenged the assumptions of this rather tolerant view of Israel's nuclear arsenal. Vanunu's contention that Israel had explored advanced weapon designs, and that some weapons might be intended for battlefield use (rather than for deterrence) suggested a much more aggressive program than Egyptians had suspected. A bomb in the basement was one thing; a battlefield nuclear arsenal was something else entirely.

Of course, Israel was not the only country pursing nuclear weapons during this period. Iraq was using its oil wealth in an attempt to develop a broad array of weapons of mass destruction, including nuclear weapons. The primary target for these weapons was Iran, its adversary in a long and vicious war that spanned most of the 1980s. Iran was slow to counter Iraq's WMD threats, but by the mid-1980s, a number of Iranian officials had concluded that it had to match Iraq's efforts in this area.

Closer to home, there was violence of different kind. Two years after signing a peace treaty with Israel, Sadat was assassinated, and Hosni Mubarak took the reins of government. His tenure meant a continuation of Sadat's foreign policy -- peace with Israel, alliance with the United States, and a rejection of nuclear weapons.

## B. Peace and Nuclear Weapons

Nuclear weapons were not a focus of the Camp David negotiations, but the subject came up nonetheless.[26] During the talks, Egyptian representatives made a series of nuclear arms control proposals. One proposal sought an Israeli pledge not to use nuclear weapons against Egypt; another suggested a complete ban on nuclear weapons; a third obliged both countries to submit to full-scope safeguards. (The last proposal would have opened all of Israel's nuclear facilities to inspection.) Israel rejected each of the proposals, but Egypt went forward with the treaty anyway. That same year Egypt offered its plan for a nuclear weapons free zone (NWFZ) in the Middle East. The UN approved the resolution, without objection from Israel, though nothing came of it.[27]

It was also in 1979 that Egypt's atomic cooperation agreement with the United States came up for renewal. During negotiations between the two countries, Egyptian representatives supposedly shocked their American interlocutors with a proposal that safeguards be suspended in the event of war. Bhatia claims that, as a consequence, the negotiations were suddenly suspended.[28] In time, however, language satisfactory to both sides was crafted and the agreement was completed. [29]

Yet even with a nuclear cooperation agreement, Cairo found itself unable to acquire the reactors it hoped would power Egypt's economic resurgence. Officials in the Ministry of Electricity concluded that if Egypt wanted to harvest the atom, it would have to address a decade old issue -- the Nuclear Nonproliferation Treaty.

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26 Shlomo Aronson, with Oded Brosh, *The Politics and Strategy of Nuclear Weapons in the Middle East*, (Albany: State University of New York, 1992), p. 163-164; Seymour M. Hersh, *Samson Option: Israel, America and the Bomb*, (London: Faber, 1993), p. 269.

27 Mahmoud, Karem, *A Nuclear-Weapon-Free Zone in the Middle East.*

28 Bhatia, *Nuclear Rivals in the Middle East*, p. 60.

29 The parties agreed that, in the event of hostilities, "the USA and Egypt 'shall enter into consultations ...with a view to maintaining the objectives of the NPT." Kats, "Egypt," p. 191.

## C. Egypt and the NPT

### C1. The Decision to Ratify the NPT

Egypt had come a long way since the '73 War. It made peace with Israel, agreed to stringent bi-lateral safeguards in 1974 and again in 1979, and had been the lead sponsor of a proposal to establish a NWFZ in the Middle East. To the frustration of Egyptian officials, however, the country was still unable to acquire civilian nuclear technology. There had been a flurry of offers and agreements following the '73 War, but seven years later, Egypt was no closer to acquiring a large power reactor.

The main stumbling block was Egypt's failure to ratify the Nuclear Nonproliferation Treaty. It had signed the treaty in 1968, but as a matter of policy, it had refused to ratify the treaty until Israel announced that it would do the same. In time, it became clear that Israeli was not going to join the treaty, and that Egypt had to ratify the NPT, if it wanted nuclear energy for economic development.[30]

The final straw came in February of 1980, when the US declined to finance the purchase of a reactor. Despite its nuclear cooperation agreement, American officials refused to waive or alter State Department regulations prohibiting power plant financing for countries that had not ratified the NPT.[31]

In response to these setbacks, Sadat appointed a special commission headed by Boutrous Boutrous Ghali to assess the issue of NPT ratification. In its deliberations, the commission explicitly examined whether Egypt *could* develop nuclear weapons ("how far can we go") as well as whether the country *should* develop nuclear weapons.[32]

The dominant view favored the NPT over a nuclear weapons option, but there were also those who opposed ratification.[33] Many in the Foreign Ministry opposed the treaty on political grounds,[34] while members of the military objected for reasons of national security. (The latter submitted a brief that claiming that Israel had forty nuclear warheads.)[35]

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30 Kats ("Egypt," p. 187-88) calls the desire for civilian nuclear technology "perhaps the single most important reason for the Egyptian decision to ratify the NPT." Barnaby (*The Invisible Bomb*, p. 84) writes that Egypt felt that "until it ratified the NPT, it would find it extremely difficult, if not impossible, to buy nuclear power reactors from abroad...[and they] were very keen" to do so. Bhatia recounts how in the collapse of the Technicatome and American proposals led to a reappraisal within the Egyptian government. It began with a joint memo by the Minister of Electricity and the Minister of Oil Production that outlined the need for nuclear energy and thus the necessity to join NPT. On the need to ratify the NPT for nuclear power, see also interviews with Abdel Monem Said Aly, April 27, 1995; Mohammed Shaker, February 10, 1995; Nabil Fahmy, April, 21, 1995.

31 On the refusal to provide financing, see Kats, "Egypt," p. 194.

32 Interview with source. See also Arab Republic of Egypt Ministry of Foreign Affairs, *Egypt and the Treaty of the Non-Proliferation of Nuclear Weapons*, (Cairo: State information Service, 1981), pp. 55-59.

33 Interview with Ali Saidi, September 30, 1996.

34 Officials in Egypt's Foreign Ministry opposed ratification, because Israel had not altered its position on the NPT, and thus saw no reason to change Egypt's long-standing posture. Interview with Nabil Fahmy, April 21, 1995; Bhatia, *Nuclear Rivals in the Middle East*, p. 61.

35 Interview with source.

Others appeared to favor ratification precisely, because it would allow the technology transfers that would enable Egypt to counter Israel's nuclear capability.[36] The ratify-and-pursue group, like those who opposed ratification outright, appear to have been a minority, however. Most officials supporting ratification took the view that joining the NPT meant the end of Egypt's nuclear ambitions.[37] Finally, in December of 1980, Sadat announced that Egypt would ratify the treaty. Not long after ratifying the treaty, Egypt concluded safeguards arrangements with the IAEA.[38]

**C2. After NPT: Pursuit of a Power Reactor**

Having announced its intention to ratify the treaty, the government moved swiftly to secure the benefits that NPT status promised. In February, the month it ratified the treaty, Egypt approached France and soon signed a nuclear cooperation agreement that included a feasibility study for the sale of at least two large power reactors. By September, Egypt signed agreements the United States and West Germany for the sale of additional reactors.[39] In all, some six to ten power reactors were to be sold to Egypt.[40] While Egyptian representatives initialed agreements in foreign capitals, the

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[36] The Minister of Defense reportedly argued that Egypt should pursue its own nuclear capability, and that signing NPT would, in fact, make it easier to do so. See interview with M. Kandib, April 24, 1995. On this latter point, see Sayed Selim, "Egypt," in *Nuclear Power in Developing Countries: An Analysis of Decision Making,* James E. Katz and Onkar S. Marwah, editors, (Lexington: Lexington Books, 1982), note 31, p. 156, who cites comments by the Deputy Prime Minister Kamal Ali.

[37] Interviews with Nabil Fahmy, April 21, 1995 and Ali E. Hillal Dessouki, January 1, 1997. It is worth noting that Israel did not try to sink the post-NPT reactor deals, as it had in years past. Weissman (*Islamic, Bomb*, p. 321-322) quotes French nuclear spokesman Alain Varneau: "They gave it their approval."

[38] Egyptian willingness to submit to intrusive safeguards arrangements extended to their bilateral agreements as well. The 1981 agreement with the US, for example, contained a provision that gave the US an unconditional right to insist on the storage of nuclear waste outside Egypt -- thus precluding reprocessing. Marianne van Leeuwen and Ben Soetendorp, "Israel," in *A European Non-Proliferation Policy*, Harald Muller, ed., (Oxford: Clarendon Press, 1987), p. 242. On the nonproliferation requirements, also see Leonard S. Spector, *Nuclear Proliferation Today*, (Cambridge: Ballinger, 1984), p. 128.

[39] This burst of activity appears to confirm the Egyptian view that lack of NPT ratification had inhibited their ability to acquire nuclear technology. Barnaby, The *Invisible Bomb*, p. 85.

[40] On the various 1981 agreements, see Weissman, p. 321-22; Kats, "Egypt," p. 187, Barnaby, *The Invisible Bomb*, p. 85; and Bhatia, *Nuclear Rivals in the Middle East*, p. 61-2. The American firms included Westinghouse and Bechtel; another group included France's Framatome and the Italian company Nira, and the German contract was to carried out by Kraftwerk Union. In the next several years, Egypt also signed nuclear cooperation agreements with Canada (1982), the UK (1983), Belgium (1984), Switzerland (1985), Iraq and Pakistan (1985), Argentina (1983, 1985), Brazil (1986), as well as Sweden, Italy, India, and the GDR. In 1985, Egyptian officials discussed plans for a reactor at Abu Qayr, part of an eight reactor deal with the FRG. More recently, Egypt signed a nuclear cooperation agreement with Ukraine (1995), and the presidents of Egypt and Russia formed a special commission to promote scientific cooperation on issues including nuclear power. IAEA provided supports as well, agreeing to conduct a feasibility study on the potential for small and medium sized reactors and financing the purchase of an new accelerator. According to the head of the AEE, the IAEA contributed more to Egypt's nuclear program ($18.7m) than any other country between 1958 and 1988. On the nuclear agreements, see "Swiss Sign Deal with Egypt," *Nuclear Engineering International*, January, 1985, p. 9 (MIIS 3); "Nuclear Program Strewn with Obstacles," *Nuclear Developments*, August 29, 1989, p. 12 (MIIS 54); "Nuclear Cooperation with Iraq, Pakistan," *Worldwide Report*, January 9, 1986, p. 34 (MIIS 15); "Risks Resulting from Setback to Nuclear Plan Discussed," *Worldwide Report*, September 23, 1985, pp. 26-34 (MIIS 7);

Ministry of Electricity and its new Nuclear Power Plants Authority (NPPA) was busy back in Cairo planning for the new reactors. A Swiss firm, Motor Columbus, was hired to evaluate the various reactor proposals.

After a furious start, however, the process returned to form. Schedules slipped, weeks turned into months, and months turned into years. Bids were first solicited in 1982,[41] but Egyptian officials announced a series of postponements.[42] Four years later, in March of 1986, the government asked vendors to restructure their proposals because of financial problems.[43]

The following month, the Chernobyl reactor ruptured, and the political fallout reached all the way to Cairo. After the accident, Egyptian Prime Minister Ali Lufti announced that Egypt would reconsider its plans for nuclear power.[44] President Mubarak called for a national commission to study the issue, and the commission recommended against further development of nuclear generated electricity. The president endorsed its conclusion.[45]

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"Arab Development of Nuclear Power Is Discussed, *Worldwide Report*, September 28, 1985 (MIIS 18); Richard Kessler, "Iran Sending Delegation to Argentina to Explore Nuclear Cooperation," *Nucleonics Week*, May 15, 1986, pp. 3-4 (MIIS 17); "Nuclear Power Agreement Signed with Egypt," *Worldwide Report*, June 13, 1986 (MIIS 11); "Atomic Energy Agency Director Interviewed," *Worldwide Report*, May 19, 1986, pp. 35-41 (MIIS 21); "Egypt Said Studying Nuclear Cooperation Offer," FBIS-SOV-95-109, June 6, 1995 (MIIS 113); "Studies Advocate Building Nuclear Reactors," FBIS-NES-95-130, June 27, 1996 (MIIS 114); "Egypt-Russia to Expand Cooperation," RAI-Novosti, January 10, 1997 (MIIS 143); "Officials on Nuclear Energy Program," *Nuclear Developments*, January 13, 1989, p. 7 (MIIS 46); "Atomic Energy Chief Discusses Peaceful Applications," *Nuclear Developments*, July 18, 1990, pp. 19-21 (MIIS 63).

41 The original deadline for bids was November, 1983. "El-Dabaa Bids Extended," *Nucleonics Week*, July 16, 1987, pp. 13-14 (MIIS 25); "Egypt Receives Bids for Nuclear Plants," *New York Times*, November 27, 1983, p. 7.

42 "Egypt Getting Closer to a Decision on El Dabaa," *Nuclear News*, February, 1985, pp. 102, 104 (MIIS 1); "Plans for Up to Ten Nuclear Power Plants Outlined," *Worldwide Report*, April 16, 1985, pp. 66-67 (MIIS 4); "Al-Dab 'Ah Plant Delayed," March 26, 1986, p. 48 (MIIS 18), "El Dabaa Bidders Asked to Wait Through June," *Nuclear News*, April, 1986, p. 78 (MISS 16); "Switzerland/Egypt," *Nucleonics Week*, June 19, 1986, p. 14 (MIIS 13). In 1984, the Minister for Energy and Electricity announced that the overall plan for eight reactors would be pushed back five years. See Barnaby, *The Invisible Bomb*, p. 82; Bhatia, *Nuclear Rivals in the Middle East*, p. 62; "Egypt Delays Nuclear Plan," *New York Times*, September 4, 1984, p. D5.

43 "El Dabaa Bidders Told to Cut Prices," *Nuclear Engineering International*, May 1986, p. 6 (MIIS).

44 "Government Reconsidering Nuclear Power," *Worldwide Report*, June 19, 1986, p. 27 (MIIS 11).

45 Interviews with Ahmed Fakhr, April 20, 1995 and December 30, 1996. Despite the turn of events, the Ministry of Electricity and Energy persisted in its efforts to acquire a power reactor. In September of 1986, it appeared that the AEE had selected a German firm to build the El Dabaa plant, and that it hoped to sign a letter of intent by the end of the year, but nothing happened. By mid-1987, the French had pulled out, and the Import-Export Bank had withdrawn from the American bid because of "lack of movement." "KWU Chosen as Vendor But No Order Placed," *Nuclear News*, November, 1986, p. 77 (MIIS 12); Maggie Bennett, "Egyptians Hope to Sign with KWU for El-Dabaa Project by Years End," *Nucleonics Week*, November, 20, 1986, pp. 1-2 (MIIS 19); "Egypt Postpones Once More," *Nuclear Engineering International*, February, 1987, p. 8 (MIIS 26); "Egypt: El-Dabaa Bids Extended," *Nucleonics Week*, July 16, 1987, pp. 13-14 (MIIS 25) Since 1987, there has been talk of constructing a nuclear power plant -- with Canada, the PRC, Israel -- but nothing has come of it, and there is no reason to expect this to change for the

### C3. Success with a Research Reactor

Egyptian efforts to acquire a large reactor had failed for a fourth time (1961, 1963, 1974, 1981), but there was progress in other areas. Egyptian officials had long sought a new research reactor,[46] and after ratifying the NPT, they tried once again -- this time with success.

Two committees were formed to study the issue. One recommended a 20 MW light water reactor. The other committee -- headed by Khashab, the Secretary General of the AEE -- recommended a natural uranium, heavy water moderated reactor. The latter type of reactor was strongly associated with weapons programs because of the amount of plutonium it could generate, and because it offered the possibility of a fully indigenous fuel cycle. In 1983, the choice between the two reactor types was presented to the AEE's Board of Directors. At some point, senior government officials intervened and instructed the AEE not discuss the natural uranium option.[47] Having settled the design issue, AEE officials started working on a bidding process.

It was not until 1989, however, that Egypt formally accepted bids.[48] Four groups submitted proposals: US General Atomics, Atomic Energy Limited of Canada, Argentina's Investigaciones

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foreseeable future. See Barnaby, *The Invisible Bomb*, p. 82; "Egypt and Canada Are Said to Be Negotiating," *Nuclear News*, MID-April, 1989, p. 52A (MIIS 52); "Iran: Chinese Nuclear Station Discussed," *Nucleonics Week,* August 13, 1992, p. 14 (MIIS 80); "No Contracts with China to Buy Nuclear Power Plants," *Proliferation Issues*, August 27, 1992, p. 10 (MIIS 81); US, Canada Oppose Purchase of Chinese Reactors," *Proliferation Issues*, September 23, 1992, p. 14 (MIIS 84); *Eye on Supply*, No. 6, Spring 1992, p. 28; "Soviets Offer Reactor to Israel," *Nuclear Engineering International*, December, 1991, p. 13 (MIIS 71); Margaret C. Ryan, "Egypt Is Again Considering Construction of Nuclear Plant," *Nucleonics Week*, September 24, 1992, pp. 17-18 (MIIS 89); "Egypt Pursuing Plans to Build a Nuclear Plant at El-Dabaa, *Nucleonics Week*, January 2, 1997, p. 5 (MIIS136); "Egypt: Report Examines 'Peaceful' Nuclear Program," FBIS-TAC-97-106, April 16, 1997 (MIIS 138).

[46] AEE officials had also considered upgrading the 2MW reactor at Inchas, but abandoned those plans. In 1987, the AEE completed maintenance review in preparation for upgrading the Inchas reactor to 5MW, and in 1990, IAEA finished a contract to improve reactor safety. When India and Egypt signed a nuclear cooperation agreement that same year, there were expectations that India would upgrade the Inchas reactor to 5 MW. Throughout 1991, Egypt and India held negotiations. Indian officials said that Egypt had "a keen interest" in an Indian reactor, but in 1992, the AEE announced that there would be no deal. Lack of money was the reason cited. The new plan was to shut the old reactor down once the Argentine reactor was up and running. Ehteshami reports that the Inchas reactor was upgraded to "over 5 MW with West German (and some French) assistance," but that appears not to be the case. On the saga of the 5MW reactor, see "Egypt: Nuclear Fuel Unit to Begin Production," JPRS-TND-88-003, February 25, 1988 (MIIS 38); "Inchas Nuclear Reactor Resumes Operation," MENA, February 10, 1990, pp. 14-15 (MIIS 64); "Pact Signed with India on Nuclear Cooperation," *Nuclear Developments*, January 4, 1991, p. 21 (MIIS 64); "Official Confirms Offer of Nuclear Reactors Sale," *Proliferation Issues*, September 12, 1991, p. 19 (MIIS 71); "Indian Reactor Sales and Generating Plans," *Nuclear Engineering International*, January, 1992, p. 3 (MIIS 77); "Egypt to Build first New Nuclear Plant Since 1961," Compuserve Executive News Service, September 21, 1992 (MIIS 82); Anoushiravan Ehteshami, *Nuclearization of the Middle East*, (London: Brassey's UK, 1989), p. 134.

[47] Interviews with Mohamed Ezzat Abdelaziz, February 13, 1995 and April 27, 1995. Aziz, who chaired the committee recommending a light water reactor described the instruction as "very serious."

[48] It was during this period that AEE officials set about to buy a larger accelerator. The old one obtained from the Russians in the 1950s was a 2 MEV model. The AEE shopped around for a 20 MEV accelerator and signed a contract with the Soviet Union, with financial assistance being

Aplicadas, and a joint bid by Framatome and Seimens.[49] In September of 1992, Egypt selected the Argentine firm to build a 22 MW research reactor fueled with low-enriched uranium for use in training and applied nuclear research.[50] The reactor began operating at full capacity in 1998.[51]

After decades of drift, the Egyptian nuclear program had finally taken substantive steps forward. It had, at the same time, made ever stronger commitments to a policy of nonproliferation. It turns out, however, that not everyone in the Egyptian government felt bound by that policy.

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provided by the IAEA. As of 1995, that contract was being implemented. Interviews with Mohamed Ezzat Abdelaziz, February 13, 1995 and April 27, 1995. See also "Atomic Energy Chairman Reports Results of IAEA Conference," *Nuclear Developments*, November 29, 1989, p. 19; "Egypt: Argentinean Nuclear Reactor Installed in Inchas," FBIS-NES-97-096, April 6, 1997 (MIIS 137). Back in 1987, there was a report that Egyptian authorities did install an "electronic accelerator." "Egypt: Nuclear Fuel Unit to Begin Production," JPRS-TD-88-003, February 25, 1988 (MIIS 38).

[49] Richard Kessler, "Argentina Denies Reports of Nuclear Commerce with Iraq," *Nucleonics Week*, April 26, 1990, pp. 13-14 (MIIS 58). There was also a report of a French-Canadian joint venture. "Egypt to Build first New Nuclear Plant Since 1961," Compuserve Executive News Service, September 21, 1992 (MIIS 82).

[50] The reactor would also be used for neutron generation and isotope production. In 1988, Egypt and Argentina had signed a fifteen year nuclear cooperation agreement covering collaboration on the fuel cycle, fuel fabrication, waste disposal, isotopes, and research reactors. On the Argentine reactor in general, see interviews with Mohamed Ezzat Abdelaziz, February 13, 1995 and April 27, 1995; Emerging Nuclear Suppliers Project, *Eye on Supply*, (Monterey: Monterey Institute of International Studies), No. 3, Winter 1990-1991, p. 4; Emerging Nuclear Suppliers Project, *Eye on Supply*, No. 8, Winter 1993, p. 3. On its intended use, see "Argentine Company Builds Nuclear Reactor in Egypt," FBIS-TEN-97-334, November 30, 1997 (MIIS 144). It appears that Argentina may export uranium enriched to 20% for use in the reactor. Mark Hibbs, Argentine SWU Plant to Restart in 1995," Nuclear Fuel, September 26, 1994, p. 3 (MIIS 104). It was to be a five year project with a cost of approximately $60m. Fergus Nichol, "Egyptian Reactor Deal for Argentina," *Financial Times*, September 23, 1992 (MIIS 85).

[51] AEE officials were also successful in upgrading their fuel fabrication capability. Egypt enjoyed close cooperation with West German firms, one of which agreed to provide a lab-scale fuel fabrication facility. Construction was started in 1987, and it began operating in 1989. With the new fuel unit, Egypt was able to train a cadre of Egyptian scientists in nuclear metallurgy and fuel fabrication, "from uranium oxide to pins with all the processes in between." On the reactor reaching full capacity, see "Egypt: Trials of Second Rector Start," FBIS-NES-96-041, February 24, 1996 (MIIS 129); "Argentine Company Build Nuclear Reactor in Egypt," FBIS-TEN-97-334, November 30, 1997 (MIIS 144); "Company Says Nuclear Reactor in Egypt 'Operational,'" FBIS-LAT-98-072, March 13, 1998 (MIIS 151). On fuel fabrication, see Interviews with Mohamed Ezzat Abdelaziz, February 13, 1995 and April 27, 1995. See also "Atomic Energy Agency Director Interviewed," *Worldwide Report*, May 19, 86, pp. 35-41 (MIIS 21); "Egypt Sets Decision Date," *Nuclear Engineering International*, March 1987, p. 15 (MIIS 22); "Nuclear Fuel Factory Completed; Reactor Planned," *Worldwide Report*, August 18, 1987, p. 71 (MIIS 23); "Nuclear Fuel Unit to Begin Production," JPRS-TD-88-003, February 25, 1988, p. 16; "Paper Cited on Local manufacture of Nuclear Fuel," *Nuclear Developments*, January 4, 1990, p.13 (MIIS 62).

## D. The General's Fancy

The government of Egypt had forsaken nuclear weapons, but within the military, an ambition to acquire nuclear weapons persisted. Back in the 1960s, the Ministry of Defense directed its own "special projects" program, separate from the country's nuclear establishment. Similar efforts appear to have been made in the 1980s under the direction of the Minister of Defense, Abdel Halim Abu Ghazala.

It should be stressed that the quality of the data documenting these activities is, on the whole, poor. Often, the data depends on a single source or on sources that did not have direct involvement in events that are said to have taken place. Still, the number of reports involving different incidents, all in the same time period, strongly suggests the presence of nuclear weapons-related activity. Prudence dictates, however, that confidence about any one incident should be modest.

### D1. With Little Help from My Friends

One characteristic that distinguished Ghazala from previous defense ministers was his interest in nonconventional weapons and high technology. The Defense Minister provided funding for various special projects and, in some cases, took a direct and personal interest in their development.[52] His interest in unconventional weaponry was shared by others in the Middle East, most notably the Iraqi military, whose bloody war with Iran virtually coincided with Ghazala's tenure as defense minister.

In 1984, Ghazala entered into a partnership with his Iraqi colleagues in what became known as the Condor II or Badr missile project. The Condor II was essentially a Scud missile with an extended range.[53] Joining Iraq and Egypt in this venture was Argentina, which had developed the Condor I rocket.[54] Iraq and Egypt also worked together in an unsuccessful attempt to acquire fuel air explosives (FAEs). In 1984, Egypt approached the United States and offered to buy part of its aging stockpile of FAEs.[55] Egypt justified its request by saying that the FAEs were needed for de-mining, but American officials rejected the proposal. It has also been suggested that, during this same period, Egypt and Iraq cooperated on the development of chemical weapons.[56]

Given this record, it should not be surprising that there are indications that Egyptian-Iraqi collaboration also extended to the field of nuclear technology. Iraq began its nuclear weapons program in the 1970s, and intensified its efforts after Israel's 1981 bombing of the Osiraq reactor. For years, Egyptian nuclear scientists and engineers had migrated to Iraq (and Libya) as opportunities at home dwindled. One highly placed observer contends that some elements in the Egyptian government "used period of Iran-Iraq war to learn about nuclear weapons."[57]

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52 Interview with Mohammed Masoud, December, 31, 1996.

53 Interviews with Ahmed Fakhr, April 20, 1995 and December 30, 1996.

54 On the Condor program, see Scott D. Tollefson, "El Condor Pasa: The Demise of Argentina's Ballistic Missile Program," in *The International Missile Bazaar*, William C. Potter and Harlan W. Jencks, eds, (Boulder: Westview Press, 1994).

55 *United States v. Helmy*, U.S. District Court for the Eastern District of California (Sacramento), CR No. S-89-201-RAR, Vols. 1-8.

56 Gordon M. Burck and Charles C. Flowerree, *International Handbook on Chemical Weapons Proliferation*, (New York: Greenwood Press), 1991, p. 229.

57 Interviews with Abdel Monem Said Aly, February 14, 1995 and April 27, 1995 and December 30, 1996. Said Aly suggests that the Iraqi collaboration gave Egypt a way to explore nuclear technology without having to pay for it and without the risk of upsetting the US.

### D2. Permission to Seek Nuclear Weapons

Perhaps the Iraqi military's pursuit of nuclear weapons inspired their Egyptian colleagues, or perhaps it was Gen. Ghazala's personal interest in technology, nuclear or otherwise. In any case, it is alleged that the Ministry of Defense went to Mubarak in 1984 and requested permission to start a nuclear weapons program. Mubarak is said to have "rejected the idea completely." Mubarak, it is said, pointed out that Egypt had made a commitment under the NPT and argued that a nuclear program, if discovered, would undermine Egypt's credibility internationally. We are now in a period of peace, observed Mubarak. Israel's nuclear arsenal had to be addressed politically, not militarily.[58]

The issue may have come up again two years later after the Vanunu revelations, which once again put the nuclear issue on the Egyptian agenda. If so, Egypt's political leadership again rejected the nuclear option.[59]

### D3. Secrets and Scandals

Despite Mubarak's clear refusal to approve a nuclear weapons program, it appears that Ghazala went ahead with plans of his own. The Ministry of Defense was a large and powerful organization, and Ghazala was a powerful personality. Since the founding revolution, the military had dominated Egyptian politics, and many people believed that Minister Ghazala harbored his own presidential aspirations. The picture was further complicated by the fact that Ghazala provided Mubarak's with protection against the various plots and coup attempts that are a staple of Egyptian politics.

Two incidents, in particular, give rise to the suspicion that Ghazala used his autonomy to pursue nuclear weapons and other weapons of mass destruction. The first incident concerns the bizarre tale of Major Gen. Hassar El Zayat, an up and coming military officer who was being groomed for Chief of Staff of the Egyptian Army. In 1987, El Zayat was in London, serving as military attaché in Egypt's embassy. In September, El Zayat was arrested by British police for allegedly assaulting a British woman.[60] It appears that Gen. el Zayat had used his time in London to cultivate contacts in the Chinese embassy. His purpose, it is said, was to persuade the Chinese to enter into a cooperative arrangement for work on nuclear weapons. Soon after el Zayat's arrest and release, he received a phone call directly from President Mubarak, who immediately fired him and ordered him back to Egypt.[61]

A second and better documented incident also involves scandal, but of a different flavor. This one involved the Condor II. The missile program had run into trouble procuring key materials and components. Under the direction of Defense Minister Ghazala, Egyptian officials attempted to smuggle missile-related items out of the United States. To aid their cause, they enlisted the help of Abdelkader Helmy, an Egyptian-American engineer working for an American defense contractor. Helmy had known Ghazala as a boy growing up in Egypt. The personal relationship -- or the moneys deposited in a secret Swiss bank account -- persuaded Helmy to participate in the

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58 Interview with source.

59 The issue of Vanunu and an Egyptian response may have reached the Council of Ministers. See interview with M. Kandib, April 24, 1995. On the rejection of the nuclear option, see interviews with Ahmed Fakhr, April 20, 1995 and December 30, 1996;

60 An Egyptian source disputes this view, suggesting that el Zayat was caught on video engaged in a consensual liaison with a woman at the Royal Palace.

61 Interviews with Ahmed Fakhr, April 20, 1995 and December 30, 1996. It has been suggested on the Egyptian side that the legal charges were trumped up, in part because of British unhappiness about El Zayat's activities.

clandestine operation, but in 1986, Helmy and his American accomplice were caught by US customs agents. They were later convicted and sentenced to prison terms.[62]

In order to lessen his sentence, Helmy offered to debrief government officials on the Egyptian procurement program. In is discussions with American agents, and in partially closed testimony before the House Ways and Means Oversight Subcommittee in 1991, Helmy revealed that Ghazala's efforts were not limited to missiles, but included nuclear weapons technology and materials as well. Helmy claims that Col. Ahmed Hussam El-Din Yossef Khairat, who coordinated the program and reported directly to Ghazala, had procured a small amount of uranium in France. Khairat had the uranium analyzed and faxed the results to Helmy for comment. Helmy claims that Khairat intended to buy additional uranium and have it enriched in Pakistan. According to one report, Helmy described the uranium purchase as signaling "the start of a broader attempt to build a nuclear warhead...."[63] Yet at least one observer of Egyptian military affairs maintains that the effort to acquire nuclear-related items was no more than a special project run out of the Minister's office, not a broad-based defense program.[64]

In either case, the person most responsible for these efforts was Ghazala. In June of 1989, the General was forced out of as Minister of Defense. Helmy's arrest and the ensuing controversy may have contributed to his premature departure, but domestic factors may have also played a role.[65] Ghazala's exit appears to coincide with the abandonment of nuclear activity on the part of the military.[66]

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62 On the Helmy affair in general, a fascinating place to start are the court records filed with the Federal District Court in Sacramento. *United States v. Helmy*, U.S. District Court for the Eastern District of California (Sacramento), CR No. S-89-201-RAR, Vols. 1-8. The records include transcripts of taped phone conversations, in which Helmy and others describe their attempts to deceive various vendors of missile related technology.

63 See *United States v. Helmy*, U.S. District Court for the Eastern District of California (Sacramento), CR No. S-89-201-RAR, Vols. 1-8 and Christopher Drew, "Despite Denials, Egypt's Secret Nuclear Effort May Not be Dead," *Chicago Tribune*, August 4, 1991, *Chicago Tribune* web site(archives). See also Robert Windrem, "Egypt's Quest for Military Parity," *MSNBC*, October 6, 1998. Windrem attained copies of Helmy's debriefing with US Customs agents after he was arrested. According to Windrem, Helmy also cited a "brigadier general, Ahmad Nashet, [who] ran both the civilian nuclear establishment as well as the nascent bomb program." Helmy has since disavowed the claims made in the debriefing.

64 Interview with Ahmed Fakhr, April 20, 1995 and December 30, 1996. Fahkr claims that Egyptian military intelligence was allegedly unaware and uninvolved in Khairat's activities.

65 Some observers pointed out that Mubarak had previously tried to remove the Field Marshall, but without success. On the Mubarak-Ghazala relationship, see Robert Springboard, *Mubarak's Egypt: Fragmentation of the Political Order*, (Boulder: Westview Press, 1989), pp. 98-107, 118-125; Anthony McDermott, *Egypt from Nasser to Mubarak : A Flawed Revolution*, (London: Croom Helm, 1988).

66 Since Ghazala's left the Ministry of Defense, there have been two claims related to Egypt and the acquisition of nuclear weapons-related technology and material. One involves the Egyptian-Argentine relationship. A Bahrain newspaper reported in 1990 that the CIA was investigating a claim that Argentina and Egypt were attempting to produce six kilograms of plutonium. This claim runs counter to the widely held view that Argentina changed nuclear policy after the election of Menem, and it appears inconsistent with what is known about pre-Menem nuclear initiatives. In Argentina, it was former Navy officers that were involved in the nuclear agency and with the alleged reprocessing efforts. Egypt's links to Argentina and the Condor project were with the airforce, the navy's organizational rival. In addition, Egyptian decisions regarding the research reactor suggest purely civilian intentions. In any case, the research reactor is administered by the Ministry of

## IV. Epilogue: the Gulf War and Beyond

The decade of the 1990s has been an unsettling one for Egypt and its neighbors. First, there was the Gulf War, which pitted an American-led coalition -- including Egypt -- against Iraq. This put Egypt at odds with a country that has a strong interest in weapons of mass destruction. Iraq's nuclear ambitions have also raised the possibility that another country in the region, Iran, might develop nuclear weapons of its own.[67] Relations between Egypt and Iran have generally been poor, first under the Shah and then under the Islamist government.

Back in Egypt, the nuclear program has continued to progress. The Argentine-built research reactor came on-line, and its reprocessing capabilities were upgraded.[68] Starting in the 1950s, Egyptian officials had tried on numerous occasions to procure the facilities that would allow reprocessing of high level radioactive waste (e.g., plutonium). With the help and oversight of the IAEA, Egypt secured an agreement for a full hot lab in the early 1980s. Work on the facility is only now being completed. A Russian intelligence report warned that the upgraded radiochemistry department

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Electricity, not the Ministry of Defense. The other report alleges "secret nuclear connections" between Egypt and North Korea. This claim at least sounds more plausible. Cooperation between the two countries on missile technology continued into the 1990s, and one could imagine Egyptian nuclear scientists working in North Korea, given their work in other countries, such as Iraq and Libya. As regards nuclear weapons, there is an additional report that is as vague as it is intriguing. *Al-Akhbar* newspaper in Cairo ran a story concerning 'Ali 'Abd-al-Salam al-Shahid, an Egyptian lawyer who was convicted in a military court of spying for Israel and then executed. The plot twist is that al-Shadid had previously approached the Egyptian government offering to sell a cache of enriched uranium. Richard Kessler, "Argentina Denies Reports of Nuclear Commerce with Iraq," *Nucleonics Week*, April 26, 1990, pp. 13-14 (MIIS 58); Joseph S. Bermudez, "North Korea's Nuclear Program," *Jane's Intelligence Review*, September, 1991, pp. 404-411. "Convicted Spy Tried to Sell Enriched Uranium," *Proliferation Issues*, June 22, 1993 (MIIS 90). Information concerning Argentina's organization of its nuclear programs comes from Michael Barletta (personal communication).

67 Mubarak has referred, albeit indirectly, to the possible Iraqi and Iranian WMD threats. See Uzi Benziman, "Mubarak Turns Down a Nuclear Bomb Offer," *Ha'aretz*, June 19, 1998.

68 In this same period, the Nuclear Materials Organization -- which had split off from the AEE in 1976 -- seems to have rejuvenated its efforts to mine radioactive ores. The NMO signed a series of nuclear cooperation agreements with Australia, Niger, Canada, Morocco, and Ukraine that focused on the mining and processing of ores. In 1993, NMO officials for the first time announced the discovery of uranium deposits, and in 1996, the Minster of Energy and Electricity announced the first stage of a project to produce uranium from phosphoric acid. On the cooperation agreements, see "Agreements Signed to Develop Domestic Uranium," *Nuclear Developments*, September 18, 1989, p. 24 (MIIS 56); "Egypt, Morocco Sign Energy Protocol," *Nuclear Developments*, march 28, 1989, p. 14 (MIIS 42); "Egypt Said Studying Nuclear Cooperation Offer," FBIS-SOV-95-109, June 6, 1995 (MIIS 113). On the uranium ore and Israel's possible assistance with finding it, see "Electricity Minister Says Uranium Ore Discovered, *Proliferation Issues*, December 18, 1992, p. 13 (MIIS 88); "Uranium Production to Begin within Current Five-Year Plan," JPRS-TD-93-030, September 27, 1993, p. 14 (MIIS 101); "Israel: Sinai U Deposits Revealed," *Nucleonics Week*, December 2, 1993, p. 17 (MIIS 97); "Egypt: Minister Says Uranium Will Fuel Atomic Research Reactors," FBIS-NES-96-228, November 25, 1996 (MIIS 133); "Egypt: Report Examines 'Peaceful' Nuclear Program," FBIS-TAC-97-106, April 16, 1997 (MIIS 138).

"could in the future be used [to]...obtain weapons-grade plutonium from uranium irradiated in the research reactor." Others are more skeptical, however.[69]

The most prominent nuclear issue in recent years has been the NPT, which came up for renewal in 1995. President Mubarak and his Foreign Minister staked out an aggressive position in support of the treaty but with the key proviso that Israel show some movement on the issue of nuclear weapons. Egypt's Ambassador Mohammed Shaker, an important and longtime observer of nuclear politics in the Middle East, even suggested that the government's NPT campaign represented its most serious effort *ever* to tackle the issue of nuclear weapons. In the end, however, the treaty was indefinitely extended without any change in Israel's position.[70]

Since 1995, the issue of nuclear weapons has come up only sporadically. In 1998, however, Egyptian statements concerning nuclear weapons were back in the news. Soon after the Indian and Pakistani nuclear tests, Egypt and seven other countries making up the "New Agenda" group issued a declaration calling for nuclear disarmament and for India and Pakistan to end their nuclear programs.[71] That same day, President Mubarak met with a group of Israeli visitors. According to a report in *Ha'aretz*, Mubarak told his audience that...

> ...with the collapse of the Soviet Union, nuclear secrets began to leak from the ruins of the Soviet regime. Egypt, he said, was offered an opportunity to buy the know-how and nuclear materials. In his opinion, nuclear information and weapons, originating in the Soviet Union, also were made available to other Middle Eastern countries. He turned down the offer because, in his opinion, anyone who took advantage of the opportunity would be entering an insane, dangerous arms race.[72]

Four months later, in October of 1998, the Egyptian leader seemed to articulate a very different position. In festivities celebrating the 25th anniversary of the 1973 War, the Mubarak appeared to suggest that Egypt might develop nuclear weapons. "We are not in a hurry to acquire nuclear arms...," he told the audience. On the other hand, Egypt would not rule out the possibility of acquiring nuclear weapons at some point in the future.[73] "If the time comes when we need nuclear weapons, we will not hesitate. I say 'if' we have to, because this is the last thing we think about. We

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[69] News reports suggest that the US was initially concerned about Egypt's new reactor, but that American officials inspected the reactor in late 1997. After the inspection, American officials declared that they "had no more concerns." On the reprocessing facility, see interviews with Mohamed Ezzat Abdelaziz, February 13, 1995 and April 27, 1995. On the weapons-related implications, see JPRS Report, *Proliferation Issues*, Russian Foreign Service Report, Proliferation of Weapons of Mass Destruction, FBIS, 1993, pp. 47-49; and Mohammad El-Sayed Selim, "Egypt and the Middle Eastern Nuclear Issue," *Strategic Analysis*, January, 1996, pp. 1381-1398. On the recent inspection, see Robert Windrem, "Egypt's Quest for Military Parity," *MSNBC*, October 6, 1998.

[70] Interview with Mohammed Shaker, February 10, 1995.

[71] The other countries included Brazil, Ireland, Mexico, New Zealand, Slovenia, South Africa and Sweden. See "Towards a Nuclear-Weapon-Free World: The Need for a New Agenda," June 9, 1998, http://www.igc.apc.org/disarm/abolish.html. The group later sponsored a UN resolution on the same issue. See U.N Resolution 53/77Y, December 3, 1998, http://www.igc.apc.org/disarm/1c53res.html#Towards a Nuclear.

[72] Uzi Benziman, "Mubarak Turns Down a Nuclear Bomb Offer," *Ha'aretz*, June 19, 1998.

[73] See Elizabeth Bryant, "Egypt Might Consider Nukes," *UPI*, October 5, 1998; "Egypt Concerned by Israeli Arsenal, Wants Balance of Forces," *Agence France Presse*, October 6, 1998.

do not think now of joining the nuclear club." A week later, in an interview with the Arabic-language *Al-Hayat* newspaper, Mubarak pointed out that "acquiring material for nuclear weapons has become very easy and it can be bought."[74]

For the student of Egyptian nuclear history, these pronouncements sound strikingly familiar. Indeed, every Egyptian president -- Nasser, Sadat, Mubarak -- has at different times said 1) that Egypt did not have or want nuclear weapons, 2) that Israel was forcing Egypt to consider the acquisition of nuclear weapons, and 3) that they would not hesitate to "go nuclear" if circumstances required it. These rhetorical postures notwithstanding, it appears that Egypt has continued, indeed strengthened, its commitment to a non-nuclear status. In actions rather than words, the Mubarak government has demonstrated a consistent reluctance to pursue the nuclear path, and has, instead, adopted a political strategy to counter Israel's nuclear arsenal.

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74 Ed Blanche, "Egypt Can Easily 'Go Nuclear' If the Necessity Arises," *Jane's Defence Weekly*, October 14, 1998, Vol. 30, No. 15, p. 1.

# Chapter 8.
# Explaining Egyptian Behavior: Hypotheses on Power

## I. Introduction: Defining a Pool of Observations

In this chapter, the four hypotheses on power are tested. The chapter closely follows the structure and style of Chapter 4, which examined these hypotheses in relation to Australian behavior. It begins by taking the case narrative and disaggregating it into data set or a pool of observations. It then proceeds with an evaluation of each hypothesis and concludes with a brief summary of the results.

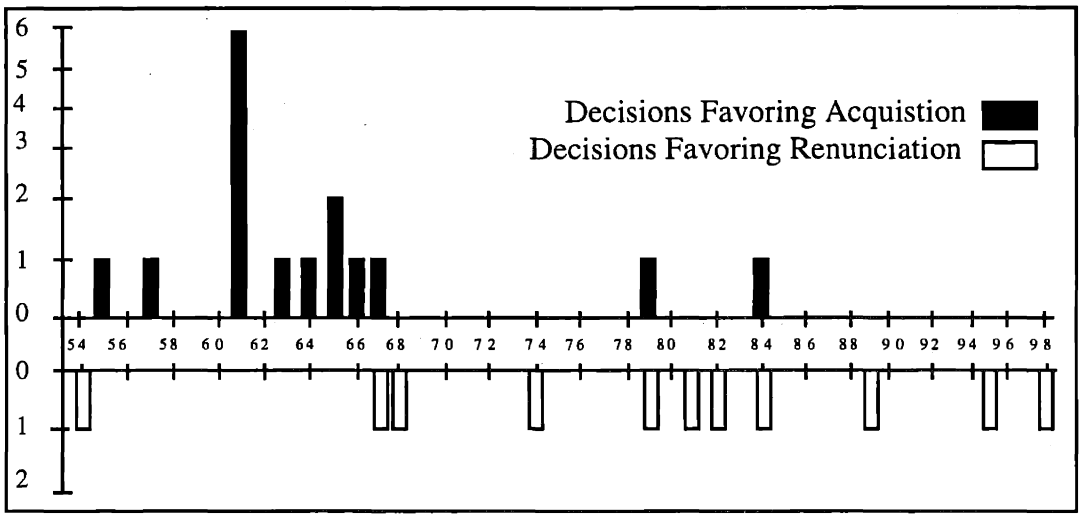
Egypt's nuclear history can be disaggregated into 27 separate decision sequences, with each decision sequence consisting of three parts: a proposal, a decision/action, and an outcome. Box 8.1. summarizes the decision sequences for the Egyptian case. Decisions in **bold** represent anti-nuclear decisions.

**Box 8.1. Egyptian Decision Sequences, 1954-1998**

| # | Yr | Proposal | Decision | Outcome |
|---|---|---|---|---|
| **1** | **54** | **Hire foreign scientists for Egyptian NW.** | **Rejected** | **Scientists not hired.** |
| 2 | 55 | Seek and maintain NW option. | Accepted | Seeks NW option. |
| 3 | 57 | Seek chemical reprocessing from USSR. | Accepted | No reprocessing from USSR. |
| 4 | 61 | Seek joint Arab nuclear weapons program. | Accepted | No joint program. |
| 5 | 61 | Acquire weapons tech & materials. | Accepted | Limited clandestine procurement. |
| 6 | 61 | Build nuclear weapons capability. | Accepted | Delayed. |
| 7 | 61 | Sign IAEA safeguards. | Rejected | Not sign IAEA safeguards. |
| 8 | 61 | Seek weapons-related assistance from India. | Accepted | No NW tech from India. |
| 9 | 61 | Seek weapons-related assistance from USSR. | Accepted | No NW tech from USSR. |
| 10 | 63 | Seek weapons-related assistance from China. | Accepted | No NW tech from PRC. |
| 11 | 64 | Seek joint Arab nuclear weapons program. | Accepted | No joint program. |
| 12 | 65 | Seek joint Arab nuclear weapons program. | Accepted | No joint program. |
| 13 | 65 | Seek weapons-related assistance from China. | Accepted | No NW tech from PRC. |
| 14 | 66 | Seek joint Arab nuclear weapons program. | Accepted | No joint program. |
| **15** | **67** | **Build nuclear weapons.** | **Rejected** | **No NW program.** |
| 16 | 67 | Seek weapons-related assistance from China. | Accepted | No NW tech from PRC. |
| **17** | **68** | **Sign NPT.** | **Accepted** | **NPT signed** |
| **18** | **74** | **Sign bilateral safeguards with US.** | **Accepted** | **Safeguards signed.** |
| **19** | **79** | **Include nuclear arms control in Camp David.** | **Accepted** | **No arms control in Camp David.** |
| 20 | 79 | Seek agreement for suspension of safeguards in war. | Accepted | Abandons proposal. |
| **21** | **81** | **Ratify NPT.** | **Accepted** | **NPT ratified.** |
| **22** | **82** | **Sign IAEA safeguards agreement.** | **Accepted** | **Agreement signed.** |
| 23 | 84 | Acquire weapons tech & materials. | Accepted | Limited clandestine procurement. |
| **24** | **84** | **Build nuclear weapons.** | **Rejected** | **No NW program.** |
| **25** | **89** | **Close military's NW program** | **Accepted** | **Program closed.** |
| **26** | **95** | **Support extension of NPT.** | **Accepted** | **Voted for NPT extension.** |
| **27** | **98** | **Build nuclear weapons.** | **Rejected** | **No NW program.** |

As in the Australian case, the set includes decisions that moved the government closer to the acquisition of nuclear weapons, as well as decisions that favored the rejection or renunciation of nuclear weapons. Box 8.2 graphs this set of decisions over time . The Y axis is the number of decisions for or against nuclear weapons in a given year, with the black columns representing pro-nuclear decisions and the white bars representing anti-nuclear decisions.[1]

**Box 8.2 Egyptian Nuclear Decisions Over Time**




In general, pro-nuclear decisions predominated in the period from 1955 to 1967, while anti-nuclear decisions predominate after 1967. The main exceptions to the generalization include the interest in nuclear weapons in the 1980s under Defense Minister Ghazala and the rejection of a proposal by foreign scientists to set up a bomb program in 1954. Given this general pattern, how do the power hypotheses fare?

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[1] As with the Australian decision set, one must define constitutes a discrete decision. (See Chapter 4, p. 3, footnote 2.) This study discriminates between possible decision points on the basis of several attributes: the decision making process (e.g., whether there is a formal finding), the composition of the decision group, and the environment in which the decision is made. For example, the post-67 decision to seek nuclear weapons assistance from China is counted as a decision distinct from similar decisions in the early 1960s. Nasser is the key decision maker in both cases, but the 1967 decision was made in a radically different context. The defeat in 1967 led Nasser to reconsider the possibility of Chinese nuclear assistance *despite* China's reluctance to provide such assistance on previous occasions. Other situations are less obvious. The repeated attempts to convince the Arab League to initiate a joint Arab nuclear program are a case in point. The real question here is whether different counting rules generate different results, so to test that possibility, two additional sets of observations were constructed -- one using more inclusive counting rules (35 decision sequences) and one using less inclusive counting rules (21 decision sequences). Both sets generated similar results. The reason is that while the number of decisions changed, the *pattern* over time did not, i.e., little activity before 1961, high levels of activity from 1961 to 1967, and low levels of activity after 1967 except for a brief period in the 1980s.

# II. Hypotheses on Power

There are four variants of the power hypothesis. The first stresses security threats -- or rather the absence of security threats -- as an explanation for why countries do not acquire nuclear weapons. The second points to the general effects of bipolarity, while the third and fourth highlight particular features of bipolarity, i.e. superpower security guarantees and superpower pressure.

## H1. Threat

The threat hypothesis suggests that a state's nuclear behavior is a reflection of its security environment. States that face particular kinds of threats (e.g., adversaries armed with nuclear weapons or adversaries with an overwhelming conventional advantage) will seek redress in the form of nuclear weapons or a nuclear weapons capability. States that do not face these threats will not seek such weapons. To assess the hypothesis, two tests are used: 1) a congruence test that compares threats and nuclear behavior and 2) a process tracing test. We begin with a brief introduction to Egypt's security environment.

### Egyptian Security: an Overview

This abbreviated survey Egypt's security environment focuses on three attributes -- geography, prospective threats, and war fighting experience.

Geography

Due west and south of Egypt are Libya and Sudan, and to its north across the Mediterranean Sea are Turkey, Greece, and Europe. Egypt's most active neighbors are in the East, however. Across the Red Sea are Saudi Arabia and Yemen, which hosted some 50,000 Egyptian troops during the Yemen civil war. On Egypt's eastern border is Israel, its chief military adversary for much of post-revolutionary period. Beyond Israel is Syria, which briefly merged with Egypt during the UAR, and further east of Syria are the regional powers, Iraq and Iran. In spatial terms, the distances between countries are modest, at least when compared with Australia, whose chief concerns -- China and Japan -- were much farther away.

Prospective Threats

Egypt finds itself in what many security analysts consider "a dangerous neighborhood." Within this comparatively compact region are a number of countries that Egypt could rightly count as past or present threats, among them the UK and France, Israel, Saudi Arabia, Iraq, Libya, and Iran. A thumbnail sketch of Egypt's relations with each country is provided below.

*The UK and France*

Britain was the dominant power in the Middle East in the years leading up to the Egyptian revolution, and even after the revolution, thousands of British troops remained on Egyptian territory. These troops were a less-than-subtle reminder that colonial Britain constituted the chief threat to Egyptian security in early and mid-50s. Fears that Britain might use force appeared justified in 1956 when the UK launched the Suez War. France, which had interests in Algeria and other parts of North and West Africa, joined Britain in its effort to take the canal by force. France had also developed close ties with Israel, the third partner in the Suez venture.

For some years after Suez, the French and British stance towards Egypt remained hostile, but by 1960, attitudes had begun to shift. British officials gave up hope that Nasser might be removed from office. They also concluded that, rhetoric aside, Nasser was a moderate -- at least compared with other Arab leaders -- and that he represented the best bet for regional stability. Though there continued to be problems between the two countries (e.g., in Yemen), the UK abandoned military

intervention as a possibility, and in 1964, relations between the two countries were re-established. French antipathy towards Egypt also receded over time, but for different reasons. France became increasingly concerned with Algeria, and thought that better relations with other Arab states might prove useful. De Gaulle's election also brought a new skepticism about French-Israeli cooperation. In 1962, Paris moved to re-established relations with Cairo.

In sum, the European colonial powers that had dominated the Middle East and North Africa were, in the 1950s, Egypt's main security threat and were viewed that way by Egyptians. After 1960, Nasser remained suspicious about the intentions of the European powers, but the likelihood of direct intervention seemed increasingly remote. The imperialists, it was thought, would employ a more indirect strategy: working though Israel.

*Israel*

For Egyptians, the Israeli threat was one that evolved over time. From 1948 to the mid 1950s, Israel was an afterthought, albeit one that had caused embarrassment and irritation. With the Gaza raid and the Suez War, Israel graduated into a full-fledged military threat, though one that was still dependent on the support of colonial powers. With the discovery of Dimona in the late 1950s, the war scares of the early 1960s, and most important of all, the '67 War, Israel quickly came to be seen as the single, most powerful threat to Egyptian security. It retained that position for at least another decade. In 1979, the two countries signed the Camp David Accords. The peace pact reduced the likelihood of conflict between the two countries, but it did not erase Egypt's fundamental vulnerability.[2] In the view of many Egyptians, Camp David brought peace but not security. Since 1979, Egypt has witnessed the emergence of new threats, but Israel remains the most potent of the potential adversaries. The Vanunu revelations in 1986 were another reminder that Israel possessed the capability to destroy Egypt if it was so inclined.

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[2] Egypt's defense spending, for example, continued to grow at a steady pace until the mid-1980s. Official statements also cited a continuing Israeli threat. For a time, Egyptian leaders soft-pedaled the Israeli nuclear program, but during the 1990s, officials have repeatedly pointed to Israel's arsenal as a threat to Egypt and to the region. On Egyptian defense spending, see SIPRI, *SIPRI Yearbook 1990 World Armaments and Disarmament*, (Oxford: Oxford University Press), 1990, p. 192. On Egyptian statements, see, for example, "President Mubarak Grants Interview on October War Anniversary;" Egyptian Space Channel, Cairo, in Arabic 0900 gmt 6 Oct 98; BBC Summary of World Broadcasts (Part 4 The Middle East; IRAN; ME/D3352/MED); October 8, 1998 [Lexis-Nexis].

*Kings, Tyrants, and Clerics: Saudi Arabia, Iraq, Iran*[3]

The Egyptian-Israeli relationship has been fairly straightforward. Neither side liked the other very much, and even in times of peace, both countries worried about the possibility of future conflicts. Egypt's relationships with other states in the region, especially the other Arab states, have been more erratic. Saudi Arabia is one example. Under Nasser, relations between the two were openly hostile, with each country accusing the other of attempted coups, assassinations, and other machinations. Indeed, Nasser had problems with all the monarchies, who feared that Egyptian inspired social revolution might sweep them from power. Saudi-Egyptian animosity peaked during the Yemen civil war, when the two sides came into direct confrontation,[4] but relations improved after the '67 War, and have generally gotten better over time. Today, Egyptians do not consider the Saudis to be a military threat, despite the fact that Saudi Arabia spends more than double what Egypt spends on defense.

Relations with Iraq have also taken dramatic swings. Under Nasser, relations ran hot and cold depending on the latest coup in Baghdad. In recent decades, the Egyptian-Iraqi relationship has also shifted back and forth. In the 1980s, during the Iran-Iraq War, ties between the two countries were close. In 1991, however, Egypt joined the US, the UK, and the Gulf coalition against Iraq following its invasion of Kuwait. Today, Iraq represents a dangerous regional rival, one with a documented interest in nuclear weaponry.

Egypt's relationship with Iran is more complex. Of the region's players, Iran is the most geographically removed from Egypt. The two countries have not fought a war, and rarely has one country been the chief focus of the other. Still, there have been tensions. In the 1950s and 1960s, the Shah of Iran repeatedly complained to American officials that he considered Nasser the most dangerous threat in the region. Egypt's support of Iraq during the Iran-Iraq War; its persecution of Islamist groups, and Iran's promise to export the Islamic revolution also complicated relations. Perhaps as important is the fact that each country sees itself as the leading power in the Middle East. Recently, Egypt and Iran have made tentative moves to improve relations, but difficult issues remain. Egypt would certainly feel less secure if Iran joined the nuclear club, even if Iran's move came in reaction to an Iraqi acquisition of nuclear weapons. To date, however, there has been little public discussion of an Iranian bomb by Egyptian analysts.

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[3] Perhaps the most curious of the prospective threats is Libya and its mercurial leader, Colonel Muammar Qaddafi. Qaddafi had a deep affection for Nasser, but was disparaging of Sadat, particularly after Camp David. When Sadat was assassinated in 1981, officials in Cairo and Washington feared that Qaddafi might launch an attack, and US forces were quietly deployed to Egypt. The Libyan leader has also expressed an interest in nuclear weapons, which he discussed with Egyptian leaders in advance of the '73 War. Still, it is doubtful that Libya could be considered a legitimate military threat to Egypt. Egypt is a more populous country with a larger military. It is hard to imagine Libya using a nuclear weapon against an Arab country, and few if any Egyptians take the notion of a Libyan threat very seriously. Of course, a Qaddafi with the bomb might induce Egyptians to rethink that position. On Libyan interest in the bomb, see Mohamed Hassanein Heikal, *The Road to Ramadan*, (New York: Quadrangle), 1975, pp. 187-202.

[4] See, for example, Memo of Conversation, Harry Kern, Editor, Foreign Reports, H. Earle Russell, "Impressions of Mr. Kern during recent trip to Saudi Arabia, December 19, 1962, JW 12/5/95 10-162. After talks with the Saudi prince, Kern reported that "Faysal is convinced that Nasser is determined to destroy the monarchies in Saudi Arabia and Jordan," but that Faysal hoped to use Yemen as "a means to bleed Nasser white and ultimately destroy him."

Warfighting Experience

Egypt has gone to war with some regularity over the last several decades. Since 1952, it has been a direct participant in the Suez War, the Yemen civil war, the '67 War, the War of Attrition, the 1973 War, and the Gulf War. Small and Singer rank Egypt 31st out of 82 countries for the number of battlefield deaths experienced during interstate war -- about 25 thousand in all.[5] Turkey aside, this number represents the highest total of battlefield deaths for any country in the region. Still, it is a number that is far, far lower than countries in the top seven, which each lost over a million people on the battlefield. It also ranks lower that countries such as Australia (29) and Canada (28), whose soldiers died on behalf of their Western allies. In sum, Egypt is no stranger to war, particularly to war with Israel. It has sacrificed more on the battlefield that any of its Arab brothers, but its losses have not been as large as one might imagine.

**Test 1: Correspondence between Threats and Nuclear Decision Making**

The purpose of this test is to determine whether there is a correlation or covariation between external threats and Egypt's nuclear choices. Three measures of threat are used. The first is the number of adversaries armed with nuclear weapons. The second is the number of adversaries that possess a latent capability for developing nuclear weapons. The third is the number of countries that pose an overwhelming conventional threat. Overwhelming conventional threat is defined as a two-to-one advantage in the level of defense expenditure and the size of the population. Given the hypothesis, one would expect that the presence of a single adversary with any of these three attributes would be a sufficient motivation for acquiring nuclear weapons, with outright possession of nuclear weapons by an enemy providing the strongest motivation.

For this test, the 27 nuclear decisions are coded for the three measures.[6] If one plots the number and direction of Egypt's nuclear decisions against the level of threat, the result is something like Box 8.2. In this graph, threat is represented by a composite score that combines the two nuclear measures, i.e., enemies with nuclear weapons and enemies with a latent nuclear capability.[7]

Both a narrow definition of threat and a broader definition of threat -- one including other Arab states -- are plotted.[8] The two versions are identical until 1961. After 1961, the narrow threat score counts only Israel as a nuclear threat. The broader definition of nuclear threat includes three latent threats: Iran from 1974-1979, Iran from 1984-1998, and Iraq from 1992-1998.

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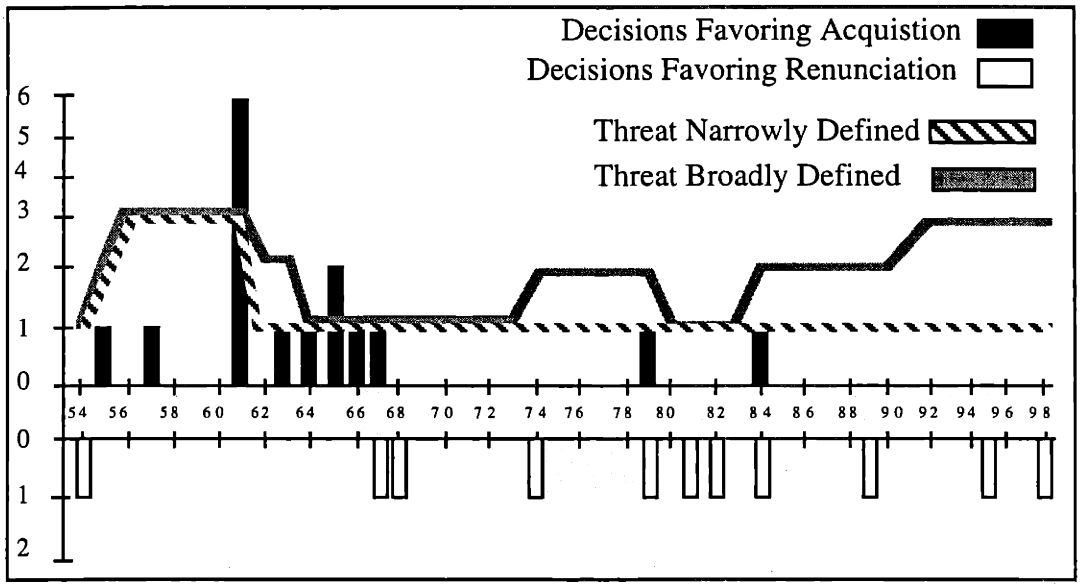
5 Melvin Small and J. David Singer, *Resort to Arms*, (Beverly Hills: Sage Publications), 1982, pp. pp. 165-180.

6 See Box 8.8 at the end of the chapter.

7 The least relevant of the three threats is overwhelming conventional force. No country in the Middle East has twice the population, twice the military expenditures, and hostile relations with Egypt. Most of the countries in the region have smaller populations than Egypt. Some spend twice as much on the military, such as Saudi Arabia in the '90s or Iraq in the '80s, but cannot be classified as hostile in those time periods. Further complicating the measure of conventional threats is the problem of post-1991 Iraq, where solid data on defense expenditures is not available.

8 A country is coded as an potential adversary if one of the following conditions is met: 1) the country has some history of armed conflict with Egypt, 2) the country is a member of an alliance that is hostile to Egypt or hostile to an alliance to which Egypt belongs, 3) process tracing evidence that suggests that the country is considered a potential threat.

**Box 8.3 Threat and Egyptian Nuclear Decision Making, 1954-1998**




The results are noteworthy in several respects. First, from the mid-1950s on, Egypt faced *at least one* threat that might have justified the acquisition of nuclear weapons. In the mid-1950s, the UK and France, which enjoyed overwheming conventional superiority and were perceived as having interventionist intentions. Israel was a latent nuclear threat by 1958 and a fully operational threat by 1966 -- a status that has remained largely unchanged. If anything, the Israeli nuclear threat, measured in capability, has grown in size and sophistication.[9]

Second, there appears to be something of a correspondence between the Israeli nuclear threat and increased efforts by Egypt to acquire nuclear weapons, at least in the period between 1961 and 1967. Indeed, most of Egypt's efforts to get the bomb came in this period and can be at least partially attributed to the presence of an Israeli nuclear program.

Third, this correspondence for the 1961-1967 period looks less compelling given Egyptian behavior over the long-term. Egypt concluded that Israel was seeking nuclear weapons in 1958 or 1959, yet Egyptian efforts to acquire the bomb did not commence until 1961 -- after the *public* revelations about Dimona. Moreover, Egypt makes comparatively few efforts towards the bomb after 1967, despite the persistence of an Israeli nuclear threat and an increase in the number of latent nuclear threats.

Failure to pursue nuclear weapons in the first years after the '67 War might be explained by the fact that the results of war altered Egyptian security priorities and that Sadat had no choice but to focus on conventional, rather than nuclear, armaments. That seems reasonable, though some have argued that "defeat in war" is a cause of proliferation.[10] In any case, the post-1967 exigencies do not

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9 "Revealed - The Secrets of Israel's Nuclear Arsenal / Atomic Technician Mordechai Vanunu Reveals Secret Weapons Production," *The Times* (London), October 5, 1986 [Lexis-Nexis].

10 Stephen M. Meyer, *The Dynamics of Nuclear Nonproliferation*, (Chicago: University of Chicago, 1984), p. 64.

explain why Egypt consistently rejected the nuclear option even *after* Egyptian conventional forces had been rebuilt. The Ministry of Defense ran a small, clandestine program to acquire nuclear technology and materials in the 1980s, but once the program came to light, it was shut down and the minister responsible was forced out of the government. The program's closure came despite the revelations that Israel had dramatically expanded the size and scope of its nuclear program.

Fourth, it is worth noting what the graph does not capture. The pool of observations is based on decisions and actions -- either for or against nuclear weapons. The pool does not include *non-actions* or decisions *not* taken. Take, for example, the 1961-1967 period. This phase is marked by repeated attempts to acquire nuclear weapons from outside sources and initiatives intended to build an indigenous nuclear weapons capability. During the same period, Egypt repeatedly squandered opportunities to advance its nuclear program. On these occasions, there was no *formal decision* to let the nuclear program drift, but that is, in fact, what happened. Nasser wanted the bomb; his government took a variety of steps to acquire it, but nuclear weapons were never given the political priority that would have been expected, given the threat posed by Israel.

**Test 2. Process Tracing**

Process tracing evidence on Egyptian decision making is scarce, but the available data suggests that Egypt viewed Britain as its chief military threat in the early and mid-1950s, but that after 1955, Israel increasingly became the focus of Egyptian defense thinking. Israel was also viewed as a nuclear threat, perhaps as early as 1958. There is no evidence that Iraq, Iran, or Libya were viewed in the same way.[11] Interview respondents consistently cited an Israeli nuclear threat and linked Egypt's pro-nuclear decisions to Israel's arsenal.

American officials who met with Nasser left convinced that the Egyptian president was deeply troubled by Israel's nuclear program. Typical is the view of Herman Eilts, a former Ambassador to Egypt. According to Eilts, when Nasser looked across his borders,

> ...the threat he saw was Israel. There was no question about that. And especially his comments about Israel going nuclear, what he was going to do about this, well it may have been a lot of hogwash, but nevertheless it was a real and proper reflection of the threat as he saw it. And the Egyptians have always had an inordinate fear that the Israelis would use nuclear weapons.[12]

Similar sentiments were expressed by Badeau, Komer and other observers.[13] A fear of Israeli nuclear weapons is also reflected in Nasser's own comments, both in private meetings and in public statements.[14] Evaluating Sadat's and Mubarak's views is more difficult, but public statements suggest that both Egyptian leaders considered Israel's nuclear arsenal to be a security threat.[15]

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11 The absence of evidence concerning the regional states may reflect the fact that there are no archival documents available for the relevant time periods and that the pool of interview subjects was weighted in favor of the 1950's, 1960's and early 1970s.

12 Interview with Herman Eilts, September 10, 1993.

13 See Chapter 6, footnotes 59 and 60. The so-called Badeau-Komer thesis contended that Nasser was sufficiently worried about the Israeli bomb that he might launch a preventive war.

14 See, for example, Airgram from Amembassy Cairo to the DOS, Memcon with President Nasser, April 18, 1963; GRDOS; RG 59; Pol 63-66; Box 1888; File: Pol Affairs and Relations 1/1/65, Arab-Israel; NAII. For an alternative view, see Talbot, who suggested that "..the Egyptians

Finally, there is no evidence linking Egypt's decision to reject or renounce nuclear weapons to a belief that the Israeli threat had subsided or diminished. If anything, statements by Egyptian leaders since NPT ratification have repeatedly pointed to the dangers posed by Israeli nuclear weapons.[16]

**Assessment**
The process tracing evidence is roughly consistent with the results of the congruence test, namely, that Egypt felt threatened, first by the UK, and then by Israel. Israeli atomic efforts appear to have stimulated Egyptian interest in acquiring nuclear weapons, but continuing concern about Israel did not prevent Egypt from giving up the nuclear option. Moreover, Egypt continued to reject the nuclear option even as other states in the region exhibited a new interest in the nuclear field. In short, a lack of threat does not account for Egypt's non-nuclear status.

## H2. Bipolarity (General)

The bipolarity hypothesis suggests that states are less likely to pursue nuclear weapons under conditions of bipolarity. To test this hypothesis, one can compare nuclear decision making under bipolarity with nuclear decision making in the absence of bipolarity.

In the Egyptian case, the period of bipolarity was marked by extremes in nuclear behavior. Egypt both sought and renounced nuclear weapons during the bipolar period. The collapse of bipolarity at the end of the 1980s did not, however, lead Egypt to hedge or move closer to a nuclear option. If anything, Egyptian nuclear policy moved in the opposite direction, towards a more committed policy of nonproliferation. Egypt supported the indefinite extension of the NPT; it volunteered to participate in IAEA programs to extend regional monitoring; it claimed to have turned down offers of nuclear weapons material from black marketers; and it joined other "New Agenda" countries in criticizing India and Pakistan for its recent nuclear tests.[17] Of course, in his day, Nasser also

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probably shared in a calculation we made, that the Israelis were trying to get muscle to assert themselves, but it would take an extreme provocation to break with the US by using the nuclear weapons. As a deterrent, fine, as in the Indian position, but the calculus of using it would have been critical, and I never got the sense that Egypt felt that Israel would use a bomb against them, especially while there was a good relationship with the US." Interview with Phillips Talbot, September 30, 1993.

15 See, for example, "President Mubarak Grants Interview on October War Anniversary;" Egyptian Space Channel, Cairo, in Arabic 0900 gmt 6 Oct 98; BBC Summary of World Broadcasts (Part 4 The Middle East; IRAN; ME/D3352/MED); October 8, 1998 [Lexis-Nexis]. The problem with relying on public statements is that inflammatory rhetoric are a mainstay of Middle East politics, and while officials can be shockingly candid, it is often difficult to distinguish sincere statements from posturing.

16 For a period in the 1970s and 1980s, Egyptian officials downplayed the dangers from an Israeli bomb. Official statements questioned whether the Israelis had, in fact, developed nuclear weapons. In the 1990s, Egyptian statements about the Israeli nuclear threat have grown more frequent and more pointed. See, for example, "Egypt Is Threatening to Arm Itself with Chemical and Biological Weapons as a Response to Nuclear," *Ha'aretz*, August 19, 1999 [Hebrew], Translated for the author by Eitan Barak.

17 On the other side of the ledger, Egypt has not accepted a set of new IAEA protocols, the so-called 93+2 regime, that was developed after the discovery of Iraq's nuclear weapons program.

criticized nuclear testing and supported nonproliferation resolutions -- even as he pursued the nuclear option. Unlike Nasser, however, Mubarak has backed up the rhetoric with action. It appears, therefore, that the most general form of the bipolarity hypothesis does not stand up to scrutiny.

## H3. Security Guarantees

The security guarantee hypothesis suggests that states with security guarantees are less likely to pursue nuclear weapons, while states that lack such guarantees are more inclined to seek nuclear weapons. Two measures of security guarantee are used: 1) the presence or absence of a defense treaty with a nuclear great power and 2) the number of conventional troops deployed in the region by a nuclear great power ally. Troop deployments are used as a proxy for the level of commitment on the part of a guarantor -- the greater the number of troops stationed nearby, the more robust the guarantee.

The two countries that could play the role of security guarantor for Egypt are the United States and the Soviet Union. The United States has never signed a defense treaty with Egypt, nor has it based armed forces on Egyptian soil.[18] The history of relations between the two countries and the perception that the US would ultimately side with Israel in a conflict make the US an improbable guarantor.

Egypt did sign a defense treaty with the Soviet Union, and the Soviet Union stationed thousands of advisors and related personnel in Egypt during the early 1970s. Indeed, it has been suggested that the Soviet Union provided Egypt a nuclear security guarantee, and that this guarantee explains why Egypt did not become a nuclear weapons state.[19] To evaluate this claim, two tests are used. The first test is a correspondence test that compares Egyptian nuclear decision making with presence or absence of a Soviet friendship treaty and troop deployments. The second test is a process tracing test using statements by Egyptian officials and other material pertaining to the Egyptian-Soviet relationship.

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Egypt is not alone in this regard. The new safeguards were approved in 1997, but as of 1999, only nine countries had implemented the new system. IAEA, *Annual Report 1999*, (Vienna: IAEA), 1999, p. 129 [PDF from http://www.iaea.org/worldatom/Documents/Anrep/Anrep99/07_annex.pdf]

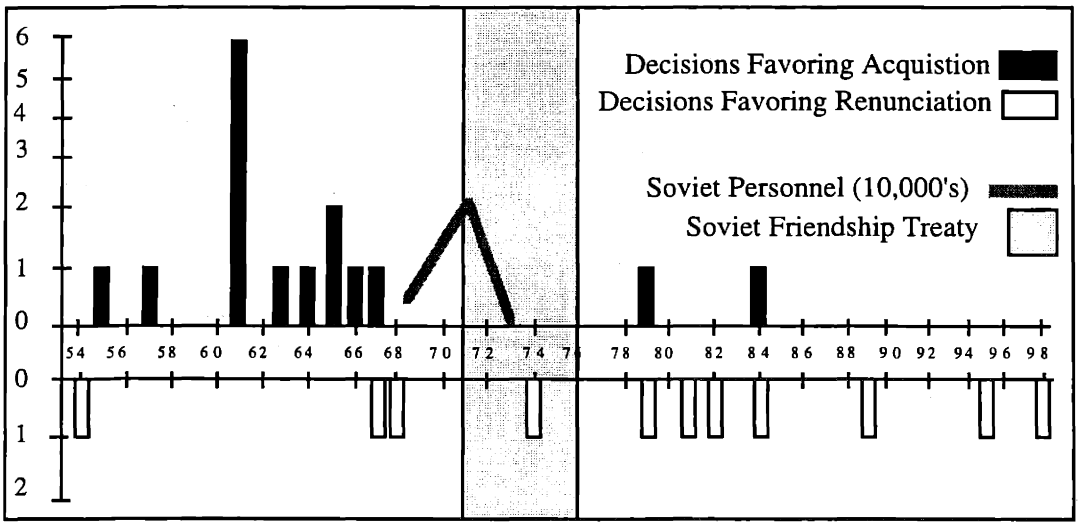
18 Camp David accords do not oblige American forces to defend Egypt if attacked by Israel. American service personnel have gone to Egypt to assist with arms transfers, but there are no American bases or semi-permanent forces stationed there.

19 On the claim of a Soviet nuclear guarantee, see Hedrick Smith, "Soviet Said to Offer Cairo Atom Defense," *New York Times*, February 4, 1966, p. 1; Pierre Lellouche, "The Garrison States", in Kincade, William, and Christopher Bertram, eds., *Nuclear Proliferation in the 1980s: Perspectives and Proposals* (New York: St. Martin's Press, 1982), p. 77, footnote 60; Marianne van Leeuwen and Ben Soetendorp, "Israel," in *A European Non-Proliferation Policy*, Edited by Harald Muller, (Oxford: Clarendon Press, 1987), p. 242. Strangely, Kats maintains that Egypt enjoys US and UN security guarantees that protect it from nuclear attack (presumably through the NPT), but it is clear that no such guarantee either exists or is recognized by Egypt. Gregory H. Kats, "Egypt," in *Non-proliferation: The Why and the Wherefore*, Edited by Jozef Goldblat, SIPRI, (London: Taylor and Francis), 1985, pp. 189, 190-191.

**Test 1. Correspondence Between Soviet Security Guarantee and Egyptian Nuclear Decision Making**

Following the disastrous defeat in the '67 War, Nasser told the Soviet Union that Egypt was prepared to sign a defense pact and provide the USSR with military bases. Four years later, in 1971, Egypt and the Soviet Union signed a defense pact, the Soviet-Egyptian Treaty of Friendship and Cooperation. In the interim, the USSR ramped up its presence in Egypt, beginning with approximately three thousand people in 1968-1969, and peaking somewhere between fifteen and twenty thousand in 1971-1972. In 1972, Sadat asked his Soviet visitors to leave Egypt, and in 1976, Sadat unilaterally abrogated the friendship treaty. If one maps these developments over the history of Egyptian nuclear decision making, the result is something like Box 8.4.

**Box 8.4 Egyptian-Soviet Relations and Nuclear Decisions**




At first glance, it would appear that there is some correspondence between Soviet support and Egyptian nuclear decisions. Most of Egypt's efforts to get the bomb pre-date Soviet involvement, and other pro-nuclear decisions in the 1980s come after the Soviet relationship was terminated. During the period of the treaty, Egypt did not make a single decision favoring nuclear weapons.

Still, the results raise a number of questions. The first concerns the timing of the treaty. Nasser offered to sign a treaty and provide military bases in 1967. The Soviets refused to sign a treaty for four years and rejected the bases offer altogether.[20] Even more curious is the record of decision making in the *post*-treaty period. Egypt continued to reject the bomb even after the collapse of Egyptian-Soviet relations and later renounced nuclear weapons -- despite the absence of a security guarantee.

20 Abdel Magid Farid, *Nasser The Final Years*, (Ithaca: Ithaca Press), 1994, pp. 1-7.

**Test 2. Process Tracing the History of Soviet-Egyptian Relations**

Process tracing evidence for the security guarantee hypothesis would, at its best, offer statements or documents by decision makers connecting their decisions for or against nuclear weapons to the presence or absence of a security guarantee. The available evidence falls short of that standard, but statements by officials strongly indicate that the Soviet Union did not, in fact, offer nuclear weapons or a nuclear security guarantee.

When press accounts in the 1960s asserted that the Soviet Union had provided Egypt with a nuclear security guarantee and might even make a transfer nuclear weapons, Nasser flatly rejected the claims.[21] Some thirty years later, both the former Egyptian ambassador to the USSR and Nasser's personal secretary categorically denied that the Soviets offered either weapons or guarantees.[22]

**Other Available Information**

Other information about Egypt and the Soviet Union is generally inconsistent with the premise of the hypothesis, that the Soviet Union *would* offer a nuclear guarantee. The Soviets were especially cautious on issues involving nuclear weapons, and all the more so after the Cuban missile crisis and their disastrous experience with the China. The Chinese had received Soviet nuclear assistance, only to turn around and target their one-time ally.

Of even more relevance is the history of the Egyptian-Soviet relationship. Little in that history would have inspired either side to have confidence in the other. Pre-1967 relations oscillated between uncomfortable-but-supportive to down right hostile. As Chapter 6 briefly outlines, both sides had reason to complain about the other. From the Soviet perspective, the USSR had provided aid and assistance, most notably the High Dam, but had received little in return. Nasser jailed and persecuted Egyptian communists, publicly rejected Communism, made overtures to both the US and China, and criticized the USSR's international behavior.

Egypt, on the other hand, resented Soviet heavy handedness; its lack of support during the break-up of the UAR in 1961; and Soviet support for Iraq, a regional rival. These and other differences led to a number of nasty public tiffs, including a famous exchange involving then Vice President Sadat and Khreschev. More importantly, the Egyptians were, first and foremost, anti-imperialists. They had profound suspicions about Soviet intentions, played the US and the USSR (and the USSR and China) against each other, and worked through most of the 1960s to develop indigenous capabilities that would free them from dependence on Soviet arms.

In the weeks and months that followed the '67 War, the Soviet Union responded with arms and assistance, but in a way that only served to raise questions about the Soviet commitment. Officials from the USSR openly complained that the Israelis had captured so much Soviet equipment (equipment that would be passed on to the US). In response to requests for advanced weapons systems, the Soviets demurred, arguing that the Egyptian army was in such poor shape that it could

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21 During an interview with NBC in 1966, Nasser was asked if Egypt had a nuclear security guarantee from the US or the USSR. He responded, " The answer is no. And I want to say something, that we don't accept any protection from that sort. We adopt an, a policy of national independence and nonalignment, so if we accept the protection from that type or from that sort, this would affect our policy of national independence and nonalignment." Nasser went on to say that he would not accept a guarantee if it were offered. DOS Airgram CA-10775, "Nasser and Eban TV Interviews," April 29, 1966, pp. 3-4.

22 Interviews with Sammi Sharaf, January 6, 1997; and Mourad Ghaleb, January 5, 1997.

not handle such weapons. For their part, the Egyptians felt insulted and wondered why their Soviet friends had not been more forthcoming before and during the war.[23]

Not surprisingly, the Egyptians were unhappy that Soviet officials had declined to sign a defense treaty or build a military base. Even worse was Soviet insistence that Egypt agree to terms with Israelis that Cairo perceived as virtual capitulation. In time, Egypt's erstwhile ally did provide arms, but the Soviets refused to provide advanced weaponry, and the armaments they did provide arrived only after endless delays and constant cajoling.[24]

By 1970 and the War of Attrition, the USSR appeared more willing to take a direct role in assuring Egypt's security. Air defenses were overseen by Soviet personnel, and MIG fighters with Soviet pilots patrolled Egyptian air space.[25] Still, the fundamental conclusion drawn by the Egyptians was that the Soviet commitment was inherently limited. The USSR did not want to see Egypt forced on its knees, but it was not willing to risk direct confrontation with the United States. If these two interests came into conflict, Egypt would likely come out the loser.

After Nasser died in 1970, Sadat took power. Sadat disliked the Soviets, but he needed their help to rebuild Egypt's armed forces. By 1972, however, both sides had reached their limit, and Sadat ordered his Soviet visitors to go home. Some have suggested that the Soviets had been asking to go home; others maintain the Sadat simply expelled them. In any case, neither side seemed particularly unhappy with the decision.

The '73 War again brought the two countries together, albeit for a short time. In fact, the '73 War provided what appears to be a dramatic reminder that the Egyptians could not depend on the USSR to insure their survival in the nuclear age.[26] In the waning days of the war, the Israeli army managed to encircle an Egyptian army division. Though a cease fire had been called and accepted, it appears that Israeli forces under the command of Ariel Sharron pressed on and had plans to finish off the Egyptian force. As the situation grew more desperate, the USSR issued a stern warning to the US that the USSR might intervene on its own to avoid a catastrophe. The US

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23 Farid, *Nasser The Final Years.* One of Nasser's military advisors recounted a meeting he attended between Nasser and the Chief of Staff of the Soviet armed forces. In an effort to make his point about the lowly state of the Egyptian military, the officer presented photographs of Israeli forces on the eve of the attack. "Look," said the general, Israel is at the moment of commencing attack and you are falling asleep!" The Egyptians were taken aback by the photos and naturally inquired why this information had not been provided to the Egyptians beforehand. The general is said to have changed the subject. Interview with Hasan Badri, , April 20, 1995.

24 Farid, *Nasser The Final Years.*

25 When confronted, however, the Soviet pilots retreated. Leeuwen and Soetendorp, "Israel," p. 242.

26 After the 1973 War, there was a claim that, during the war, the USSR sent nuclear weapons to Egypt in the hull of a Soviet ship. This supposedly based claim on unreleased American intelligence that the Soviet ship was giving off a radioactive signature. No one interviewed for this study treated the bomb-in-the-ship allegation seriously. On the contrary, Heikal reports that the USSR was scared to death that the '73 war might escalate into a nuclear confrontation. no Soviet nuke guarantee-Ismail A senior diplomat suggested that the USSR would not have allowed the United States to directly threaten Egypt with nuclear weapons, but that a nuclear threat from Israel would be a different issue. An Israeli threat would be "Egypt's problem."

government responded by putting its forces, including its nuclear forces, on alert. Soon after, the Soviets backed down and the Israelis relented. In other words, the USSR appears to have threatened intervention on behalf of its ally, *but then backed off* in the face of an American threat.

In sum, on virtually every event of significance to Egyptians -- the 1961 break-up of the UAR, the '67 War, and the '73 War to name three -- the USSR proved less than reliable. In this context, a Soviet security guarantee -- assuming it was offered and accepted -- could not have inspired much confidence.

**Assessment**
The congruence and process tracing tests raise serious questions about the explanatory value of the security guarantee hypothesis in the Egyptian case. There is some correspondence between Egyptian restraint and Soviet protection for the period of the Friendship Treaty, but Egyptian behavior before and after the treaty, together with evidence from the historical record, cast strong doubt on whether the correspondence, in fact, represents a causal relationship. The Egyptian-Soviet relationship was a marriage of convenience based on short-term interests. It is doubtful either party thought the marriage would last or believed that the other party would defend them "til death do us part."

## H4. Superpower Pressure

The pressure hypothesis suggests that the superpowers force weaker nations to abandon their nuclear aspirations. In the Egyptian case, it is conceivable that either the US or the USSR might have used pressure tactics.[27] The evaluation of this hypotheses begins with a set of three correspondence tests that focus on the observable implications of the hypothesis. This is followed by a process tracing test and a comparison with what else is known about the US-Egyptian and Soviet-Egyptian relations.

**Tests 1-3. Awareness, Threatening Communications, Recognition**
The congruence tests are based on three predictions about the conditions and behaviors one would expect to see if a superpower were pressuring Egypt to abandon its nuclear aspirations: 1) the superpower is aware of Egyptian efforts to acquire nuclear weapons (or, conversely, opportunities to make nonproliferation commitments), 2) the superpower issues a threatening communication intended to influence Egypt's behavior, and 3) the Egyptians recognize the superpower behavior as an attempt to affect their nuclear policy. Given the pressure hypothesis, one would expect a correspondence between these three conditions and outcomes involving the rejection or renunciation of the nuclear weapons.

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[27] On Egypt's relations with the superpowers, see Fawaz A. Gerges, *The Superpowers and the Middle East: Regional and International Politics, 1955-1967*, (Boulder: Westview Press), 1994; Muhammad Abd el-Wahab Sayed-Ahmed, *Nasser and American Foreign Policy, 1952-1956*, (Cairo: The American University in Cairo Press), 1989; William J., *Economic Aid and American Policy Toward Egypt 1955-1981*, (Albany: State University of New York Press), 1985; Leo Tanksy, *U.S. and U.S.S.R. Aid to Developing Countries, A Comparative Study of India, Turkey, and the U.A.R.*, (New York: Frederick A. Praeger), 1967; Karen Dawisha, *Soviet Foreign Policy Towards Egypt*, (New York: St. Martin's Press), 1979; Mohamed Hassanein Heikal, *The Sphinx and the Commisar*, (New York: Harper & Row), 1978.

Box 8 lists twenty-five rejection and renunciation outcomes. It includes proposals to renounce nuclear weapons that were accepted and proposals for the acquisition of nuclear weapons that were rejected or failed.

**Box 8.5 Nonproliferation Outcomes in Egypt, 1954-1998**

| # | Yr | Nonproliferation Outcome | # | Yr | Nonproliferation Outcome |
|---|---|---|---|---|---|
| 1 | 54 | Rejects weapons offers by foreign scientists. | 14 | 67 | No weapons assistance from PRC. |
| 2 | 57 | Not acquire chem reprocessing from USSR. | 15 | 68 | Sign NPT. |
| 3 | 61 | Not acquire joint Arab NW program. | 16 | 74 | Signs bilateral safeguards with US. |
| 4 | 61 | Not acquire weapons assistance from India. | 17 | 79 | Proposes nuclear arms control in Camp David. |
| 5 | 61 | Not acquire NW capability. | 18 | 79 | Abandons proposal to suspend safeguards. |
| 6 | 61 | Not acquire NW via special projects group. | 19 | 81 | Signs bilateral safeguards with US. |
| 7 | 61 | Not acquire weapons assistance from USSR. | 20 | 81 | Ratifies NPT. |
| 8 | 63 | Not acquire weapons assistance from PRC. | 21 | 82 | Signs IAEA safeguards agreement. |
| 9 | 64 | Not acquire joint Arab NW program. | 22 | 84 | Rejects proposal for NW. |
| 10 | 65 | Not acquire joint Arab NW program. | 23 | 89 | Closes military NW program. |
| 11 | 65 | Not acquire weapons assistance from PRC. | 24 | 95 | Supports indefinite extension of NPT. |
| 12 | 66 | Not acquire joint Arab NW program. | 25 | 98 | Rejects offers of clandestine assistance. |
| 13 | 67 | Rejects proposal for NW. | | | |

The United States was largely unaware of Egyptian nuclear decisions in the 1950s and 1960s, and instead pressured Cairo over *non-nuclear* issues. Between 1967 and 1973, the US was in no position to threaten Egypt, since ties between the two countries had all but ended. The most plausible instances of American pressure take place after 1973, but of the ten observations in this period, only two (#18, #23) appear to be an instances in which pressure may have played a role. Even in these cases, it is not clear that the outcome would have differed in the *absence* of US pressure.

An assessment of Soviet behavior depends more on interview data and inference than archival documents, and so less is known about the degree to which Moscow was aware of Cairo's nuclear ambitions. The available evidence suggests that prior to 1967, the USSR did not pressure Egypt on nuclear matters (though it did attempt to compel behavior in other areas). After the abrogation of the Friendship Treaty in 1976, the USSR was in no position to pressure Egypt. That leaves the period between 1967 and 1976, but there is little or no evidence of any attempt, let alone any success, in the use pressure tactics to influence Egyptian nuclear decision making.

### Test 4. Process Tracing Test

There is no evidence connecting superpower pressure and nuclear decision making. Indeed, the data indicates both the Washington and Moscow preferred to use carrots rather than sticks. In time, however, both superpowers grew exasperated by Egyptian behavior and attempted to force changes in a number of Egyptian policies. Few of these efforts were successful, and none related to nuclear weapons. This brief survey looks first at US policy, then Soviet policy, and finally Egypt's response to the superpower actions.

American Pressure and Egyptian Relations

The US has certainly been willing to employ pressure tactics in its foreign relations, and has done so with Egypt. During the Eisenhower administration, for example, the US withdrew support for the High Dam in order to demonstrate American displeasure at Cairo's non-aligned politics.

Kennedy came to office hoping to improve relations with Egypt. Washington increased its aid allotment and attempted to cultivate a new political relationship with Cairo.[28] The policy was premised, in part, on the recognition that "local concerns have more effect on Nasser than Western pressure."[29] It also reflected a State Department view that...

> ...Overt pressure, through propaganda or the operation of our aid programs, seeking to modify basic U.A.R. policies is demonstrably not only unproductive but damaging. Avoidance of overt pressures from the U.S. permits full operation of the serious stresses in U.A.R.-Soviet relations.

The new policy of engagement extended to the area of civilian nuclear cooperation. Kennedy entered office soon after the Dimona reactor became public. In 1961, the administration mistakenly believed it had received a request from the Egyptian government for assistance to build its civilian nuclear program. The US response was not pressure, but constructive engagement. US officials told Nasser that the Kennedy administration had "general interest in assisting the UAR in this field." Though American policy makers were reluctant to get involved in a large financial project and were concerned about Egypt's lack of support for safeguards, they were "interested in assisting a UAR nuclear program for political reasons" and were willing to discuss some form of American support.[30]

Others were less interested in engagement, however. There was strong sentiment on Capitol Hill (and in certain Arab countries) that American food aid should be used to pressure the Egyptian

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28 Ironically, while Kennedy had no intention of pressuring Egypt, an early misunderstanding led the Nasser government to the opposite conclusion. In 1961, Ambassador Badeau delivered a verbal message to Nasser, which Nasser incorrectly interpreted as a threat to reduce American food aid. Nasser's reaction was predictably unpleasant. Subsequent communications corrected the misunderstanding, however. American aid increased, and relations between the two nations improved, at least for a time. Mohamed Hassanein Heikal, *The Cairo Documents*, (New York: Doubleday), 1973, pp. 206-207.

29 Meyer, NEA, Memo of Conversation, Lord Hood, Minister British Embassy, et al and F. D. Kohler et al, Subject: The Middle East and the Arab-Israeli Problem, February 13, 1961, p. 3, JW 5/5/9/96E.

30 Memo for Fred Dutton through McGeorge Bundy, Status of UAR Nuclear Development, July 7, 1961, p. 3, Secret; Lot Files Pertaining to the Near and Middle East, Bureau of Near East and South Asian Affairs, Office of Near Eastern Affairs, Records of the Director, 1958-1963; Memoranda to [WH]; Box 4; NAII. Another document provides a clue as to the specific nature of the political motivations. The document, "Outline of Topics for Meeting Regarding U.A.R. Request for Atomic Energy Program" has a section entitled "Reasons for U.S. to Take Forthcoming Attitude." The reasons include "1. Quiet exploitation of UAR-USSR friction, 2. Shut USSR out of potentially dangerous area of activity, 3. Increased leverage as partial counterbalance to USSR military and High Dam assistance to UAR, 4. Possible opportunity to establish safeguards against UAR military use of atomic power." For a more skeptical view, see Draft Telegram from Phillips Talbot to Amembassy Vienna, June 29, 1961.

government on a range of issues. At the time, American aid provided between a third and a half of Egypt's cereal intake. The American Ambassador in Cairo recalled being "under constant pressures to use the threat of aid withdrawal to protect some one's immediate interests."[31] In general, though, the Kennedy administration appears to have resisted calls to use food aid as a weapon.[32]

After Johnson assumed office, US-Egyptian relations grew increasingly strained, and soon reached an all time low. Johnson had few qualms about threatening the supply of food aid and did so on more than one occasion.[33] Yet even as relations deteriorated, there was one area that did not divide the two countries: nuclear policy. The Johnson administration, which had continued the arms control initiatives begun under Kennedy, believed that it had obtained a commitment from Nasser that Egypt would not pursue nuclear weapons.[34] US policy makers were sufficiently convinced of Egypt's intentions that John McCloy -- Johnson's special arms control envoy to Nasser -- was instructed to alter his talking points and drop references to nuclear weapons in favor of discussing missiles.[35]

Relations between the two countries were essentially suspended between the '67 and '73 Wars, but the period from 1974 to the present has been one of steadily improving relations. These improved relations have been reflected in ever increasing levels of aid and a series of bilateral agreements.

Soviet Pressure and Egyptian Relations

The troubled history of Soviet-Egyptian relations was discussed in the previous section on security guarantees. As regards the use of pressure, the Soviet story is similar to the American one. The Soviet Union had hoped to win Egypt's favor with aid and assistance. Like the US, it was often infuriated by the behavior of the beneficiary. It too attempted to pressure the Egyptian government, and like the US, the effort failed more often than it succeeded. Despite a considerable amount of economic aid, arms, and trade, the USSR had great difficulty translating largesse into leverage.

In the early and mid-60s, Soviet use of pressure may have been constrained by its competition with the US and China, all three of which hoped to win Egypt's loyalty. After 1976, the USSR had

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31 On the pressure to pressure, see John Badeau, "Development and Diplomacy in the Middle East," *Bulletin of Atomic Scientists*, Vol. 22, No. 5 (May 1966), p. 8.

32 In October of 1963, the Egyptian press did complain of American pressure, alleging that the US was threatening to cut food aid because of the continuing conflict in Yemen. The claim remains unconfirmed, however. *Middle East Journal Chronology*, October 17, 1963.

33 Heikal, *The Cairo Documents*, 1973, p 225-249. Aid increased steadily beginning 1958, jumped in 1961, peaked in 1964, declined precipitously after 1965. William J. Burns, *Economic Aid and American Policy Toward Egypt 1955-1981*, (Albany: State University of New York Press), 1985.

34 Memo from Dean Rusk for the President, Second McCloy Mission on Near East Arms Control, August 12, 1964; NSF; Country Files, File: UAR cables, Vol. 2, 6/64-12/64; Box 159; LBJPL. Memo for the President from McGeorge Bundy, August 3, 1964; NSF; Country Files, File: UAR cables, Vol. 2, 6/64-12/64; Box 159; LBJPL; Outgoing Telegram from DOS, to Amembassy Cairo, Near East Arms Control, May 28, 1964; NSF; Country Files, File: UAR cables, Vol. 1, 11/63-5/64; Box 158; LBJPL.

35 Outgoing Telegram from DOS, to Amembassy Cairo, August 7, 1964; NSF; Country Files, File: UAR memos, Vol. 1, 11/63-5/64; Box 158; LBJPL. Memo from Nicholas G. Thatcher, NE, to Talbot, NEA, Outline of NE Problems, March 10, 1961, p. 3.

virtually no leverage, as the Egyptians moved progressively into the American camp. Egypt's greatest dependence on the USSR's was in the period immediately following the Six Day War, roughly 1967 to 1972.[36]

Soviet pressure, when it was applied, did not have nuclear weapons as a focus.[37] Of particular concern to the USSR was Egypt's relationship with West Germany, and by implication, lack of support for East Germany. Egyptian officials complained of Soviet pressure on the German issue in 1961, when a delegation visiting Moscow were subjected to "a violent diatribe against the UAR's cooperation with imperialist countries."[38] It has also been suggested that Soviet pressure was a factor in Egypt's invitation to the East German Prime Minister Ultricht in 1965, an act which had led to a meltdown in Egyptian-West German affairs.[39]

Of greater relevance is an allegation concerning the period following the '67 War, when the Soviet military took responsibility for restructuring the Egyptian military. As part of that effort, the USSR allegedly forced Egypt to shut its jet and rocket programs. If true, it could reasonably be conjectured that Soviet officials would have demanded an end to the nuclear program as well. Evidence is scarce, but the claims warrant skepticism. In interviews, the Minister of Defense at the time explicitly rejected the notion that the Soviets forced the cancellation of the jet and missile programs. The decision, according to the minister, was his alone, and the chronology of the events appears to support his view.[40] The decision to freeze and then end the jet and missile programs was made early on, before the Soviets established a strong presence in Egypt. Moreover, other WMD programs -- notably the CW and BW programs -- appear to have persisted well after the war.

Egyptian Responses to Superpower Pressure

There are few documents describing Egypt's internal reaction to superpower pressure, but there are a number of public declarations by Egyptian officials. The quintessential statement of this kind is Nasser's Victory Day speech at Port Said in 1964....

> The American Ambassador says that our behavior is not acceptable. Well, let us tell them that those who do not accept our behavior can go and drink from the sea. What I want to say to President Johnson is that I am not prepared to sell Egyptian independence for thirty million pounds. ...If we are now drinking tea seven days a week, we can make do with only five days. ...If we are eating for four days, we can make do with four. We can tighten our belts. ...But we are not going to accept pressure. We are not going to accept gangsterism by cowboys.[41]

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36 Quintin V. S. Bach, *Soviet Economic Assistance to the Less Developed Countries: A Statistical Analysis*, (Oxford: Clarendon Press), 1987.

37 On Soviet pressure, see Memo from Robert C. Strong, NE to Mr. Talbot, NEA, "Reasons Behind Current Soviet Propaganda Against the U.A.R.," June 12, 1961, JW5/10/96 5L.

38 "Recent Indications of Continued U.A.R. and Iraqi Opposition to Soviet Penetration," Attachment to Memo from Robert C. Strong, NE to Mr. Meyer, NEA, Recent Indications of Continued U.A.R. and Iraqi Opposition to Soviet Penetration, June 6, 1961.

39 Hedrick Smith, "Ulbricht Visit to Cairo Today Said to have Been Urged by Soviet," New York Times, February 24, 1965, p. 2.

40 Interview with Amin Howeidy, April 26, 1995, and January 1, 1997.

41 Burns, *Economic Aid and American Policy Toward Egypt 1955-1981*, pp. 159-160.

The Soviets received equal treatment in this regard. In 1961, for example, Moscow made a series of public denunciations concerning Egypt treatment of Egyptian communists, but the Egyptian press responded to these "Soviet propaganda attacks" by insisting "that the U.S.S.R. would never be successful in exerting pressure on the U.A.R."[42]

Of course, rare is the government that will publicly declare that it is capitulating to pressure. This is all the more true of a country like Egypt, whose foreign policy was premised on non-alignment and anti-imperialism.

Egypt's most credible *public* statement on superpower pressure came in 1966. At the time, Nasser insisted that "The freedom we have bought with our blood shall not be sold for wheat, rice, maize, or anything else."[43] He went on to back up that declaration by announcing that Egypt would no longer accept American aid -- a voluntary act that carried a substantial cost to the Egyptian government.

In sum, the documentary record shows that both superpowers hoped to win Egypt's favor with aid, both attempted to pressure Egypt when they failed to obtain the desired results, and both found themselves frustrated by an obstinate and independent Egyptian government. Most importantly, neither superpower prior to 1967 appears to have applied pressure over the issue of nuclear weapons. This conclusion also finds support in the data from interviews.

**Assessment**

Overall, the pressure hypothesis performs poorly in its tests. No observation scores positively for all three predictions (awareness, threatening behavior, recognition of pressure), and for many observations, there is evidence that directly disconfirms the pressure hypothesis, e.g., offers of nuclear aid or instructions to envoys not discuss nuclear weapons. When pressure tactics were employed, they were used on behalf of issues unrelated to nuclear weapons.

The failure of the pressure hypothesis should not be surprising. Compellence of this kind is usually difficult, and the typical instruments for achieving success are often weaker that they appear.[44] The difficulties of compellence are compounded when the country being pressured is governed by a proud, nationalist leader -- John Gorton of Australia and Gamal Nasser being two examples.[45]

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42 "Recent Indications of Continued U.A.R. and Iraqi Opposition to Soviet Penetration," Attachment to Memo from Robert C. Strong, NE to Mr. Meyer, NEA, Recent Indications of Continued U.A.R. and Iraqi Opposition to Soviet Penetration, June 6, 1961.

43 Burns, *Economic Aid and American Policy Toward Egypt 1955-1981*, p. 169.

44 On the limits of foreign aid, particularly in the Middle East, see Burns, *Economic Aid and American Policy Toward Egypt 1955-1981*, pp. 200-212 or Stephen M. Walt, *The Origins of Alliances*, (Ithaca: Cornell University, 1987), pp. 218-261.

45 According to Badeau, "... Egypt [will not] change its foreign policy - especially in areas it considers to involve its own national security - under the threat of aid withdrawal. This is as true for the Soviets as for ourselves; deep nationalism and an understandable pride in sovereignty - combined with strong leadership - make the regime highly resistant to external political pressure." Badeau, *Development and Diplomacy in the Middle East*, p. 9.

# III. Summary: Hypotheses on Power

None of the power hypotheses performs particularly well. The hypotheses on bipolarity (H2), security guarantees (H3) and pressure (H4) are not at all supported. The threat hypothesis (H1) may help explain Egyptian interest in nuclear weapons in the early 1960s but provides a poor explanation for why Egypt gave up the nuclear option. Box 8.6 summarizes the results. A more detailed analysis of these results can also be found in at the end of Chapter 10.

## Box 8.7. Summary of Findings for Power Hypotheses

| Hypothesis | Tests | Results |
|---|---|---|
| **H1. Threat** | 1) Correspondence b/t level of threat and NDM.<br><br>2) Process tracing. | <u>Fails Tests.</u><br>Threats may explain some pro-nuclear decisions in the 1960s, but lack of threat does not account for Egypt's non-nuclear status. Egypt failed to act on opportunities when the NW threat was obvious and renounced NW even as threats persisted or increased. |
| **H2. Bipolarity** | 1) Correspondence b/t of bipolarity and NDM. | <u>Fails Test.</u><br>Egypt sought NW under bipolarity but has not pursued NW since the end of bipolarity. |
| **H3. Security Guarantee** | 1) Correspondence b/t guarantee and NDM.<br><br>2) Correspondence b/t allied troop deployments and NDM<br><br>3) Process tracing. | <u>Fails Tests.</u><br>Egypt made no attempts to acquire NW during period of Soviet Friendship Treaty, but renounced NW after it had renounced the Treaty. Strong process tracing evidence suggests Soviets did not offer a security guarantee, and a guarantee would not have been seen as credible even if it had been offered. |
| **H4. Pressure** | 1) Superpower is aware of proliferator activity.<br>2) Superpower issues threat.<br>3) Proliferator perception of being pressured.<br>4) Process tracing. | <u>Fails Tests.</u><br>Hypothesis performs poorly on all tests. Superpowers preferred aid over pressure; did not pressure on nuclear issues, and were seldom successful in their attempts to pressure Egypt on non-nuclear issues. |

NDM = Nuclear decision making NWS = Nuclear weapons state NW = Nuclear weapons

## Box 8.8 Egypt Threat Scores

| Narrow | | | | Broad | | | |
|---|---|---|---|---|---|---|---|
| Yr | NWS | Latent | Coven | Yr | NWS | Latent | Coven |
| 54 | UK | France | UK | 54 | UK | France | UK |
| 55 | UK | France | UK | 55 | UK | France | UK |
| 56 | UK | France, Israel | UK, France | 56 | UK | France, Israel | UK, France |
| 57 | UK | France, Israel | UK, France | 57 | UK | France, Israel | UK, France |
| 58 | UK | France, Israel | UK, France | 58 | UK | France, Israel | UK, France |
| 59 | UK | France, Israel | UK, France | 59 | UK | France, Israel | UK, France |
| 60 | UK, France | Israel | UK, France | 60 | UK, France | Israel | UK, France |
| 61 | UK, France | Israel | UK, France | 61 | UK, France | Israel | UK, France |
| 62 | 0 | Israel | 0 | 62 | France | Israel | France |
| 63 | 0 | Israel | 0 | 63 | France | Israel | France |
| 64 | 0 | Israel | 0 | 64 | 0 | Israel | 0 |
| 65 | 0 | Israel | 0 | 65 | 0 | Israel | 0 |
| 66 | Israel | 0 | 0 | 66 | Israel | 0 | 0 |
| 67 | Israel | 0 | 0 | 67 | Israel | 0 | 0 |
| 68 | Israel | 0 | 0 | 68 | Israel | 0 | 0 |
| 69 | Israel | 0 | 0 | 69 | Israel | 0 | 0 |
| 70 | Israel | 0 | 0 | 70 | Israel | 0 | 0 |
| 71 | Israel | 0 | 0 | 71 | Israel | 0 | 0 |
| 72 | Israel | 0 | 0 | 72 | Israel | 0 | 0 |
| 73 | Israel | 0 | 0 | 73 | Israel | 0 | 0 |
| 74 | Israel | 0 | 0 | 74 | Israel | Iran | 0 |
| 75 | Israel | 0 | 0 | 75 | Israel | Iran | 0 |
| 76 | Israel | 0 | 0 | 76 | Israel | Iran | 0 |
| 77 | Israel | 0 | 0 | 77 | Israel | Iran | 0 |
| 78 | Israel | 0 | 0 | 78 | Israel | Iran | 0 |
| 79 | Israel | 0 | 0 | 79 | Israel | 0 | 0 |
| 80 | Israel | 0 | 0 | 80 | Israel | 0 | 0 |
| 81 | Israel | 0 | 0 | 81 | Israel | 0 | 0 |
| 82 | Israel | 0 | 0 | 82 | Israel | 0 | 0 |
| 83 | Israel | 0 | 0 | 83 | Israel | 0 | 0 |
| 84 | Israel | 0 | 0 | 84 | Israel | Iran | 0 |
| 85 | Israel | 0 | 0 | 85 | Israel | Iran | 0 |
| 86 | Israel | 0 | 0 | 86 | Israel | Iran | 0 |
| 87 | Israel | 0 | 0 | 87 | Israel | Iran | 0 |
| 88 | Israel | 0 | 0 | 88 | Israel | Iran | 0 |
| 89 | Israel | 0 | 0 | 89 | Israel | Iran | 0 |
| 90 | Israel | 0 | 0 | 90 | Israel | Iran | 0 |
| 91 | Israel | 0 | 1 | 91 | Israel | Iran, Iraq | Iraq |
| 92 | Israel | 0 | 1 | 92 | Israel | Iran, Iraq | 0 |
| 93 | Israel | 0 | 1 | 93 | Israel | Iran, Iraq | 0 |
| 94 | Israel | 0 | 1 | 94 | Israel | Iran, Iraq | 0 |
| 95 | Israel | 0 | 1 | 95 | Israel | Iran, Iraq | 0 |
| 96 | Israel | 0 | 1 | 96 | Israel | Iran, Iraq | 0 |
| 97 | Israel | 0 | 1 | 97 | Israel | Iran, Iraq | 0 |
| 98 | Israel | 0 | 1 | 98 | Israel | Iran, Iraq | 0 |

# Chapter 9. Explaining Egyptian Behavior: Hypotheses Based on Resources

The resource hypotheses explain nuclear decisions and outcomes in terms of the proliferator's material endowments and its access to the resources of other countries. Three resource hypotheses are evaluated: 1) a lack of financial resources, 2) a lack of scientific resources, and 3) a lack of access to foreign technology.

## H5. A Lack of Financial Resources.

This financial resources hypothesis claims that developing countries do not join the nuclear club, because they cannot afford it. They simply lack the money. Nearly all accounts of Egyptian nuclear decision making cite the importance of resource constraints, and most rank Egypt's lack of resources as the key reason it never developed the bomb.[1]

The popularity of the resource explanation is not surprising. Unlike many of its neighbors, Egypt did not have the good fortune to be sitting on top of large reserves of oil or natural gas. Its burgeoning population, which doubled between 1947 and 1976, outstripped its modest economic achievements, and the wars with Israel had severe economic repercussions. Sadat himself often told his audiences that the wars with Israel had made Egypt the poorest country in the Arab world.[2]

Four tests are used to assess the hypothesis. The first three are based on the observable implications of the hypothesis: 1) the unsuccessful proliferator will have fewer financial resources than the countries that built nuclear weapons, 2) financial constraints will inhibit spending on new or discretionary projects, and 3) financial constraints will impede the development of similar weapons programs. The fourth test is a process tracing test, i.e., whether decision makers cite a lack of financial resources in their deliberations over nuclear policy.

### Test 1. The Nonproliferator Will Have Fewer Financial Resources than the Countries that Developed Nuclear Weapons.

The financial resources hypothesis is predicated on the notion that there is some minimum level of resources required for states to pursue nuclear weapons. To establish a lower boundary or threshold, one can look to the nine nuclear weapons states. Of the countries that acquired nuclear weapons, two countries -- Israel and Pakistan -- are the clearest cases of developing countries with limited financial resources.[3] Israel is far wealthier than Pakistan on a per capita basis, but its tiny

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[1] For examples of the resource explanation, see Yair Evron, "The Arab Position in the Nuclear Field: a Study of Policies up to 1967," *Cooperation and Conflict*, Vol. 8, 1973, p. 21; William B. Bader, *The United States and the Spread of Nuclear Weapons*, (New York: Pegasus), 1968, p. 94; Roger F. Pajak, "Nuclear Status and Policies of the Middle East Countries," *International Affairs*, Vol. 59, No. 4 (1983), p. 595; Anoushiravan Ehteshami, *Nuclearization of the Middle East*, (London: Brassey's), 1989, p. 133; Shyam Bhatia, *Nuclear Rivals in the Middle East*, (London: Routledge), 1988, p. 109; Gregory H. Kats, "Egypt," in *Non-proliferation: The Why and the Wherefore*, Edited by Jozef Goldblat, SIPRI, (London: Taylor and Francis), 1985, p. 189.

[2] On Sadat's statements, see Ali E. Hillal Dessouki, "The Primacy of Economics: The Foreign Policy of Egypt," in *The Foreign Policies of Arab States*, (Boulder: Westview), 1984, p. 122.

[3] Other candidates include China in the mid-1950s and India in the early 1970s. Data on China for that period ranges from poor to non-existent. Among the states that sought but did not acquire

population provides a very small base from which to mobilize capital. Pakistan, by contrast, is very large, but very poor.

Three measures of financial resources are used for comparing Egypt's capabilities with those of Israel and Pakistan: GNP, central government expenditures (CGE), and defense expenditures. The comparisons will focus on these countries' resource endowments *at the time they decided to pursue nuclear weapons*, i.e., Egypt from the 1960s to the 1980s, Israel in the mid-1950s, and Pakistan in the early 1970s. Given the difficulties involved in cross-national comparison, only general results are sought, i.e., agreement by multiple sources on the gross relative position of these countries.[4]

Egypt vs. Israel

Israeli's decision to seek nuclear weapons came some time after Ben-Gurion assumed power in 1955, most probably after the Suez War. Throughout the 1950s and up until 1967, all the data sources report that Egypt had a larger GNP, larger CGE, and a larger defense budget than Israel. After the '67 War, Israel took the lead in all three categories and maintained a lead for another decade and a half. The key point, however, is that at every point, from the 1950s to the 1990s, Egypt had a larger GNP, CGE, and defense expenditure than Israel *at the time Israel decided to go nuclear*. Egypt in 1970 had fewer financial resources than Israel in 1970, but more resources (in constant dollars) than Israel did in the 1950s, when it negotiated its secret agreement with France.

Egypt vs. Pakistan

Pakistan has roughly twice the population of Egypt, but it is a very poor country. Egypt's CGE has been larger than Pakistan's for the entire period on record, from the 1950s to the 1990s. As regards defense spending, Egypt has outspent Pakistan in every year and every decade except for the 1990s. The data for GNP, on the other hand, show the more populous Pakistan with a larger GNP for most of the period considered.[5]

The key comparison to be made is with Pakistan in the early 1970s. Pakistan's average GNP between 1970 and 1973 was larger than Egypt's average GNP for the period between 1961 and 1966, i.e., after the Dimona revelations but before the '67 War. Egypt's defense expenditures and central government expenditures for this period, however, were roughly equal to those of Pakistan in the 1970-1973 period, with Egypt having a slight edge in both categories. Box 9.1 summarizes the results.

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nuclear weapons, the relevant cases might include Taiwan in the 1960s or North Korea in the 1960s or late 1970s, depending on when one dates the beginning of their program.

[4] Cross national comparisons inevitably raise questions about the quality, meaning, and comparability of data. The data for these comparisons are drawn from the three standard sources -- the World Bank, SIPRI, and ACDA -- but there are problems, nonetheless. The data for the 1950s and early 1960s is generally spotty. Numbers on defense expenditures are particularly problematic, in part, because countries differ in what they define as defense related. Data for the country variables is often different for different sources, and different *within* the same series.

[5] The possible exception is a brief period from the mid-70s to the mid-80s, when the GNPs were roughly comparable in size.

**Box 9.1. Egypt's Resources Compared with Israel and Pakistan**

| | Egypt ('61-'66) | | |
|---|---|---|---|
| | **GNP** | **CGE** | **Defense** |
| **Israel ('55-'59)** | Higher | Higher | Higher |
| **Pakistan ('70-'73)** | Lower | Equal | Equal |

As the table indicates, Egypt had equal or greater resources when compared with either Israel or Pakistan at the time these countries opted to go nuclear. The one exception is GNP for Pakistan. The results are not unequivocal, but they suggest that the resource hypothesis fails its first test: Egypt had equal or greater financial resources than some countries that did acquire nuclear weapons.

**Test 2: Financial Constraints Will Inhibit Spending on New or Discretionary Projects.** According to the financial resources hypothesis, the primary obstacle for the proliferator is a lack of money. The proliferator is so financially constrained that it cannot find or afford the money for a nuclear program, despite the fact that an adversary's nuclear weapons pose a threat to its very existence. These conditions suggest a government at the limit of its means, unable to take on new projects or projects of secondary importance.

One can test whether this description holds for Egypt by looking at the government's expenditure patterns. A review of Egyptian spending in the 1960s, reveals that the government spent large sums on a variety of projects that can only be labeled as discretionary. Indeed, the money spent on any one of the programs described below would have provided more than sufficient funds for building the country's nuclear capability.

The Yemen Civil War

Less than two years *after* the disclosure of the Dimona reactor, Nasser plunged Egypt into a bloody and expensive intervention in Yemen. Egypt's involvement in Yemen began three days after a coup toppled the Middle East's most notorious monarch. Nasser began dispatching forces in support of the new government and by 1965, upwards of 70,000 troops, or about a third of its ground forces, were fighting in the Yemeni civil war. At the time, the conflict was the largest modern inter-Arab war on record. In addition to sending troops and materiel, Nasser also supplied financial aid to shore up the fledgling Yemeni government. The Yemen conflict, often referred to as Nasser's Vietnam, did not come to a close until after the 1967 war with Israel.[6]

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6 For a discussion of the Egyptian role in the Yemen civil war see, Ali Abdel Rahman Rahmy, *The Egyptian Policy in the Arab World: Intervention in the Yemen 1962-1967 Case Study*, (Washington: University Press of America), 1983. Most sources on the scope of the Yemen intervention cite the 70,000 figure, including Badeau, IISS and Safran. Terrill cites 60,000 troops in Yemen in 1966 at the time of Egypt's largest offensive. Smith contends that Egypt had 50,000 in Yemen at the peak of the war. Bird also cites the 50,000 figure. John S. Badeau, *The American Approach to the Arab World*, (New York: Harper & Row),1968, pp. 123-151; Harvey H. Smith et al, *Area Handbook for the United Arab Republic* (Egypt), (Washington: American University), 1970, p. 60; International Institute for Strategic Studies, *The Military Balance, 1965-1966*, (London: IISS), 1966; Nadav Safran, *From War to War: The Arab-Israeli Confrontation 1948-1967*, (New York: Pegasus), 1969, p. 156; W. Andrew Terrill, "The Chemical Warfare legacy of

As one might guess, the Yemen adventure was expensive. Estimates of Egypt's expenditures generally run between $92 and $138 million a year in 1960s dollars, but some figure run much higher. Overall, there is little dispute that the government spent significant resources on the Yemen war, to the point that it negatively affected the Egyptian economy.[7]

Expansion of the Army

In December of 1961, Nasser announced that he planned to expand his army by three divisions. What is curious about this announcement, in retrospect, is that it occurred a year *after* Israel's announcement on Dimona but nine months *before* the coup in Yemen. In other words, the decision to expand Egypt's conventional capability rather than its nuclear capability was independent of the Yemen affair. Indeed, there is a report that Nasser sought to further expand his ground forces again after 1962, so that he could replace the troops he had diverted to Yemen.[8]

Jet Program

It is also during this period that Egypt embarked on an costly program to indigenously produce its jet aircraft. Previously, Egypt had bought is jet aircraft "off the shelf," its biggest supplier being the UK.[9] Egyptian efforts to establish a jet production capability began in the late 1950s, but picked up momentum in the early 1960s. In 1962, Nasser officially opened the Helwan Air Works, a jet production facility that had been operating on a pilot basis. The purpose of the facility was to design and build a new series of Egyptian-made jet aircraft, including a supersonic fighter-bomber. By 1965, the cost of the program was approximately $80.6 million per year.[10]

Missile Program

Analysts differ over when Egypt's missile program first began, but all agree that a sustained effort did not commence until the early 1960s.[11] In July of 1962, Egypt conducted its first official rocket

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the Yemen War," *Comparative Strategy*, Vol. 10, p. 113; Kai Bird, *The Chairman John J. McCloy The Making of the American Establishment,* (New York: Simon & Schuster), 1992, p. 567.

[7] On the cost of the Yemen war, see Mohamed Hassanein Heikal, *The Sphinx and the Commisar*, (New York: Harper & Row), 1978, p. 148; Michael N. Barnett, *Confronting the Costs of War*, (Princeton: Princeton University Press), 1992, p. 99; Rahmy, *The Egyptian Policy in the Arab World: Intervention in the Yemen 1962-1967 Case Study*, pp. 208-211, 245; Terrill, "The Chemical Warfare legacy of the Yemen War," p. 110. The exchange rate between dollars and Egyptian pounds during the 1960s was roughly 2.3-1. See Safran, *From War to War: The Arab-Israeli Confrontation 1948-1967*, p. 148.

[8] On the December announcement, see *Middle East Journal Chronology*, December 13, 1961, p. 441. From this point, the *Middle East Journal Chronology* will be abbreviated *MEJC*.
See also, Safran, *From War to War: The Arab-Israeli Confrontation 1948-1967*, p. 134.

[9] On jets from the UK, see *MEJC*, August 30, 1961.

[10] On Egypt's jet program, see John H. Hoagland, Jr. and John B. Teeple, "Regional Stability and Weapons Transfer: The Middle Eastern Case," *Orbis*, Vol. 9, No 3 (1965), pp. 716-719. Smith estimates that the jet fighter program cost £E35 million or $80.5 million a year in 1960s dollars. Smith et al, *Area Handbook for the United Arab Republic*, p. 471.

[11] Possible dates for Egypt's missile program include: 1951 (Hoagland and Teeple, "Regional Stability and Weapons Transfer: The Middle Eastern Case," p. 719), 1952 (Smith et al, *Area Handbook for the United Arab Republic*, p. 471), and 1957 (Evron, "The Arab Position in the Nuclear Field: a Study of Policies up to 1967," p. 20).

test.[12] Some two years later, according to the Institute for Strategic Studies, Egypt had an arsenal of between 100 and 250 missiles. In 1964, Field Marshall Amer openly proclaimed that Egypt had become a strong rocket power, but those who studied the program had their doubts.[13] In fact, the missiles were of limited military value (unless equipped with non-conventional warheads). They did, however, attract a lot of political attention.[14]

These projects raise an obvious question. How is it that Egypt had the money for three new army divisions, an $80 million a year jet program, over $100 million for intervention in Yemen, and "particularly expensive" missile program at the same time it lacked the monetary resources for atomic research? [15] The funds spent on any one of these programs would have allowed Egypt to significantly upgraded its nuclear infrastructure.[16] Moreover, none of the non-nuclear projects could be described as a military necessity. The jet program, for example, had more to do with a

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12 In November of 1961, there were press reports of a test rocket firing. *MEJC*, November 9, 1961. On the July tests, see *MEJC*, July 23, 1962 and Mohamed Hassanein Heikal, *The Cairo Documents*, (New York: Doubleday) 1973, p. 207. Two days later after the July test, the missiles were put on display in a public parade. *MEJC*, July 23, 1962.

13 On the problems with Egyptian rockets, see IISS, *The Military Balance, 1964-1965, 1965-1966, 1966-1967*; Evron, "The Arab Position in the Nuclear Field: a Study of Policies up to 1967," p. 20. See also Robert Komer, Memo for the Record, Conversation with Roland Evans, May 2, 1963, Located at the John F. Kennedy Library. Komer describes the Israeli claims about the Egyptian rockets as "quite exaggerated."

14 The Israelis mounted a comprehensive campaign against the missile and the jet program. The campaign included sending mail bombs to German scientists working for the Egyptian program. (see for example, *MEJC*, September 25, 1964; Heikal, *The Cairo Documents*, p. 207; and *MEJC*, July 28,1965 on an Egyptian trial of accused mail bomber), a public trial in Israel of a former German scientist working on the missile program (*MEJC*, June 10, 1963), complaints to the British government (Embassy telegram from London to the Secretary of State, No 3774, March 28, 1963, from the Kennedy NSC files on microfilm at Harvard University), complaints to the American government (see for example, Robert Komer, Memo for the President, May 28, 1964, in advance of Eshkol's visit, from the Johnson files at the National Security Archives), complaints to the US Congress (Department of State telegram to Embassy personnel, No 1760; 4/12/63, from the Kennedy NSC files on microfilm at Harvard University), and a letter writing campaign to Vice President Johnson from American Jewish leaders complaining about "Nazi scientists" (NSC files on microfilm at Harvard University have copies of letters from several prominent businesspersons. Each letter has precisely the same text as every other letter. See, for example, letters dated May 23 and 24, 1963 from Bloomfield Industries, Leonard Haimes Co., and Gardner Hotel Supply.)

15 On the missile program as "particularly expensive," see Safran, *From War to War: The Arab-Israeli Confrontation 1948-1967*, p. 156.

16 See Department of State Memo from William Crawford to Strong, March 15, 1963, in National Security Archive, *U.S. Nuclear Non-Proliferation Policy, 1945-1991*, Virginia Foran, Editor, (Alexandria: Chadwych-Healey), 1991, fiche number 00944. (From this point forward, the National Security Archive's *U.S. Nuclear Non-Proliferation Policy, 1945-1991* will be abbreviated *NSA*.) A draft report dated December 12, 1964, by R. Murray for President Johnson's special committee on nonproliferation maintains that a nuclear weapons program might require only $150 million (1964 dollars) as an initial investment, as low as $30-$40 million for a country, like India, that had a nuclear infrastructure. Document from the Johnson archives located at the National Security Archive, original from LBJ Library.

desire for prestige and independence, than security.[17] Egypt could have bought jets for less money than it took to develop an indigenous production line.

That Egypt could have devoted more money to its nuclear program is also evident when one looks at the pattern of spending over time. The data show that Egypt was able to extract larger and larger sums for military projects even after 1967, when the economy was comparatively weaker. In constant dollars, Egypt was spending an extra $300 million *a year* in 1966 over what it spent in 1960. By 1970, it was spending well over a $1 billion *a year more* than what it spent a decade earlier.[18]

**Test 3. Financial Constraints Will Impede the Development of Similar Weapons Programs.**

This test is based on the notion that a general cause, like a lack of financial resources, should affect similar programs in similar ways. If lack of financial resources interfered with the development of a nuclear weapons program, then it should have had a similar impact on other weapons projects. If Egypt that was deterred from pursing nuclear weapons for financial reasons, it should also have been deterred from pursuing similar projects of equal or greater financial cost.

Here again, it is instructive to compare the trajectory of the nuclear program with the development of the jet and missile programs. All three programs were military projects and all three "took off" at roughly the same time. Their fortunes turned out to be quite different, however.

In 1961, Egypt seemed interested in expanding all three programs -- nuclear research, jets, and missiles. It was not long, however, before the nuclear program stalled, even as the jet and missile programs commanded ever greater resources. By the end of 1965, with the onset of broader economic problems, the nuclear program stalled, yet the missile and jet programs continued.[19] With the defeat in '67, all three programs were halted, but unlike the nuclear program, by the mid-1970s, the missile and jet programs had been revived. In fact, the 1975 incorporation of the Arab Industrial Organization represented a concerted attempt to develop a broad program of indigenous defense production. Egypt also continued to maintain a modest chemical and biological program.

In short, the nuclear program stalled even as other, arguably less vital military programs, continued. There is one exception to this pattern. Between 1967 and 1973, all three programs were frozen or cut back.

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17 Airgram from John S. Badeau, Ambassador, Amembassy Cairo, to DOS, United States Objectives in the United Arab Republic, May 18, 1963, p. 3; GRDOS; RG 59; Pol 63-66; Pol-Political Affairs and Relations, Arab-Isr, 1/1/64; Box 1889; NAII

18 SIPRI, *SIPRI Yearbook 1977 World Armaments and Disarmament*, (Oxford: Oxford University Press), 1977, p. 288-299. See also Lai Dessouki and Adel al-Labban, "Arms Race, Defense Expenditures, and Development: The Egyptian Case, 1952-1973," *Journal of South African Asian and Middle Eastern Studies*, Vol. 4 , No. 3 (Spring), pp. 69-70 cited in Barnett, *Confronting the Costs of War*, p. 81. These numbers led one proponent of the resource hypothesis to admit that financial constraints do not explain Egypt's behavior. Evron, "The Arab Position in the Nuclear Field: a Study of Policies up to 1967,", p. 30, footnote 16.

19 Interviews with Gabr Aly Gabr, April 28, 1995 and Ali E. Hillal Dessouki, January 1, 1997.

**Test 4. Process Tracing.**
There is little in the way of documentary evidence concerning nuclear weapons and financial constraints, but in interviews, several respondents do cite cost considerations. Some attribute to Nasser a belief that nuclear weapons were too expensive -- "an expensive toy that could not be used" as Heikal described it.[20] Badri, a military adviser to Nasser after the '67 War claimed that nuclear weapons "were discussed in the high council of war many times." Badri claims that after the '67 War, Nasser lamented that Egypt could pursue the nuclear path only "if the national budget is cut in half to devote to bomb." Badri went on to speculate that if Nasser had possessed the necessary funds, he "would have done it."[21] Sammi Sharaf, Nasser's secretary, also pointed to financial cost as one of the reasons Nasser did not pursue the bomb.[22] Interestingly, Hedayat, who ran the nuclear program for much of the 1960s, specifically ruled out a lack of money as an impediment to his efforts.[23]

On the whole, the process tracing evidence supports the financial constraints hypothesis. The most persuasive of it -- that is, the most detailed descriptions of actual declarations by Nasser or other actors -- relates to the period immediately following the '67 war.

**Other Available Information**
The results of these four tests are consistent with what is known about Egyptian economic history since 1955, i.e., that Egypt went through a period of boom, bust, and then recovery. The economic boom is reflected in a number of statistical measures, including per capita income growth, GNP growth, and growth in the industrial sector. As John Waterbury points out, "the performance of nearly all Egypt's economic indicators" reflects the same pattern: "a gathering of momentum in the late 1950s, a strong growth peaking in 1965, marked decline until the early 1970s, and then a new rise in growth."[24]

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20 Interview with Mohammed Hassanein Heikal, January, 6, 1997.

21 Interview with Hasan Al Badri, April 20, 1995.

22 Interview with Sammi Sharaf, January 6, 1997. Basheer also cites cost concerns, particularly after 1967. Interview with Tahseen Basheer, December 29, 1996.

23 Interviews with Salah Hedayat, February 16, 1995, and April 26, 1995. Financial constraints were cited by other nuclear officials, however. Some publicly attributed delays in the bidding process to a shortage of funds; others cited their poor financial circumstances when seeking liberal financing from foreign governments. These claims are difficult to evaluate. First, such statements are obviously self-serving. Second, they do not necessarily indicate the financial position of the government as a whole. The AEE could have lacked funds at the same time that money was spent lavishly on other projects, which, in fact, appears to be the case. On AEE officials pleading poverty, see Frank Barnaby, *The Invisible Bomb: The Nuclear Arms Race in the Middle East*, (London: I. B. Tauris), 1989, p. 81; Bhatia, *Nuclear Rivals in the Middle East*, p. 62. See also interviews with Amin Zaki El-Behay, April 23, 1995 and January 1, 1997.

24 John Waterbury, *The Egypt of Nasser and Sadat: The Political Economy of Two Regimes*, (Princeton: Princeton University Press), 1983, p. 210. , pp. 209-210. On the GNP growth rate, see Safran, *From War to War The Arab Israeli Confrontation 1948-1967*, p. 434. On the growth of the industrial sector and the government's industrial investment, see R. D. McLaurin, Mughisuddin Mohammed, and Abraham R. Wagner, *Foreign Policy Making in the Middle East*, (New York: Praeger), 1977, p. 63.

During the early sixties expenditures for defense, social services and gross investment all increased.[25] Direct government investment in industry tripled from 1960 to 1965, rising to a level of approximately £E103 million ($240 million) a year.[26] In addition, the process of nationalization brought more of the country's economic resources under the control of the government.[27]

The timing is particularly striking: Egypt's period of economic boom directly coincides with the discovery of Israel's clandestine nuclear program. It was a time, as Nadav Safran says, of "more intensely felt needs and enhanced possibilities of meeting them."[28]

**Assessment**

The financial resources hypothesis finds partial support in some tests but is contradicted by others. The hypothesis fails the first and second tests: on five of six measures Egypt had a resource base comparable to that of Israel and Pakistan, and it spent hundreds of millions of dollars on what can only be described as discretionary projects. The results of the third test support the hypothesis, but only for the period between 1967 and 1973. The results of the process tracing test also favor the hypothesis, but the evidence is neither plentiful nor precise, and the best of it points to the post-'67 War period. These results are generally consistent with Egypt's broader economic history, which also points to the period from 1965 to 1973 as one of financial constraints.[29]

Of the four nonproliferation outcomes that occur in the '67-'73 period (#13-15)[30], only one stands out as a clear candidate for the financial hypothesis, Nasser's 1967 rejection of the nuclear weapons option (#13).[31] In general, though, a lack of financial resources does not appear to account for Egypt's nuclear status.

## H6. A Lack Scientific and Technological Resources.

This hypothesis contends that countries fail to acquire nuclear weapons, because they lack the necessary scientific resources to accomplish the job. Four tests are used to assess this claim. The first three are based on the observable implications of the hypothesis: 1) the unsuccessful proliferator will have a smaller scientific base than the countries that built nuclear weapons, 2) the

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25 Safran, *From War to War: The Arab-Israeli Confrontation 1948-1967*, p. 194.

26 On the growth of the industrial sector and the government's industrial investment, see McLaurin, Mohammed, and Wagner, *Foreign Policy Making in the Middle East*, p. 63.

27 On the resources that nationalization opened to the government, see Safran, *From War to War: The Arab-Israeli Confrontation 1948-1967*, p. 154; Barnett, *Confronting the Costs of War*, p. 94-97.

28 Safran, *From War to War: The Arab-Israeli Confrontation 1948-1967*, p. 154.

29 Of course, even under these circumstances, Egypt commanded more resources than Israel did during the late 1950s. It is also worth noting that Pakistan -- with its very modest resources -- opted for the bomb despite having just been defeated in a war that also damaged its economy.

30 They include: #13, 1967, Rejects proposal for NW; #14, 1967, No weapons assistance from PRC, and #15, 1968, Sign NPT.

31 Any conclusion should be tempered, however, by the other event of significance that year: Nasser's unsuccessful attempt to acquire nuclear weapons assistance from China (#14). Even if the PRC had acceded to Nasser's request, it still would have required that Egypt invest a significant sum in a nuclear program, which he must have known at the time of the request.

absence of "slack" or excess capacity in the country's scientific resources, and 3) that the lack of scientific resources will also impede the development of other weapons programs that are science or engineering intensive. The fourth test is a process tracing test, i.e., whether decision makers cite the lack of scientific capability in their deliberations.

Many of these tests rely on cross-national comparisons using statistical data collected by the international organizations. All such data invite questions about accuracy and reliability, but statistics measuring a country's scientific base pose especially difficult problems.[32] For Egypt, the best available data on scientific resources was reported in 1973, when UNESCO commissioned a series of studies on science and engineering in Egypt and the Middle East. Where possible, the comparisons used in these tests will employ data from this year.

**Test 1. The Nonproliferator Will Have a Smaller Scientific Base than the Countries that Developed Nuclear Weapons.**

The question at issue is whether Egypt had the minimum endowments that would have allowed it to pursue a nuclear weapons program. What is the minimum level of scientific resources required? This lower boundary is probably best represented by Pakistan, which among the nuclear weapons states, was the country with the smallest scientific infrastructure at the time it decided to seek the bomb.[33] To compare scientific development in Egypt and Pakistan, several measures are used, including 1) the number of scientists and engineers in each country, 2) the number of postgraduates in science and engineering, 3) the number of university graduates in science and engineering, 4) the number of scientific publications, and 5) each country's expenditure for research and development.

Education and Science in Egypt

Among Arab states, Egypt is considered a leader in science[34] and education.[35] A recent survey of Arab science researchers and their published work, for example, ranked Egypt first in scientific

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32 First, there is a problem of availability. Data on the number of scientists, engineers, and technicians is available for some countries in some years and not in others. Even when there is data for the required category and time period, there is the problem of counting rules. Countries often have different definitions for what constitutes "scientist" or "a university." More serious still is the problem of contradictory or inconsistent numbers for the same country.

33 Ideally, one would like to compare Egypt in the 1960s with China in the 1950s, but the UNESCO data on China's scientific base is particularly spotty.

34 On science and engineering policy in Egypt, see UNESCO, *Science and Technology in the Development of the Arab States*, Science Policy Studies and Documents, no. 41, (Paris: The UNESCO Press, 1977); UNESCO, *National Science and Technology Policies in the Arab States*, Science Policy Studies and Documents, no. 39, (Paris: The UNESCO Press),1976; Aboul-Foutouh A. Latif, *Science and Technology in Africa A Case Study of Egypt*, (Nairobi: MANSCI, 1990 [i.e. 1994]; Zahlan, *Science and Science Policy in the Arab World*; Mamdouh Saleh, "Retrospective Evaluation of Forecasting Methods for Qualified-Manpower Needs for Egypt, in *Forecasting Skilled Manpower Needs*, R. V. Youdi and K. Hinchliffe, eds., (Paris: UNESCO Institute for Educational Planning, 1985.

35 On education in Egypt, see El Said Mostafa El-Said, *The Expansion of Higher Education in the United Arab Republic*, (Cairo: Cairo University Press), 1960; Joseph S. Szyiowicz, *Education and Modernization in the Middle East*, (Ithaca: Cornell university Press), 1973; George D. M. Hyde, *Education in Modern Egypt: Ideals and Realities*, (London: Routledge & Kegan Paul), 1978 and Bill Williamson, *Education and Social Change in Egypt and Turkey A Study in Historical*

output, accounting for a startling 70% of the total scientific research carried out in the Arab world.[36] Its current success can be traced back to the 1950s, when ever greater numbers of Egyptians sought educational opportunity, particularly in science and engineering. India and China certainly had larger scientific establishments, but by the mid-fifties, Egypt's scientific development did not lag substantially behind that of its larger colleagues in the developing world.[37]

In the 1960s, Egypt adopted a series of policies expressly intended to encourage higher education and training in the sciences. The heart of these new initiatives was the abolition of fees and the promise of a job for anyone with a university degree.[38] As might be expected, the number of students entering the system expanded dramatically.[39] The effects were particularly strong in science and engineering, where the number of graduates in science and engineering quintupled between 1954 and 1966.[40]

Egypt vs. Pakistan[41]

According to UNESCO statistics for 1973, Egypt had roughly half the population of Pakistan but twice the number of scientists and engineers engaged in R&D.[42] (Compared with Iraq, Egypt had a lead of seven to one.[43]) Even more astonishing is Egypt's lead in the total number of scientists and engineers, where it bested Pakistan by a staggering ten to one.[44]

Similar disparities are found in the number of postgraduates in science and engineering. In the mid-1970s, Egypt had double the number of total post-graduates, double the number of post-

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*Sociology*, (London: Macmillan Press), 1987; Khalid Ikram, *Egypt Economic Management in a Period of Transition*, (Baltimore: John Hopkins University Press for the World Bank), 1980, 124-137.

36 Hafez Kobeissi, " An Introduction to the Study of the Geographic Distribution of Arab Scientific Researchers, in *The Arab Brain Drain*, A. B. Zahlan, ed., (London: Ithaca Press for the United Nations), 1981, p. 143.

37 On the comparison of Egypt with India and China, see Zahlan, *Science and Science Policy in the Arab World*, pp. 34, 37).

38 Williamson, *Education and Social Change in Egypt and Turkey A Study in Historical Sociology*, pp. 172-173.

39 Ikram, *Egypt Economic Management in a Period of Transition*, p. 136; Gulam Nabi Saqib, *Modernization of Muslim Education in Egypt, Pakistan, and Turkey, A Comparative Study*, (London: Reach Press), 1977, p. 255.

40 Szyiowicz, *Education and Modernization in the Middle East*, p. 289.

41 On science and education in Pakistan, see Pervez Hoodboy, ed., *Education and the State Fifty Years of Pakistan*, (Karachi: Oxford University press), 1998; Pervez Hoodboy, *Islam and Science, Religious Orthodoxy and the Battle for Rationality*, (London: Zed Books), 1993.

42 UNESCO, *UNESCO Statistical Yearbook, 1980*, (Paris: The UNESCO Press), 1980, pp. 762, 764.

43 UNESCO, *Science and Technology in the Development of the Arab States, Science Policy Studies and Documents*, no. 41, (Paris: 1977), p. 175.

44 Again, Egypt's advantage in the total number of science and engineers also appears to apply against Iraq. UNESCO, *UNESCO Statistical Yearbook, 1980*, (Paris: The UNESCO Press), 1980, pp. 882-883, 886-887. UNESCO, *Science and Technology in the Development of the Arab States*, Science Policy Studies and Documents, no. 41, (Paris: The UNESCO Press, 1977), p. 175

graduates in science, and a whopping fifty to one advantage in the number of engineering post-graduates.[45] Not surprisingly, Egypt also produced more university graduates with science or engineering degrees.[46]

Other measures of scientific development yield similar results. Take, for example, the rate of scientific publication, where Egypt outperformed Pakistan by a ratio of over three to one.[47] Another indicator that is commonly used to assess scientific development is spending on research and development. Here again, Egypt's R&D spending in 1973 was three times that of either Pakistan or Iraq.[48]

The general picture that emerges is quite consistent. Egypt was far more committed to education, science, and engineering than Pakistan.[49] This commitment is reflected not only in *relative* measures (Egypt spent a higher percentage on its GNP on R&D and a higher percentage of its public expenditures on education than Pakistan[50]) but more importantly, in *absolute* measures.[51] Despite its smaller population, Egypt enjoyed a larger scientific base.[52]

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45 UNESCO, *UNESCO Statistical Yearbook, 1980*, (Paris: The UNESCO Press), 1980, pp. 481-562.

46 Gulam Nabi Saqib, *Modernization of Muslim Education in Egypt, Pakistan, and Turkey, A Comparative Study*, (London: Reach Press), 1977, pp. 211, 267.

47 Pervez Hoodboy, I*slam and Science, Religious Orthodoxy and the Battle for Rationality*, (London: Zed Books), 1993, p. 33-35. See also, Hafez Kobeissi, " An Introduction to the Study of the Geographic Distribution of Arab Scientific Researchers, in "The Arab Brain Drain, A. B. Zahlan, ed., (London: Ithaca Press for the United Nations), 1981, p. 142.

48 The Egyptian percentage of GNP devoted to R&D in 1973 was .83, .2 for Pakistan, and .25 for Iraq. UNESCO Statistical Yearbook, 1980, (Paris: The UNESCO Press), 1980, pp. 882-883,886-887; UNESCO, *Science and Technology in the Development of the Arab States, Science Policy Studies and Documents*, no. 41, (Paris: 1977), p. 161. Dollar figures were calculated using GNP numbers from the World Bank, *World Tables*, (Baltimore: Johns Hopkins University Press for the World Bank), Second edition, 1980, pp. 152-153, 74-75, 108-109.

49 The figures also demonstrate that Egypt had a higher commitment to education, science, and engineering than Iraq.

50 UNESCO, *UNESCO Statistical Yearbook, 1985*, (Paris: The UNESCO Press), 1985, pp. IV/5 to IV/21. Saqib, *Modernization of Muslim Education in Egypt, Pakistan, and Turkey, A Comparative Study*, pp. 279-284 and Hoodboy, *Islam and Science, Religious Orthodoxy and the Battle for Rationality*, pp. 28-49.

51 Indeed, the disparities are sufficiently consistent and large across so many categories that one can say with some confidence that Egypt's scientific resources between 1960 and 1965 were likely equal or greater than Pakistan's resource level in the early 1970s, when they opted for the bomb.

52 So far, the focus has been on quantitative, not qualitative achievements. It is, of course, conceivable, that Pakistan produced a smaller, but higher quality, set of scientists engineers. The evidence for this proposition is not very strong, however. Though Egypt's education and science policies have certainly been subject to criticism, the Egyptian system is probably at least as good, if not better, than the Pakistani system. Rahman and Choudhary call education and science in Pakistan "spectacular failures," and lament the low priority "the Pakistani leadership has given since 1947 to the sciences." Atta-ur-Rahman and M. Iqbal Choudhary, "Scientific Education and Research," in *Education and the State Fifty Years of Pakistan*, Pervez Hoodboy, ed., (Karachi:

This picture is also consistent with what is known about Egypt's atomic energy program. Egypt was the first Arab country to establish a nuclear engineering department, and it sent many of its brightest students abroad for training in the nuclear sciences.[53] Of all the AEE's various projects -- heavy water, mining thorium, building a power reactor, etc. -- the one project that achieved recognized success was in the training of nuclear scientists and engineers -- many of whom left to work for other Arab countries and in the US and Europe.[54] The successor to the AEE today claims to have over 850 "academic scientists in various fields of nuclear science and engineering, supported by about 650 technical staff...."[55]

**Test 2. The Absence of Excess Capacity (Slack) in the Proliferator's Scientific Resources.** There are several ways to determine whether a country has an excess capacity -- or slack -- in the pool of scientific talent. One can look, for example, at the broad contours of the labor market. In Egypt, the enduring themes have been expansion and migration. The opening of higher education led to a flood of new university graduates, scientists, and engineers. The result was oversupply and out-migration,[56] as Egyptians left for employment opportunities in the United States, Europe, and

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Oxford University press), 1998, pp. 293, 288. On problems with the Egyptian system, see Szyiowicz, *Education and Modernization in the Middle East.*

53 Regarding the training of scientists, see Bhatia, *Nuclear Rivals in the Middle East*, pp. 46, 50, 60; Barnaby, *The Invisible Bomb: The Nuclear Arms Race in the Middle East*, pp. 82-83). Egypt, had, for example, established its Regional Radioisotope Center, which later operated as IAEA regional center. Smith et al, *Area Handbook for the United Arab Republic*, p. 472; Taysir N. Nashif, *Nuclear Warfare in the Middle East: Dimensions and Responsibilities*, (Princeton: Kingston Press), 1984, p. 27. Actual figures on the staff of the nuclear program are still sketchy. One source reports that in 1957, approximately 52 scientists were employed by the AEE. (Zahlan, *Science and Science Policy in the Arab World*, p. 45). Some fraction of the 37 scientists employed by the defense ministry and the 179 scientists working for the National Research Center were also involved on nuclear research, as were nuclear scientists and engineers affiliated with various universities.

54 Bhatia, for example, maintains that "the Egyptian government's greatest success in nuclear matters, which remains true today, has been that of training large numbers of competent scientists." Bhatia, *Nuclear Rivals in the Middle East*, p. 47

55 Egypt Atomic Energy Authority, May 15, 2000, http://www.frcu.eun.eg/www/homepage/aea/about.htm.

56 On the resultant oversupply, see, for example, Szyiowicz, *Education and Modernization in the Middle East*, p. 115. On the emigration of Egyptian scientists and engineers, and the issue of "brain drain" more generally, see Szyiowicz, *Education and Modernization in the Middle East*; Hafez Kobeissi, " An Introduction to the Study of the Geographic Distribution of Arab Scientific Researchers, in *The Arab Brain Drain*, A. B. Zahlan, ed., (London: Ithaca Press for the United Nations), 1981), pp. 132-143.

other Arab states.[57] In the nuclear field, Egypt became a major supplier of scientists and engineers to other Arab programs, most notably Libya and Iraq.[58]

Another indicator of slack is the expenditure of scientific and engineering resources on discretionary projects. The jet and missile programs, described earlier, commanded not only financial resources, but scientific and engineering resources as well. In 1961, over 1000 people worked on the rocket program, and an even larger number worked on the jet program.

Any calculation of capacity must also include the availability of foreign scientists and engineers that can be brought to work on a project.[59] Despite Israel's infamous campaign against the "Nazi rocket scientists" in the early 1960s, Egyptians have found a steady stream of foreign governments, firms, and independent contractors willing to help with their defense needs.

In the 1960s, roughly 100 of the 1,000 jet workers consisted of West German and other European scientists and engineers. Another 350 West German engineers worked on the jet program.[60] By contrast, very few foreign workers were employed in the nuclear program.[61]

The broader trends in the Egyptian labor force, the expenditure of scientific resources for discretionary military programs, and the availability of foreign scientists and engineers suggest that there were ample scientific resources -- domestic and foreign -- that could have been mobilized by the Egyptian government had it wanted to do so.

**Test 3. The Lack of Scientific Resources Will Also Impede the Development of Other Weapons Programs that Are Science or Engineering Intensive.**
This test is premised on the expectation that a shortage of scientific and engineering talent should affect similar programs in similar ways. Once again, a comparison with the jet and missile programs is instructive. The jet and missile programs experienced robust growth until about 1965, and two years later, following the '67 war, both programs were frozen. Unlike the nuclear program, however, both the jet and missile programs were revived in the 1970s and have continued since.

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57 Between 1966 and 1977, for example, 3310 scientists and engineers took up employment in United States. This figure is the highest of any country in the Middle East. Lebanon came in a distant second with 623. Alan Flechter, "Arab Scientific Manpower in the United States," in *The Arab Brain Drain*, A. B. Zahlan, ed., (London: Ithaca Press for the United Nations), 1981, p. 150.

58 On Egyptians working for Libyans, see Bhatia, *Nuclear Rivals in the Middle East*, p. 66. On Egyptian nuclear scientists in Iraq, see, for example, Leonard S. Spector, *Nuclear Ambitions*, (Boulder: Westview Press, 1990), pp. 196-197.

59 Over time, the Egyptian missile program has received Soviet, North Korean, Argentine, French, and more recently, American assistance, as well as help from foreign individuals for hire.

60 On the foreign scientists working on jets and missiles, see Hoagland and Teeple, "Regional Stability and Weapons Transfer: The Middle Eastern Case," pp. 718-719. Bader uses a similar figure – 500 Europeans for both programs in the early 1960s. Bader, *The United States and the Spread of Nuclear Weapons*, p. 95.

61 *Ma'ariv* reported that 46 foreign scientists were working for Egypt's nuclear program in 1962. Nashif, *Nuclear Warfare in the Middle East: Dimensions and Responsibilities*, p. 27. The number is likely even smaller than that. When asked, nearly all interview respondents maintained that the nuclear program had few foreigners, other than the Soviets assisting with Inchas.

**Test 4. Process Tracing.**
There is nothing in the process tracing evidence to suggest that decision makers worried about a lack of scientific talent, and that these worries affected their decisions. The process tracing evidence is extremely limited, but what is available suggests that resource concerns -- when they were expressed at all -- focused on monetary rather than human resource issues.

**Other Available Information**
Over the years, writings on proliferation have often featured country assessments, i.e., lists of countries coded for their scientific capability and the likelihood they would seek nuclear weapons. Often the country assessments are little more than a tally of a state's existing nuclear facilities, or worse, a general characterization of a country as either "backward" or "modern." Most of these assessments conclude that Egypt lacked the capability to pursue nuclear weapons.[62] The two most systematic evaluations of country capability conclude, however, that Egypt did posses a latent nuclear capability.[63]

Certainly, the feeling among scientists who worked at the AEE during the 1960s was that they could have developed a bomb, had they been given an opportunity to do so. "Absolutely yes," said one high ranking nuclear official. It was "not at all a lack of capability." Egyptian scientists were "never given a chance to go all the way."[64] Rahman, the founder of Egypt's nuclear program, was quite certain that Egypt could have had the bomb. Hedayat, the Minister of Science, insisted that

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[62] See, for example, Evron, "The Arab Position in the Nuclear Field: a Study of Policies up to 1967," Nashif, *Nuclear Warfare in the Middle East: Dimensions and Responsibilities*, p. 260, and Kats, "Egypt," p. 189, for example. Government assessments at the time also tended to downplay Egypt's nuclear capability. Ironically, Schoettle listed Egypt as a country with a "primitive nuclear capability," similar to that of Pakistan and Yugoslavia. The most persuasive negative assessment comes from David Fischer, who worked for the IAEA and has written extensively on proliferation. He recalled a visit to Inchas in the early 1960s. His assessment was not a favorable one. He noted that the "the general level of technical competence was low" and that there was an apparent "lack of middle level technical people." Most troubling to Fischer, however, was the lack of safety culture. The "mind set was not there," he contended. For a contrary opinion, see Paranjpe Shrikant, who lists Egypt as a "nuclear capable" country. Enid Curtis Schoettle, *Postures for Non-proliferation*, (London: Taylor & Francis, 1979), p. 3; Phone interview with David Fischer, May, 1997; Paranjpe Shrikant, *US Nonproliferation Policy in Action, South Asia*, (New Delhi: Sterling Publishers), 1987, p. 6.

[63] Meyer contends that Egypt possessed a latent capability. Wohlstetter et al posit that Egypt possessed a basic nuclear infrastructure, i.e., some latent capacity. Stephen M. Meyer, *The Dynamics of Nuclear Nonproliferation*, (Chicago: University of Chicago, 1984), pp. 108-109; Albert Wohlstetter et al, *Swords from Plowshares*, (Chicago: University of Chicago Press, 1977), p. 43. The view that Egypt had the will and ability to, in time, match an Israeli nuclear threat was also common in the 1960s. At the time of Ben-Gurion's announcement, Arab leaders, the world press, and American policy-makers, voiced concern that Egypt would launch a serious nuclear program of its own, and that in time (roughly ten years), Egypt would be able to counter with a weapon of its own program. President Kennedy was sufficiently concerned about the prospects of a non-conventional arms race in the region that he attempted to negotiate a secret arms control agreement between Israel and Egypt. On the reaction of the international press, see, for example, one Egyptian official's characterization of American press coverage, *New York Times*, January 10, 1961, p. 46.

[64] Interview with Egyptian atomic energy official.

Egypt's nuclear program had the necessary scientific personnel to pursue its objectives. This view was echoed by several AEE officials, who maintained that Egypt had "a very strong foundation in basic and applied nuclear sciences."[65] In the words of Nasser's secretary, Sammi Sharaf, "we had the brains."[66]

**Assessment**

The results of the four tests do not support the scientific resources hypothesis. Egypt enjoyed a larger scientific base than Pakistan (and Iraq). It produced large numbers of scientists and engineers -- including nuclear scientists and engineers -- many of whom left Egypt for opportunities in other countries.[67] When sufficiently motivated, the government demonstrated an ability to mobilize indigenous and foreign technical talent, as it did with the jet and missile programs. Indeed, the jet and missile programs continued to develop even as the nuclear program remained dormant. These results are not consistent with most country assessments, which support the hypothesis, but two of the better country assessments, and the views of Egyptian scientists involved in the program, suggest that Egypt possessed a latent nuclear capability. Overall, the evidence suggests that a lack of scientists does not explain why Egypt remained non-nuclear.

## H7. Denial of Access to Foreign Technology

The denial hypothesis contends that developing states are unable to acquire nuclear weapons, because supplier states refrain from exporting to potential proliferators. The congruence tests for this hypothesis are premised on three observable implications: 1) the proliferator has no alternative supplier, 2) the supplier state reduces its nuclear transfers to the proliferator, and 3) the supplier state lobbies other potential suppliers to follow suit. A process tracing test asks whether decision makers cite concerns about denial when they render decisions about nuclear policy.

**Congruence and Processing Tracing Tests**

In the Egyptian case, one can apply the congruence tests by examining the list of 25 nonproliferation outcomes, and coding each for the presence or absence of the three observable implications. Of the 25 outcomes, 9 could involve requests for foreign technology. Box 9.2 lists the observations and codes them for the three predicted conditions. In the table, an "Not Know" indicatess that there is insufficient data for coding the observation. The denial hypothesis should be strongest for those outcomes in which all three predictions are met.

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65 See interviews with Salah Hedayat, February 16, 1995, and April 26, 1995; Mohamed Ezzat Abdelaziz, February 13, 1995 and April 27, 1995; Ibrahim Hammouda, April 29, 1995 and January 5, 1997.

66 Interview with Sammi Sharaf, January 6, 1997.

67 Egypt simultaneously suffered from shortages of other skilled personnel, especially mid-level technicians. These human resource bottlenecks reflected mismatches between the interests of Egyptian students and the demands of the Egyptian economy. Szyiowicz, *Education and Modernization in the Middle East*, p. 269.

**Box 9.2 Nonproliferation Outcomes: Direct Requests for Technology**

| | | | Congruence | | | Process Tracing |
|---|---|---|---|---|---|---|
| No. | Yr | Anti-Nuclear Outcome | No Other Supplier | Supplier Cuts Nuc Aid | Supplier Lobbies Others | Denial Cited by D-M |
| 2 | 57 | Seek/not acquire chem reprocessing from USSR. | **Yes** | No | No | **Yes** |
| 4 | 61 | Seek/not acquire weapons assistance from India. | **Yes** | No | No | **Yes** |
| 5 | 61 | Seek/not acquire NW capability. | No | No | No | No |
| 6 | 61 | Not acquire NW via special projects group. | NK | No | No | NK |
| 7 | 61 | Seek/not acquire weapons assistance from USSR. | **Yes** | No | Yes[68] | **Yes** |
| 8 | 63 | Seek/not acquire weapons assistance from China. | **Yes** | No | No | **Yes** |
| 10 | 65 | Seek/not acquire weapons assistance from China. | **Yes** | No | No | **Yes** |
| 14 | 67 | Seek/not weapons assistance from China. | **Yes** | Not Know | No | **Yes** |
| 20 | 81 | Ratifies NPT. | No | No | No | **Yes** |

The results suggest that denial was an important cause of the nonproliferation outcome in seven of the eight observations for which there is good data (#2, 4, 7, 8, 10, 14).[69] Six of these seven involve the transfer of nuclear weapons or chemical reprocessing and appear to be instances in which Egypt had no alternative supplier at the time of the request.[70]

It has to be said, however, that Egypt did not come away empty-handed. The supplier states, which hoped not to offend a potential ally, felt obliged to offer something in the way of compensatory nuclear assistance. The USSR and China did not provide a reprocessing plant, but they did provide help in the area of reprocessing. India did not transfer the reprocessing technology, but it provided materials and other nuclear-related aid. If anything, the lesson Egypt could have drawn was not that

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68 The USSR did not lobby other suppliers in 1961 or shortly after, but it went public with concerns that China might supply nuclear weapons to Egypt after the '67 War. This may have been an attempt to persuade the Chinese not to provide such weapons. On the Soviet warning, see Hedrick Smith, "Soviet Said to Offer Cairo Atom Defense," *New York Times*, February 4, 1966, p. 1.

69 Parenthetically, it should be noted that the results also raise questions about the appropriateness of the second and third congruence tests. Suppliers turned down requests for weapons-related technology, but rarely did they also respond by reducing nuclear assistance or lobbying other suppliers. No actions was taken against Egypt, because the requests were considered within a broader framework of bilateral relations. Given this dynamic, it appears that neither the "cut nuclear aid" or "lobby suppliers" behaviors correlate very strongly with denial efforts.

70 The list of potential nuclear suppliers changes over time, depending on the capacity and willingness of the supplier states. For the purpose of this analysis, countries are included on the supplier list if they were asked by Egypt to provide nuclear technology or if they had demonstrated a willingness to supply nuclear technology to Egypt or other like states. For this set of observations (1957-1967), the primary potential suppliers of nuclear weapons included the USSR and the PRC. It was highly unlikely that UK, France, and Israel -- Egypt's enemies during the Suez War -- or the United States would transfer nuclear weapons to Egypt.

nuclear transfers were a dead end, but rather that "asking pays" -- a country will not get everything it requests, but it will get something and will not be penalized for having asked.

For two of the observations (#9, 20), the denial hypothesis does not hold to form, but the results are telling, nonetheless. One observation concerns Egypt's decision to build a nuclear weapons capability, i.e., a complete fuel cycle (#9). While suppliers were reluctant to provide nuclear weapons or a reprocessing plant, they had no qualms about providing most other nuclear technologies. Indeed, for most of the period from 1960 to 1992, Egyptian officials were in a position to upgrade the Inchas research reactor, build a nuclear power plant, acquire fuel fabrication facilities, produce heavy water, and maintain a cadre of nuclear scientists and engineers. Any of these actions would have shortened the lead time to a nuclear weapon. They also would have put Egypt in a better position to acquire other dual use technologies. Despite these availability of technology from foreign suppliers, Egypt failed to bolster its nuclear program.[71]

Egypt's failure to take advantage of those opportunities raises difficult questions about the hypothesis. Denial policies prevented the transfer of actual nuclear weapons and reprocessing plants, but they did not foreclose the nuclear option. Denial obstructed the *easiest* route to nuclear weapons, but not the *only* route to nuclear weapons.

The second observation meriting comment concerns Egypt's ratification of the NPT (#20). There is strong evidence that Egyptian officials felt they had to join the NPT or lose access to civilian nuclear technology. On its face, this would seem to be a denial-induced nonproliferation outcome, but closer examination shows it to be something else. Egypt had *already* abandoned the nuclear weapons option by 1981. By the mid 1970s, its NPT policy was based on issues unrelated to nuclear weapons. Similarly, the decision to change course and ratify the treaty was based on concerns other than nuclear weapons. It instead reflected the interests of the energy ministry, which wanted favorable financing for a power reactor. Egypt had other suppliers it could turn to, but if it wanted American technology on favorable financial terms, it would have to ratify the NPT. In short, denial policies caused Egypt to formally join the regime, but not to abandon nuclear weapons, which it had already done.

The unanticipated twist, however, is that this NPT commitment would later have consequences of its own. As the section on regimes describes, Egypt's NPT commitment subsequently contributed to one or more nonproliferation outcomes. In these cases, the regime commitment -- not denial -- is responsible for the outcome, but the cause of the regime commitment can be found in denial policies.

### Other Available Information

Another way to evaluate the "lack of access to foreign technology" hypothesis is to consider the hypothesis in the context of the broader history of national export controls and multi-lateral efforts to restrict transfers of nuclear technology. Most histories of safeguards and export controls cite the 1974 Indian nuclear test as the beginning of serious efforts to restrain nuclear trade. Prior to 1974, the obligations of suppliers were a highly contested issue. European suppliers saw American rhetoric about nonproliferation as a self interested attempt to protect market share. The Europeans were eager to establish domestic nuclear industries and viewed exports as a way to support local industry. For its part, American policy wavered between denial (not selling) and constructive

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71 In the early 1990s, Egypt did, in fact, upgrade its reactor and related capabilities, but long after it had abandoned the nuclear weapons option.

engagement (selling). Kennedy, Johnson, and Nixon all supported proposals to sell nuclear plants to Egypt, despite its absence from the NPT. Even after India's 1974 test, many supplier countries resisted fullscope safeguards and related attempts to regulate nuclear exports.

The historical record also suggests that motivated countries could overcome the impediments posed by denial policies, even in the post-1974 period. Pakistan, Argentina, Brazil, and North Korea all constructed enrichment and/or reprocessing facilities. South Korea successfully concluded an agreement for a French reprocessing plant (though Seoul later canceled the contract), and Iraq successfully imported hot cells and calutrons. In short, the history of export controls suggests that denial policies were weakest when Egypt was most interested in acquiring a nuclear capability, and that even after 1974, the barriers would not have been insurmountable.

**Assessment**

The denial hypothesis exhibits both strengths and weaknesses. It helps account for a large number of the observations: 6 of 25 outcomes. In addition, the evidence for these six outcomes is very strong. Militating against the hypothesis is the fact that the cases of denial involved only the most sensitive transfers (weapons and reprocessing plants). Egypt may not have had access to ready-made weapons, but it had other options. Egyptian governments had repeated opportunities to build their nuclear program, but never took advantage of those opportunities.

One is left with a paradox. One the one hand, denial policies were very important. In the absence of those policies, Egypt would have acquired nuclear weapons. On the other hand, denial policies did not prevent Egypt from becoming a nuclear weapons state. Egypt was a country with sufficient financial and scientific resources for pursuing the bomb and had other options it did not exercise. Its nuclear program did not progress even as other countries, subject to the same kinds of denial policies, pushed on towards nuclear weapons. Denial, itself, cannot explain Egypt's non-nuclear status.

## Summary: Resources and Nuclear Decision Making

On the whole, the resource hypotheses perform better than the power hypotheses but fall well short of a strong explanation for Egyptian behavior. Box 9.3 summarizes the results.

The financial resources hypothesis fails its first two tests rather convincingly, but there is evidence that financial constraints might have been a factor between 1967 and 1973. Presuming financial constraints were an issue in this period, that still leaves unexplained most of Egypt's nuclear history and most of the observations in the decisions/outcomes data set. The "lack of scientists" hypothesis fails all four of its tests and can be ruled out with confidence. The "denied access to foreign technology" hypothesis presents something of a puzzle. Of all of the hypotheses considered so far, it clearly performs the best, accounting for roughly a quarter of the observations. Undermining its explanatory power, however, is the fact that Egypt had sufficient indigenous resources to carry most of the burden of a program on its own and had numerous opportunities to advance its nuclear infrastructure with the help of foreign suppliers -- opportunities it failed to take advantage of. Indeed, Egypt neglected to build its nuclear program during a period when controls on nuclear transfers were weak.

## Box 9.3. Summary of Findings for Resource Hypotheses

| Hypothesis | Tests | Results |
|---|---|---|
| **H5. Lack of Financial Resources** | 1) State will have fewer resources than NWS at the time of their decision.<br>2) Financial constraints will impede new or discretionary projects.<br>3) Financial constraints will impede similar weapons programs.<br>4) Process tracing. | **Mixed Results**<br>Hypothesis fails first two tests, but tests three and four indicate that lack of financial resources may have impeded the program between 1967 and 1973, when other weapons programs also stalled. |
| **H6. Lack of Scientists** | 1) State will have fewer resources than NWS at the time of their decision.<br>2) An absence of excess capacity (slack) in scientific resources.<br>3) Scientific constraints will impede similar weapons programs.<br>4) Process tracing. | **Fails Tests**<br>The hypothesis fails every test. The difference between Egypt's scientific achievements and the comparatively modest position of Pakistan is particularly striking. |
| **H7. Denied Foreign Tech** | 1) The proliferator has no alternative supplier.<br>2) Suppliers will reduce nuclear transfers to potential proliferators.<br>3) Suppliers will lobby others to restrict tech transfers.<br>4) Process tracing. | **Passed Tests**<br>The hypothesis passes the first and last tests. The middle two tests do not appear not be good tests and should be discarded. Denial only applies to nuclear weapons and the most sensitive technologies. Egypt has many opportunities to expand its nuclear infrastructure with foreign help, but does not take advantage of them. |

NWS = Nuclear weapons state

Overall, the empirical record suggests that the problem was not a lack of resources, but rather a lack of political will. As Monem Said Aly, director of the Al-Ahram Center for Political and Strategic Studies, observed, "what was needed was a strategic decision." Given a strategic decision, the government could have found the resources. Governments will "take resources from wherever [they need to], if it is important enough."[72]

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72 Interviews with Abdel Monem Said Aly, February 14, 1995 and April 27, 1995 and December 30, 1996.

# Chapter 10. Explaining Egyptian Behavior: Hypotheses on Ideas and Institutions

This chapter examines the eight hypotheses having to do with ideas and institutions. The first hypothesis emphasizes the importance of (H8) norms. It is followed by hypotheses on the role of domestic institutional arrangements -- including (H9) democracy, (H10) electoral politics, (H11) a liberalizing economy, and (H12) organizational politics. The final three hypotheses focus on (H13-15) international institutions, and in particular, the nonproliferation regime. The chapter ends with a brief look at some new hypotheses suggested by the case.

# I. Hypotheses on Ideas

### H8. Anti-Nuclear Norms

The norms hypothesis maintains that states abandon the nuclear option, because nuclear weapons are viewed as morally unacceptable. The test of the hypothesis centers on one of its observable implications, namely, that states rejecting nuclear weapons on normative grounds will not seek, possess, or use other weapons of mass destruction. This analysis of the Egyptian case begins with a review of Cairo's policy towards chemical and biological weapons.

### Egyptian and Chem-Bio Weapons

Over the years, Egypt has demonstrated a consistent interest in chemical and biological weaponry, with chemical weapons having played the larger role in defense planning.[1] Egypt first gained access to chemical munitions in the 1950s, most likely by inheritance. The British had stored chemical weapons in Egypt , and it is probably these British stocks that made up the early Egyptian arsenal.[2] In the summer of 1963, reports out of Yemen alleged that Egypt was using tear gas against tribesmen in the mountains. Additional reports of CW, including the use of mustard gas, were made in 1965 and as late as July 1967 -- a month after the '67 War with Israel.[3] Evidence

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[1] On the history of CW and Egypt, see Stockholm International Peace Research Institute (SIPRI), *The Problem of Chemical and Biological Warfare, Vol. 1, The Rise of CB Weapons*, (New York, Humanities Press), 1971, pp. 223-24, 157; SIPRI, *The Problem of Chemical and Biological Warfare, Vol. II, CB Weapons Today*, pp. 240-242; Gordon M. Burck and Charles C. Flowerree, *International Handbook on Chemical Weapons Proliferation*, (New York: Greenwood Press), 1991, pp. 222-236; Dany Shoham, "Chemical and Biological Weapons in Egypt," *The Nonproliferation Review*, Spring-Summer 1998, p.48-58.

[2] SIPRI, *The Problem of Chemical and Biological Warfare, Vol. 1, The Rise of CB Weapons*, p. 310; Barnaby 79. Some have suggested that Egypt also received Russian CW munitions, but this seems inconsistent with what else know about Soviet transfers. The USSR did provide defensive equipment for training and decontamination, however. On Soviet CW assistance, see SIPRI, *The Problem of Chemical and Biological Warfare, Vol. II, CB Weapons Today*, New York, Humanities Press), p. 171; Burck and Flowerree, *International Handbook on Chemical Weapons Proliferation*, p. 223-225. See also Memo of Conversation, John Goshko, Washington Post, Curtis F. Jones, NE, "U.A.R. Anti-Gas Exercise, April 7, 1965, JW 10/3/7 3G; Incoming Telegram from Amembassy Cairo (Battle), May 20, 1965 JW10/3/7 3G.

[3] On the Yemen incidents, in particular, see M. Meselson and D. E. Viney, "The Yemen," in *CBW: Chemical and Biological Warfare*, Steven P. R. Rose, ed., (London: George G. Harrap & Co. Ltd.), 1968, pp. 99-102; SIPRI, *The Problem of Chemical and Biological Warfare, Vol. 1, The*

supporting claims of CW usage in Yemen is fairly strong, and while the government has never officially admitted its culpability, private conversations with Egyptians make clear that chemical weapons were, in fact, used.

Egypt is also alleged to have cooperated with other countries on CW projects. It has been suggested, for example, that Egypt transferred chemical weapons to Syria in anticipation of the 1973 War.[4] A more credible claim asserts that in the 1980s, the Egyptian and Iraqi militaries cooperated in the procurement of CW related chemicals and technology.[5]

Less is known about Egypt's work with biological weapons, but in April of 1963, Nasser told American officials that Egypt had "two BW installations here" to match the BW program of the Israelis."[6] In 1972, Sadat declared publicly that Egypt had "the instruments of biological warfare in ... refrigerators."[7]

In the 1990s, several surveys have listed Egypt as an actual or potential CW/BW proliferator, but firm and precise facts about the size of the effort remain elusive.[8] In 1996, Egypt announced that it would not sign the Chemical Weapons Convention. It signed the Biological Weapons Convention

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*Rise of CB Weapons*, pp. 159-61; SIPRI, *The Problem of Chemical and Biological Warfare, Vol. V. The Prevention of CBW*, (New York, Humanities Press), 1975, pp. 225-238. Terrill, W. Andrew Terrill, "The Chemical Warfare Legacy of the Yemen War," *Comparative Strategy*, Vol. 10, pp. 109-119.

4 Evidence of CW transfers to Syria is thin. See, for example, Michael Barletta and Erik Jorgensen, David Oliveira, "Nuclear, Biological, Chemical, and Missile Capabilities in the Middle East, Egypt," June 8, 2000, Center for Nonproliferation Studies, Monterey Institute for International Studies, http://cns.miis.edu/research/wmdme/egypt.htm.

5 Burck and Flowerree, *International Handbook on Chemical Weapons Proliferation*, p. 229.

6 Airgram from Amembassy Cairo to the DOS, Memcon with President Nasser, April 18, 1961; GRDOS; RG 59; Central Policy Files, 1964-1966; Pol 63-66; Pol Affairs and Relations 1/1/65, Arab-Israel; Box 1888; NAII. The BW program was likely run by General 'Isaam al-Din Mahmoud Khalil, though an Egyptian magazine features an interview with an unnamed "Director" of the "Chemical War Administration." Muhammad Ahmad Esa, "Our Forces and Atomic War," *Al Kuwat Al Musalaha*, February 1, 1966, attachment to Airgram from Amembassy Cairo to the DOS, "UAR Military Statement on Defense Against Nuclear Weapons," June 9, 1966, JW 10/3/7 3I.

7 See, for example, Foreign Intelligence Service of the Russian Federation, Moscow, "A New Challenge of the 'Cold War:' the Proliferation of Weapons of Mass Destruction," 1993, published by FBIS as *JPRS Report, Proliferation Issues*, p. 48.

8 Official surveys include the ACDA assessments and declassified portions of the National Intelligence Estimate. See ACDA, *Annual Report, 1996*, "Adherence to and Compliance with Arms Control Agreements," 1997, http://dosfan.lib.uic.edu/acda/reports/annual/comp.htm; E. J. Hogendoorn, "A Chemical Weapons Atlas," *Bulletin of the Atomic Scientists*, Vol. 53, No. 5, p. 37; and *JPRS Report, Proliferation Issues*, p. 48. For ongoing coverage of chemical weapons developments in Egypt see, the Center for Nonproliferation Studies website, especially Michael Barletta and Erik Jorgensen, "Weapons of Mass Destruction in the Middle East," May 1999, http://cns.miis.edu and the Federation of American Scientists website, John Pike, "Egypt Special Weapons Nuclear, Biological, Chemical and Missile Proliferation News," May 7, 2000, http://sun00781.dn.net/news/egypt/index.html.

in 1972, but never ratified it. As of this writing, it is probably safe to assume that Egypt possesses stocks of chemical agents and some chemical weapons. What is less clear is the intensity of current Egyptian efforts in this field.

**Comparing CW/BW and Nuclear Policies**
According to this test of the norms hypothesis, there should be a correspondence between a rejection of nuclear weapons and a rejection of other weapons of mass destruction. The historical record tells a different story, however. Egypt used CW and continued to maintain stocks of chemical and biological agents even as it rejected the nuclear option. Egypt is a member of the NPT, but has refused to make a similar commitment to the chemical or biological weapons conventions. These asymmetries suggest that Egypt's rejection of nuclear weapons is not a consequence of norms, but rather the result of other factors.

# II. Hypotheses on Institutions

## H9. Democracy

The democracy hypothesis maintains that democracies do not seek nuclear weapons. To test this claim for a single country, one could compare nuclear decision making in democratic and non-democratic periods. In the case of Egypt, however, there are no democratic periods. The Polity III rating for Egypt ranges from -7 to -5. Australia's score, by contrast, is +10. In other words, all of Egypt's decisions -- those favoring nuclear weapons and those favoring renunciation -- took place within nondemocratic institutional arrangements. Democracy cannot, therefore, serve as an explanation for the variation in outcomes.[9]

## H10. Electoral Politics

The electoral politics hypothesis is a more specific variant of the democracy hypothesis. It contends that governments adopt anti-nuclear policies, because it is in their electoral interest to do so. As was just noted, Egypt is not a democracy, and in any case, does not enjoy much in the way of electoral competition, and so the hypothesis cannot account for the outcomes.[10]

## H11. Organizational Politics

The organizational politics hypothesis suggests that decisions about nuclear weapons are the result of contests between powerful organizations with identifiable interests. According to the hypothesis, organizations that are likely to benefit from nuclear weapons will push for their acquisition. Other

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[9] Egypt's Polity rating does become more democratic over time, as does its nonproliferation commitment, so one might argue that there is a correspondence between democratization and nonproliferation. The correlation is a weak one, however. Egypt's decision to forgo nuclear weapons (1973) precedes its timid steps towards a more democratic system (1976). In addition, Egypt's Polity III score improves between 1981 and 1994, a period when nuclear weapons activities resurface under Defense Minister Ghazala.

[10] Egypt's score for the Polity III index on "Competitiveness of Political Participation" varies between 1 ("no significant oppositional activity outside the ranks of the regime and ruling party") and 2 ("systematically and sharply limits its form, extent, or both in ways that exclude substantial groups... from participation." The "The Regulation of Participation" index yields similar results.

organizations, whose interests are enhanced by renunciation, will fight the bomb advocates and attempt to advance their own policy preferences.

Implicit in this hypothesis is the assumption that organizations have the capacity to participate in policy generation -- not just the implementation of policy. Of course, not all states have institutional structures that allow for organizational influence. Cabinet-style governments may have ministries that enjoy broad authority, but some authoritarian governments may have a president that unilaterally determines policy. Thus, some authoritarian governments may be ill-suited to the organizational politics hypothesis. Where is Egypt on this continuum?

**Egypt and Organizational Politics**

Egyptian policy making has evolved over time, but it is far closer to the single policy maker type of government than the cabinet style government. Though Egypt is famous for its large bureaucracy, it is a bureaucracy whose powers are largely limited to implementation.[11] This was especially true of the Nasser years. Under Sadat, and then Mubarak, centers of power outside the office of the presidency began to emerge, but on questions of foreign policy and national security, the president's preferences have defining and decisive importance.

The main exception to this generalization concerns the role of the military. Contemporary Egypt was created by a military-led revolution, and military officers were appointed to lead all the important government agencies. More than the Muslim Brotherhood, it is the military that has posed the biggest challenge to the political survival of Egyptian presidents, and as a consequence, the military has long enjoyed a degree of importance and autonomy that overshadows any other Egyptian ministry. There are few inter-organizational contests over foreign and military policy, because such decisions are dominated by the president and the military.

Egypt thus exhibits few of the characteristics associated with organizational explanations. This is not to suggest that the ministries outside the military lack preferences or never fight bureaucratic battles, but these preferences and contests matter only in the absence of a controlling interest on the part of the president and the minister of defense.

The weakness of the organizational politics explanation in the Egyptian case can be corroborated by looking at the preferences of the relevant actors in the period between 1955 and 1967. During this crucial time in Egyptian nuclear decision making, the main players all shared the same view, i.e., that Egypt should develop a nuclear weapons capability, if not acquire nuclear weapons outright. This view was shared by Nasser, the head of the military, and the successive heads of the AEE. The most enthusiastic advocate was Hedayat, the Minister of Science, but he was clearly in a subordinate position. The Ministry of Foreign Affairs and other organs of government were in no position to influence nuclear decision making, and in any case, probably shared the view that Egypt should match the Israel's capability.

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11 For a concise history of the Egyptian bureaucracy through the Nasser years, see Gregory J. Kasza, "Bureaucratic Politics in Radical Military Regimes," *American Political Science Review*, Vol. 81, No. 3 (September, 1987), pp. 851-872. Kasza does argue that the bureaucracy "was not simply a passive tool following orders," but his point is intended to describe civilian policy areas and speaks more to tactical innovations, than the setting of general policy objectives. See also Nazih N. M. Ayubi, *Bureaucracy and Politics in Contemporary Egypt*, (London: Ithaca), 1980.

## Organizational Politics and Egyptian Nuclear Decision Making

As a matter of definition, it would seem that the organizational politics hypothesis cannot account for outcomes in the Egyptian case. The surprise, however, is that organizational politics do play a role in Egyptian nuclear history, but in a very particular way.

As was suggested earlier, in Egypt, no organization can hope to compete with the military over issues related to foreign and security policy, except in those instances when the military has not staked out a position. It was precisely under these circumstances, however, that Egypt took a series of actions that culminated in a *de facto* rejection of the nuclear option.

In the immediate aftermath of the '73 War, the United States and other countries signaled that they were prepared to sell Egypt nuclear power plants. The Americans decided to offer nuclear technology, because they felt the US enjoyed a competitive advantage in the nuclear field. In addition, US officials on the ground had concluded that Egypt's nuclear establishment was one of the few administrative organs that had emerged from the war with the wherewithal to move quickly and competently into a new project. The Ministry of Electricity welcomed the American proposals, in part, because officials believed that demand for electricity would outstrip the supply, and perhaps more importantly, because a large-scale nuclear program would dramatically expand the jurisdiction and budget of the ministry.

The Minister of Electricity saw an opportunity and moved to take advantage of it. He created a new agency, the Nuclear Power Plant Authority (NPPA), and persuaded President Sadat to award responsibility for the American reactors to him rather than the AEE. In time, the Ministry took over the AEE, and subsumed the once independent agency into the ministry.

Buying nuclear plants from the US would require that Egypt submit to especially stringent set of safeguards. Egypt had never signed a safeguards agreement under Nasser, but unlike Nasser, Sadat was not interested in nuclear weapons. He was interested in nuclear power. The military leadership, which Sadat had single-handedly replaced in the run up to the '73 War, was focused on the immediate after-effects of the conflict. The decision to pursue nuclear power, framed as an energy issue, was unlikely to have drawn the military's attention.

In short, a powerful bureaucratic interest aggressively pursued nuclear power -- including the necessary safeguards agreement. The President was supportive, and the military indifferent. In the absence of strong opposition by the President or Ministry of Defense, the Ministry of Electricity won support for the project, by extension, for the notion of a purely civilian nuclear program. The full implications of that choice did not become apparent to the military until the 1981 NPT ratification debate, but by that time, the President was fully on board and Minister of Electricity Abaza had consolidated his position. The decision to ratify the NPT only served to strengthen the momentum of a policy that had its roots in bureaucratic maneuvering during the months immediately following the '73 War.

Had the military understood the full import of those early decisions, it most likely would have fought the nuclear plant proposal, and might well have defeated it. Under Nasser, it was clear that the military's antipathy to arms control was one factor that carried weight in Nasser's

deliberations.[12] Having lost the bureaucratic battle over the NPT, the military eventually decided to pursue the nuclear option on its own, a task for which it was ill equipped.[13]

**Assessment**

The organizational politics hypothesis, traditionally conceived, does not neatly fit the Egyptian case. Throughout the 1950s and 1960s, there was no contest over nuclear policy, since there was a general consensus favoring the nuclear option. In the 1970s, that consensus began to break down, but the will of the military might well have determined the outcome had it participated in the decision process. It did not participate, however, and the political vacuum was filled by an aggressive and skilled organization that successfully pushed Egypt, however inadvertently, toward a formal renunciation policy. Thus, if one understands the organizational politics hypothesis as a question of who plays (the decision group and its preferences) and the set of alternatives being considered (i.e., nuclear technology as energy policy rather than defense policy), then the organizational politics hypothesis does offer some leverage for understanding nuclear outcomes during a crucial time in its nuclear history.

## H12. The Liberalization Hypothesis

The liberalization hypothesis maintains that as developing states seek to liberalize their economies and generate foreign investment, they will join international regimes, and in particular, nuclear regimes. The main proponent of this thesis is Solingen, who explicitly cites Egypt as evidence for her hypothesis.[14]

The liberalization hypothesis actually consists of two sub-hypotheses. The first maintains that the *decision* to liberalize leads states to join nonproliferation regimes, i.e., regime participation is used as a *means* or instrument for achieving economic objectives. The second contends that the *process* of liberalization privileges new political coalitions that favor further internationalization and, therefore, entry into the nonproliferation regime, i.e., regime participation is a consequence of liberalization. Both variants include the assumption that joining the nonproliferation regime, in turn, marks an end to the country's attempts to acquire nuclear weapons. Three tests of the liberalization hypothesis are considered here. They include a correspondence test, an observable implications test, and a process tracing test.

Before considering each of the tests, it makes sense to briefly summarize the first decade of Egypt's efforts to liberalize its economy. Most accounts of Egyptian economic policy date the beginning of liberalization to October, 1974 -- the month that Sadat and his finance minister, Abdel Aziz Hegazi,

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12 See, for example, Memo of Conversation, John J. McCloy, President Nasser, September 28, 1964, in *Foreign Relations of the United States, 1964-1968, Vol. 28, Arab--Israeli Dispute, 1964-1967*, (Washington: GPO, 2000), pp. 218-222.

13 There is also the possibility that the military was indifferent to the early safeguards agreements, because it assumed they could be broken. As its behavior in the 1980s demonstrates, it had no qualms about violating international nuclear treaties. If true, it would seem to indicate that military leaders badly miscalculated both the politics of the nuclear choice and the difficulties of a "go it alone" nuclear program.

14 Etel Solingen, "The Domestic Sources of Regional Regimes: The Evolution of Nuclear Ambiguity in the Middle East," *International Studies Quarterly*, Vol. 38, No. 2, June 1994, pp. 305-337; Etel Solingen, "The Political Economy of Nuclear Restraint," *International Security*, Vol. 39, No. 2 (Fall, 1994), pp. 149-150.

released their economic blueprint for the country.[15] The "October Working paper" articulated the basic principles of the Infitah or open door economic policy. Over a period of years, these principles were translated into public law.

The new economic policy had the effect of stimulating GDP growth, but came at a cost of rising inflation and social dislocation. By 1980, the downsides of liberalization had become particularly acute. Inflation had risen to 20.5% -- almost five times what it had been in 1973. Following Sadat's assassination in 1981, Mubarak, while not abandoning the Infitah, took the opportunity to moderate its application.

**Test 1. A Correspondence between Liberalization and Nuclear Decision Making**
Solingen, herself, makes use of this test. She contrasts Nasser -- an example of a "inward looking, nationalist, and radical-confessional" type of leader -- and his rejection of the nonproliferation regime with Sadat the liberal reformer, who proposed a nuclear weapons free zone (NWFZ) in 1974. In more general terms, Solingen contends that nations with liberal or liberalizing economies will favor entry into nuclear regimes, while illiberal or increasingly autarkic regimes will reject nuclear regimes and favor the acquisition of nuclear weapons.

At first glance, Solingen would appear to be correct: most of Egypt's efforts to acquire nuclear weapons preceded the Infitah. A closer look reveals a number of problems with the hypothesis, however. To begin with, Egypt did not join the NPT until 1981, some seven years after the announcement of the Infitah policy.[16]

Second, Sadat's decision to liberalize the economy most likely took place after his decision to forgo nuclear weapons. Talks between the US and Egypt concerning the purchase of a power plant began in January of 1974. Nixon's visit -- which resulted in the signing of an agreement for the sale of power plants -- came in June of 1974. That agreement was predicated on an exceptionally strong bilateral safeguards agreement. The following month, in July of 1974, Egypt and Iran sponsored the UN resolution calling for a regional NWFZ. The announcement of the Infitah policy did not take place until October of 1974, some ten months after the first discussions about the purchase of a nuclear power plant.

More problematic is Solingen's specification of the dependent variable for this correspondence test. Her chief claim focuses on Egypt's proposal for a NWFZ. It was clear from the outset, however, that this UN resolution had absolutely no chance of being adopted. Moreover, the impetus for the NWFZ proposal came from Iran, not Egypt. Iran, which had joined the NPT in 1970, persuaded Egypt to back its proposal.[17] Egypt's motivation for going along with the Iran had more to do with

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15 Anwar Sadat, "The October Working Paper," presented by President Mohamed Anwar el Sadat, April, 1974, (Cairo: Arab Republic of Egypt, Ministry of Information, State Information Service,[1974]).

16 An agreement with IAEA on safeguards did not come until 1982. Barnett (who Solingen cites) and others maintain that the liberalization actually began under Nasser in the wake of the 1967 defeat. If true, this would further distance the liberalization decision from the decision to join the NPT. Michael N. Barnett, *Confronting the Costs of War*, (Princeton: Princeton University Press, 1992), pp. 217-218.

17 Given suspicions concerning Iran's nuclear ambitions at the time, Solingen's argument seems especially ironic. Though a member of the NPT, Iran's nuclear activities under the Shah, particularly in the middle 1970s, is a matter of some speculation. The Shah had first expressed

trying to buy American nuclear power plants than attracting foreign investment. It is also worth noting that in the 1990s, Egypt continued to push economic reform, but refused to join the 1996 treaty that established an African Nuclear Weapons Free Zone.

**Test 2. States with Liberalizing Economies Will Join Other, Comparable Regimes.**
According to this test, if states adopt a regime-joining strategy to boost their foreign standing, then they should engage in similar behavior with respect to comparable regimes. In the case of Egypt, one would expect that it would not only join the NPT but other regimes related to arms control and disarmament.

The ACDA treaty set lists thirteen relevant treaties (see Box 10.2 under the international law hypothesis). Of the thirteen, Egypt has joined five, and three of those five were entered into before the 1974 Infitah policy. After 1974, Egypt joined only two additional treaties: the NPT, which it ratified long after the announcement of Infitah, and the Environmental Modification Convention, which it joined in 1982 -- some four years after the treaty opened.

In short, Egypt has not been a particularly active joiner of nuclear or arms control treaties. Its behavior does not conform with the expectations of this test.

**Test 3. Process Tracing.**
There is no process tracing evidence that suggests that the NWFZ proposal of 1974 or Egypt's ratification of the NPT were the result of a broader economic strategy. Mahmoud Karem, the Egyptian diplomat whose book recounts the history of the NWFZ proposal, does not mention liberalization as a cause of the 1974 resolution, but instead attributes Egypt's support for a NWFZ to other factors: the dangers posed by nuclear weapons and the desire to quiet Congressional opposition to the proposed sale of American nuclear reactors.[18]

As for the NPT, numerous sources attribute Egypt's ratification decision to its desire to obtain nuclear power plants, not foreign investment. Indeed, the political push for ratification came not from economic interests with a stake in liberalization, but from a much more parochial concern: the Ministry of Energy.[19]

**Other Available Information**
The liberalization hypothesis is not easily integrated with contemporary scholarship on nuclear decision making. Decisions about nuclear weapons typically involve a narrow and specific set of actors, working in secrecy, and isolated from broader interests in society. By contrast, the

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interest in acquiring nuclear weapons in the 1950s, and some analysts have suggested that Iran's proposal was meant as little more than window-dressing intended to cover over its true intentions. Solingen contrasts the liberalizing Shah with the radical Islamists who took power in 1979, but there is certainly enough evidence to make the opposite case, i.e., that the Shah was seeking nuclear weapons, and that Islamist Iran abandoned the program, at least until the mid 80s. Since the mid-1980s, Iran's nuclear policy has been a subject of internal contestation, with some factions seeking nuclear weapons and others supporting a strong nonproliferation policy.

18 Mahmoud Karem, *A Nuclear-Weapon-Free Zone in the Middle East*, (New York, NY: Greenwood Press), 1988, pp. 91-94. See also, Ahmed Abdel Halim, "Egypt's Position Towards the Israeli Nuclear Arsenal," Paper presented for the Conference on Non-Proliferation, IGC, University of California, held at Limassol, Cyprus, August, 19-23, 1995.

19 See Chapter 7, footnote 42.

liberalization hypothesis posits a decision making process in which economic interests and their arguments are well represented.

Moreover, as an economic strategy, participation in nuclear regimes is a highly indirect, if not implausible, instrument for achieving economic growth. If a country wanted to stimulate foreign investment or increase GDP, there would seem to be no lack of policy options that could generate more immediate results. Indeed, it is hard to imagine that economic interests looking to liberalize their country's economy would put nuclear weapons policy anywhere near the top of their action agenda.

**Assessment**
The liberalization hypothesis performs poorly on all three tests. Solingen is right to argue that the period between 1973 and 1981 witnessed a change in Egyptian economic and nuclear policies, but the linkage between liberalization and regime participation is not a strong one.

## H13. The Regime Hypothesis

According to the basic version of the regimes hypothesis, the slow pace of proliferation can be attributed to the establishment of an international nonproliferation regime. Two tests of this hypothesis are considered: 1) a correspondence test that compares regime participation and nuclear decision making and 2) a process tracing test.

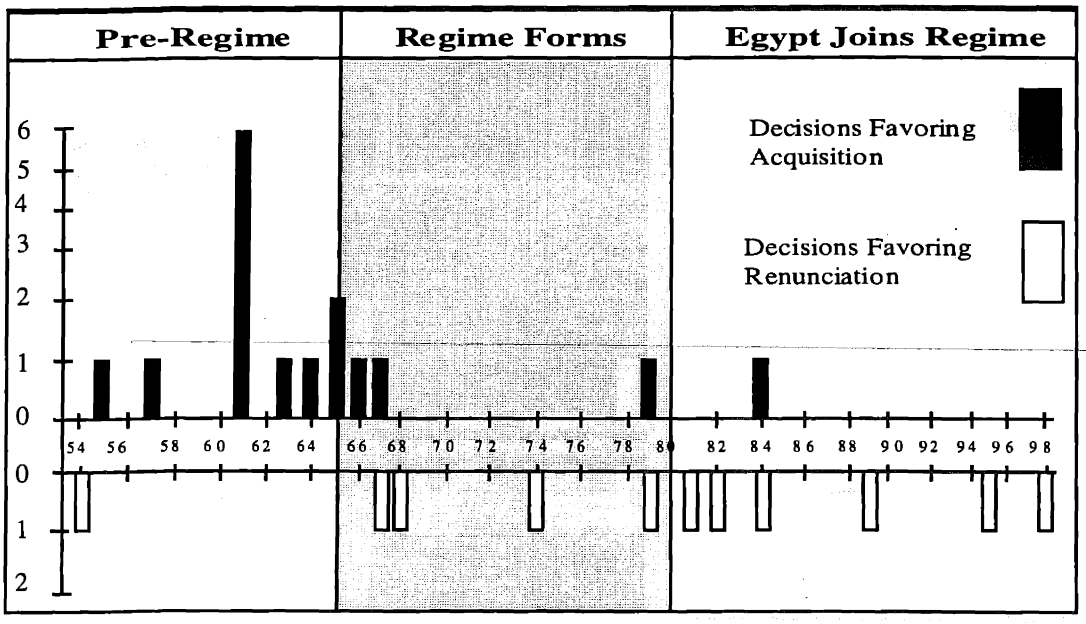
### Test 1. Regime Participation and Nuclear Decision Making

This test compares nuclear decisions made under a regime with nuclear decisions made in the absence of a regime. The hypothesis predicts that in the absence of a regime, a state will make more frequent and more serious decisions favoring the acquisition of nuclear weapons.

Box 10.1. charts Egyptian nuclear decision making over three periods. The first period, beginning in the 1950s and ending in the mid-1960s, is the pre-regime period, when no international regime of consequence operated. The second period covers the formation of a international regime and ends on the eve of Egypt's entry into the NPT in 1981. During this period, a regime forms and takes effect, but Egypt is not yet a member. The last period begins with Egypt's ratification of the NPT and continues through today.

The pre-regime period is characterized by the highest number of decisions favoring nuclear weapons and the fewest favoring their renunciation. The NPT period exhibits the opposite tendency: the fewest number of acquisition decisions and the largest number of pro-renunciation decisions. NPT membership did not prevent the Egyptian military from pursuing an autonomous acquisition policy in the 1980s, however.

**Box 10.1. The NPT and Egyptian Nuclear Decision Making**




On the surface, these results appear to roughly replicate the Australian pattern, but closer examination reveals an important difference. Australia's ratification represented an abrupt change in policy that had the effect of committing future Australian governments. Egypt, on the other hand, had already made the move away from nuclear weapons some seven years before it ratified the treaty.

## H14. The Prisoners' Dilemma Hypothesis

The prisoners' dilemma hypothesis is a more specific variant of the regimes hypothesis. It maintains that the NPT induces nuclear renunciation, because it allows states to escape a nuclear prisoners' dilemma. Adversaries can reciprocally forgo nuclear weapons and achieve their second most preferred outcome -- no player with a nuclear weapon. The PD hypothesis fails in the case of Egypt, however, because its chief adversary (Israel) already possessed nuclear weapons. The asymmetry became even more acute once Egypt joined the NPT, even as Israel remained outside the treaty, armed with nuclear weapons.

## H15. The International Law Hypothesis

The international law hypothesis offers a second variant of the regimes hypothesis. It asserts that nonproliferation regimes restrain states from seeking nuclear weapons, because states take their legal obligations seriously. To assess the strength of these claims, three tests are applied. The first two are based on the observable implications of the hypothesis. If states take their international legal commitments seriously, then the following should also be true: 1) they will not have violated

similar treaty commitments in the past and 2) they will be willing to pay costs to avoid unwanted treaty obligations.

**Test 1. Treaty Violations**
Has Egypt violated previous treaty commitments? The ACDA treaty set lists thirteen relevant arms control and disarmament treaties that Egypt is eligible to join.[20] It is a party to five of the thirteen treaties. Of the five treaties to which Egypt is a member, two may have been violated. The apparent use of chemical weapons during the Yemen civil war has to be counted as a violation of the Geneva Protocol, which prohibits the use of "poisonous or other gases."

**Box 10.2. Egyptian Participation in Arms Control Treaties**

| Egypt is a Member | Egypt is Not a Member |
|---|---|
| Geneva Protocol | <u>Signed But Has Not Ratified</u> |
| Non-Proliferation Treaty | Comprehensive Nuclear Test-Ban Treaty |
| Outer Space Treaty | African Nuclear-Weapon-Free Zone |
| Limited Test Ban Treaty | Biological Weapons Convention |
| Environmental Modification Convention | |
| | <u>Has Not Signed</u> |
| | Missile Technology Control Regime |
| | Chemical Weapons Convention |
| | Seabed Arms Control Treaty |
| | Nuclear Material Convention |
| | The Antarctic Treaty |

The second violation is more complex, but goes to the heart of the hypothesis. The Egyptian military's procurement efforts in the 1980s appear to violate Egypt's NPT commitment "not to seek or receive any assistance in the manufacture of nuclear weapons or other nuclear explosive devices." Complicating the picture is the possibility that Egypt's president may not have been aware of these activities, and ended them once they became public. Judged by behavior alone, however, the treaty did not stop Egypt from engaging in weapons-related activity.

**Test 2. Paying costs to avoid unwanted legal obligations.**
Of the thirteen treaties listed in Box 10.2, Egypt joined four of them almost immediately (Geneva Protocol, Outer Space, Environmental Modification, and Limited Test Ban). That leaves nine treaties that, in principle, could represent cases of avoidance. In three of the cases, however, lack of participation more likely reflects indifference rather than avoidance (the Antarctic, seabed, and nuclear materials treaties).

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20 It excludes NATO, bilateral, out-of-area treaties like South Pacific NWFZ. The MTCR is not an international or multi-lateral treaty, but it is included, because of its relevance to weapons proliferation. Egypt is not a member of the MTCR, and Egyptian companies have suffered MTCR-related sanctions by the US for violations of the Arms Export Control Act and the Export Administration Act of 1979. *Federal Register*, "Notices," Volume 64, Number 73, April 16, 1999, p. 18957.

For some of the other treaties, the situation is less clear. It may be that Egypt has avoided the missile, biological, test ban, and African NWFZ treaties, and has done so in order to maintain freedom of action in these areas, but there is no evidence for or against such claims. The test ban and the nuclear weapons free zone treaties, it should be pointed out, simply proscribe what Egypt is already functionally prohibited from doing under its NPT obligations.

It is also unlikely Egypt's long delay in ratifying the NPT is a case of avoidance. Egypt had abandoned the nuclear option as early as 1974, but said it would not join the NPT unless Israel was willing to do the same. The decision to ratify the treaty in 1981 represented a change in policy and came precisely because Egyptian officials felt the country was paying a cost for not ratifying. In short, the refusal to ratify was not intended to maintain a weapons option, and when there was a perceived cost to nonparticipation, the government changed policy and joined the treaty.

There is one treaty, however, that could plausibly be a case where Egypt sought to avoid a legal obligation despite a penalty for nonparticipation: the CWC. Here, the evidence is scant, but it does suggest that Egypt has avoided the CWC, because it intends to maintain a chemical weapons capacity. Egypt's public position is that it favors the treaty but will not join CWC until Israel joins the NPT. Implicit in Egyptian position is the notion that Egypt will keep a CW option until Israel renounces nuclear weapons.[21]

The provisions of the CWC are such that Egypt could pay sizable costs for refusing to join the treaty. Unlike most arms control treaties, the CWC actually punishes states that choose to remain outside the treaty. The official website for the OPCW, the administrative arm of the CWC, includes a remarkable document entitled "The Advantages of Being a State Party and the Disadvantages of Staying Outside the Chemical Weapons Convention." As the document points out, the "Convention imposes a number of restrictions on the trade of specifically identified chemicals with States not Parties to the Convention." In particular, non-parties to the treaty will be denied access to Schedule 1 and 2 chemicals, which include "chemicals for textile printing, lubrication, flame-retarding, sugar cane ripening, and many, many other every-day purposes." Schedule III chemicals will only be available under restrictions.[22] These provisions are to be phased in over a number of years, and it is unlikely that Egypt has yet suffered any consequences for its refusal to join the treaty. In time, however, the CWC may impose nontrivial economic costs on the Egypt's chemical industry and the broader economy.

In sum, evidence that Egypt has been willing to pay costs to avoid international obligations is generally scarce. The one exception is the CWC, where it appears that Egypt has acted in a way consistent with the test of the hypothesis, i.e., it has been willing to pay costs in order to avoid a treaty that could limit its weapons options.

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21 Judith Perera, "Disarmament: U.S. and Russia Drag Feet on Chemical Weapons Treaty," *Inter Press Service*, September 25, 1996, [LexusNexus]; Dany Shoham, "Chemical and Biological Weapons in Egypt," *Nonproliferation Review,* Vol. 5 (Spring-Summer 1998), pp. 52-53.

22 OPCW, "The Advantages of Being a State Party and the Disadvantages of Staying Outside the Chemical Weapons Convention," http://www.opcw.org/ptshome.htm, [August, 2000].

**Test 2. Process Tracing**

Process tracing evidence on the effects of treaty obligations is quite limited. One source reports, however, that when Mubarak rejected the 1984 proposal to pursue a nuclear weapons option, he cited Egypt's NPT obligations as one of the reasons for his decision.[23]

**Assessment**

The results from the tests of the international law hypothesis are mixed. The violations of the Geneva Protocol in the 1960s and the military nuclear procurement activities in the 1980s weigh heavily against the hypothesis. On the other side of the ledger, Egypt's refusal to join the CWC can be seen as evidence that the current government takes international treaties seriously and would rather pay the costs of non-participation than join a treaty that it perceives would limit its CW options. In addition, evidence that Mubarak cited the NPT in his rejection of the military's 1984 nuclear recommendation is consistent with the hypothesis.

In evaluating these conflicting results, it has to be said that the evidence of violations is substantially stronger than the evidence regarding Mubarak and the NPT. Moreover, the 1984 episode makes evident that respect for international law did not limit the preferences or behavior of the military, which, in Egypt, plays a critical and often autonomous role in policy formulation.

Still, if the treaty did contribute to Mubarak's decision, the result is of some import. One hallmark of nuclear weapons development is the high degree of institutional cooperation required. Unlike CW and BW, nuclear weapons require the participation of both the scientific establishment and the state executive. A military can run its own BW program on the sly with a few scientists in warehouse, but the scale and complexity involved in nuclear weapons development necessitates a broad-based effort. Thus, while Egypt's NPT commitment may not have constrained the military, the effect may have been to prevent a renewed weapons effort by interfering with the formation of the required political coalition.

It is also worth noting that the regime may have performed a function unanticipated by any of the regime related hypotheses. The regime has given Egypt a *non-military* alternative for responding to the Israeli nuclear program. Like no other country in the Middle East, Egypt has embraced the NPT as a political strategy for attacking Israel's nuclear status. The combination of a modest CW capability and a political strategy based on nonproliferation may have given Egypt enough of a counter that it feels less compelled to pursue a strictly military response to Israel's arsenal.

The treaty's function might be likened to what some analysts have claimed for conventional arms transfers. For decades, analysts have argued that one way to reduce the incentive for proliferation is the provision of conventional arms. These arms transfers would, according to the advocates, enhance the security of potential proliferators, who would then feel less of a need to turn to nuclear weapons. Of course, all the conventional weapons in the world could not balance a robust nuclear force, but the thinking was that by narrowing the perceived security gap, the motivation level of the potential proliferator would fall below the threshold required for committing to a nuclear program. As an empirical matter, such transfers appear not to have worked. States -- Israel and Pakistan to name two -- have sought additional conventional weapons *and* nuclear weapons. The general logic, however, may be valid, i.e. it may be possible to inhibit proliferation by providing states with a range of alternatives, in this case, alternatives to purely military responses to an adversary's nuclear

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23 Interview with source.

weapons. The NPT gave Egypt a political weapon to use against Israel's program, a weapon that simultaneously reinforced its own non-nuclear posture.

# III. Summary: Ideas, Institutions and Nuclear Decision Making

Box 10.3 summarizes the results from this chapter. Several hypotheses perform poorly, including the norms, democracy, electoral politics, liberalization, and prisoners' dilemma explanations.

The organizational politics, regimes, and international law hypotheses exhibit some strength, though the results are not unambiguous. Interestingly, the organizational politics and regimes hypotheses worked in tandem to constrain nuclear behavior: organizational interest in nuclear power led to a decision to join the regime, which in turn, consolidated the anti-nuclear posture and encouraged the rejection of subsequent proposals for nuclear weapons.

## Box 10.3 Summary of Results: Hypotheses on Ideas and Institutions

| Hypothesis | Tests | Results |
|---|---|---|
| **H8. Norms** | 1) States will not seek, possess, or use stocks of chemical or biological weapons. | Fails test. Possesses CW throughout period; used CW during the Yemen civil war; refuses to sign CWC. |
| **H9. Democracy** | 1) Correspondence b/t level of democratic development and NDM. | Fails test. Lack of democracy is a constant. Renounced NW despite absence of democracy. |
| **H10. Electoral Politics** | 1) Correspondence b/t public opinion & NDM.<br>2) Ruling party includes nuclear stance in campaign.<br>3) Ruling party includes nuclear stance in platform.<br>4) Coalition partners include in platform or campaign. | Fails tests. Not a democracy; no electoral politics. |
| **H11. Liberalizing Economies** | 1) Correspondence b/t liberalization & NDM<br>2) States will join comparable regimes.<br>3) Process tracing | Fails tests. Rough correspondence b/t liberalization and anti-nuclear decisions but hypothesis fails Tests 2 & 3 and is based on questionable specification of the dependent variable. |
| **H12. Organizational Politics** | 1) Proposals made by organizations likely to benefit.<br>2)Positions consistent with organizational interest.<br>3) Correspondence b/t changes in decision group or decision set and NDM.<br>4) Process tracing | Mixed Results. Egypt's institutional structure not consistent with hypothesis but change in the decision group helps account for anti-NW behaviors after '73. |
| **H13. Regimes** | 1) Correspondence b/t presence and participation in regime with NDM. | Mixed results. Correlation between regime membership and limited nuclear activity, but decsion to renounce comes well before regime membership. |
| **H14. Prisoner's Dilemma** | 1) No state in the PD will be a NWS.<br>2) Reciprocal NPT signature/ratification by players. | Fails tests. Israel is a non-NPT NWS. |
| **H15. Force of International Law** | 1) States do not violate other WMD treaties.<br>2) States will pay costs to avoid unwanted treaty obligations. | Mixed Results. Treaty violations contradict hypothesis, but CWC as case of avoidance of unwanted treaties. Mubarak cites NPT in rejecting NW proposal. |

NDM = nuclear decision making PD = Prisoners dilemma NWS = nuclear weapons state

# IV. New Hypotheses on Egyptian Nuclear Restraint

Egypt's nuclear history has provided the empirical basis for testing various explanations for nuclear behavior, but it can be used for a second task as well, namely, hypothesis generation. The case evidence suggests three new hypotheses that might explain why countries interested in the bomb fail to become nuclear weapons states. Judgments regarding the adequacy of these hypotheses will not be possible until they have been formally tested, but each hypothesis is sufficiently plausible to warrant further investigation.

Two of the hypotheses constitute independent explanations: 1) deficiencies in program management inhibit acquisition of nuclear weapons and 2) the limited institutional capacity of developing states inhibits the acquisition of nuclear weapons. A third hypothesis is really an explanatory variant of the regimes hypothesis. It stipulates that states join regimes because of the promise of future benefits, i.e. incentives. The assumption is that having joined the regime, the regime acts as a constraint on future nuclear choices. Each hypothesis is considered below.

## Deficiencies in Program Management Inhibit the Acquisition of Nuclear Weapons.

This hypothesis locates the essential causal processes at program level rather than in high politics. There are several program-level dyfunctionalities that might inhibit a state's ability to pursue the bomb, but the focus here is on civil-military divisions within the nuclear program.[24]

Debilitating civil-military divisions within a nuclear program are not unique to Egypt, but in Egypt's case, they appear to have had a particularly strong effect.[25] Salah Hedayat, the free officer who headed Egypt's nuclear program in the critical years between 1961 and 1965, had a military style of management and "a military attitude." According to several observers, he issued "orders" and insisted on "strict timetables," and when these timetables were not met, he vocally dressed down those he viewed as responsible. This style of management was not well received by several of the scientists, most of whom were recruited from academic settings.

This intra-agency conflict had several effects: projects were caught in the cross-fire of constant argument between the rival factions; some of the staff left the program; and in other cases, Hedayat's directives were simply ignored. The net result was that progress at the AEE slowed to a crawl precisely at a time when the program needed to maximize progress. What Nasser, Hedayat, and others could not know was that the years between 1958 and 1966 represented one of Egypt's best opportunities to advance its nuclear program. Instead, the AEE's efforts were stymied by intra-

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[24] See interviews with Ali Saidi, September 30, 1996; Ibrahim Hammouda, April 29, 1995; Hammad Fawzi, January 2, 1997; Mohammed Masoud, December, 31, 1996; Tahseen Basheer, December 29, 1996; Ibrahim Dakhli Abdelrazek.

[25] Conflicts between nuclear scientists and their military managers are not new. The Manhattan Project, for example, had its share of conflicts. What we are missing is a systematic analysis of these kinds of internal divisions and the conditions under which they are most likely. One could imagine, for example, that in a larger and richer program like the Manhattan Project, individual defections would prove less damaging or that such divisions are less likely when a country is officially at war. See, for example, Richard Rhodes , *The Making of the Atomic Bomb*, (New York: Simon & Schuster, 1988).

organizational conflict. Hedayat, himself, attributes the lack of progress during his tenure to personnel and management problems, and in particular to problems with El Guibaily.

One problem with hypothesis comes in the form of a counter-factual, first suggested by a former AEE scientist. When asked about the AEE's internal problems, he replied that they were real but not insurmountable. Had the nuclear program been sufficiently important to Nasser, the scientist pointed out, he could have simply imposed his will and forced either Hedayat or the dissident scientists to fall into line. Egypt was, after all, a military government, and Nasser had the authority to command compliance. Indeed, it may be that program level explanations only operate in the absence of a motivated state leader.

## The Limited Institutional Capacities of Developing States Inhibits the Acquisition of Nuclear Weapons.

A second hypothesis suggested by Egypt's experience focuses on the institutional capacity of the government and its ability to execute foreign and security policy. The institutional capacity hypothesis suggests that developing states -- especially those with regional hegemonic aspirations -- face a difficult task of managing their foreign and security policy, because their desires outstrip their institutional ability to pursue them.

Nasser, for example, simultaneously sought Arab hegemony, fought hot and cold wars with Israel, was co-leader with Tito and Nehru of the non-aligned movement, attempted to curry favor with both the US and USSR, took over (and then lost) Syria, intervened in Yemen, and nationalized Egyptian industry. Nasser was juggling all these initiatives while simultaneously fending off a political challenge from the second most powerful person in Egypt, Field Marshall Amer.[26] As a State Department report at the time notes,

> The Nasser regime has set itself broad and ambitious goals within Egypt, the Arab region, Africa, and the "non-aligned" world in general. These goals have become increasingly clear over the years and have shown signs of overtaxing the relatively narrow political and economic base from which he has operated.
>
> Nasser has not been able to pursue all these ambitious goals with equal vigor at all times. He has shifted primary attention from one goal to the other either on his own initiative or as a result of chance external developments.[27]

Pursing all these goals, together with that of developing a nuclear weapon, would be difficult in any circumstances, but Nasser's highly individualized style of leadership and the lack of an established

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26 As one observer put it, one "cannot carry 100 watermelons in one hand." Consistent with this hypothesis, some Egyptians have contended that the failure to acquire a nuclear option was a consequence of neglect, that Nasser was "involved in many things." Former Minister of Defense, Amin Howeidy, rejects this argument, however, maintaining that Nasser's government was not over-extended. Interviews with Interview with Nassif Hitti, April 28, 1995; Ahmed M. Abdel Halim, February, 1995; Amin Howeidy, April 26, 1995, and January 1, 1997.

27 Department of State, Bureau of Intelligence and Research, "The Outlook for Nasser", Oct. 30, 1961, p. 2, JFK Library, xx.

foreign policy bureaucracy could have only made the task more difficult.[28] In particular, it should have made the government particularly vulnerable to policy that was crisis or event driven and less prepared to implement long term initiatives, like that of a nuclear weapons program. [29]

## States Join Regimes Because of the Promise of Future Benefits, i.e. Incentives.

This hypothesis is suggested by Egypt's decision to ratify the NPT. That decision appears to have been one part organizational politics and one part incentives. The Ministry of Electricity wanted nuclear power plants but could only get the necessary financing if Egypt joined the NPT. The hypothesis is similar to the liberalization hypothesis, but the focus is on the particular provisions of a given treaty, not the use of a treaty as an instrument for generating foreign investment.

## General Assessment

In contrast to the analysis of Australia, there is no clear and consistent explanation for Egypt's non-nuclear status among the hypotheses considered. The original set of fifteen hypotheses offer less than stellar results. The new hypotheses on program management, institutional capacity, and incentives are intriguing but are not without their own problems and have yet to be subjected to formal testing.

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[28] On Nasser's personalized style of foreign policy and lack of institutions, see Ali E. Hillal Dessouki, "The Primacy of Economics: The Foreign Policy of Egypt," in The Foreign Policies of Arab States, (Boulder: Westview), 1984, p. 131.

[29] On the constraining effects of limited institutional capacities of countries in the Middle East, see Dessouki, "The Primacy of Economics: The Foreign Policy of Egypt;" A. I. Dawisha, "The Middle East," in *Foreign Policy making in Developing States*, Christopher Clapham, ed., (New York: Praeger Publishers, 1977), pp. 62-67.

# Chapter 11. Findings and Implications

In this final chapter, the focus is on four tasks. The first task is reviewing the study's findings on the causes of nuclear restraint. The results of the Australian and Egyptian cases are reviewed individually and then compared against each other. Two questions guide this comparison: a) which of the hypotheses can be ruled out as an explanation?, and b) given the remaining hypotheses, what behaviors are accounted for and what remains unexplained?

After analyzing these results, attention then turns to a second task -- reviewing some of the study's findings on topics *other* than nuclear restraint. Included in this review are the unexpected results of the descriptive research, as well as observations about the process of nuclear decision making, the causes of proliferation (rather than nuclear restraint), the role of international law and international organizations, and the intersection between domestic and international politics.

The third task entails addressing the question of generalizability. To what extent are the results observed here likely to apply to other cases? The conclusion offered here is that one should be cautious about making broad generalizations, but that it would also be a mistake to treat the results as unique or idiosyncratic. This section outlines several reasons why the behaviors documented in this study are likely to be observed in other states.

The fourth task is to consider the study's implications for nonproliferation policy. In the section, the conventional policy approach is described and contrasted with an alternative approach. Special attention is given to policy makers' recent interest in counterproliferation, missile defense, and a belief that underlies both strategies, namely, that proliferation is inevitable.

This inquiry then ends where it began, with the puzzle of limited proliferation. Why are there so few nuclear weapons states? What do the remarkable events of the second half of the 20th century tell us about nuclear decision making, state behavior, and our theories of international politics? The results of this investigation suggest that, more than anything else, the absence of widespread proliferation and the embrace of nuclear restraint reflects the fundamental importance of politics and institutions. Confidence in this conclusion will have to await further research -- the details of which are briefly outlined -- but if these results hold true, then scholars and policy makers will have no choice but to fundamentally rethink the problem of proliferation.

# I. Explaining Nuclear Restraint

## A. Australia and the Atom

Australia provides one of the more interesting stories of the nuclear age. A country that few people suspected of harboring nuclear ambitions made serious and repeated efforts to acquire nuclear weapons. Beginning in the 1950s, the government -- under the constant prodding of defense ministers, the air force, and the director of the atomic agency -- pursued a variety of schemes for acquiring nuclear weapons. These included buying tactical nuclear weapons, participating in proposals for nuclear sharing, secret agreements for the transfer of nuclear weapons, and developing an indigenous fuel cycle capable of producing Australia's own bomb. After 1973, however, Australia essentially set aside its nuclear aspirations. In the ensuing decades, the government's position evolved still further -- from reluctant restraint to aggressive advocacy of nonproliferation and even nuclear abolition.

The causes of Australia's behavior appear to be few in number and powerful in effect. Indeed, most of the hypotheses fare quite poorly, including the bipolarity, superpower pressure, lack of money, lack of scientific capability, democracy, liberalizing economy, and prisoners' dilemma explanations. These under-performing hypotheses fail all or most of their tests, often in spectacular fashion.

Four other hypotheses -- lack of threat, security guarantees, norms, and electoral politics -- also fail their tests, but their failure is neither as obvious nor as complete as the hypotheses described above. In general, Australian behavior does not correlate well with the level of threat or the presence of a security guarantee. Australia made some of its most serious attempts to acquire nuclear weapons in the 1950s, when threats were comparatively low and its alliances comparatively robust. It renounced nuclear weapons in the early 1970s, despite the fact that the number of nuclear threats had increased, the British had withdrawn from the Pacific, and the alliance with the US had become less dependable. There is evidence, however, that China's entry into the nuclear club in 1964, and Britain's plans for withdrawal about the same time, increased Australia's interest in nuclear weapons. In other words, for a time in the 1960s, it appears that increases in threat and declines in the quality of security guarantees correspond with *pro*-nuclear behaviors. Of course, this does not explain nuclear restraint.

Evidence favoring the norms hypothesis prior to Australia's NPT ratification is all but absent, regardless of whether one considers survey data, process tracing evidence, or Australian policy towards other weapons of mass destruction. It appears, however, that after NPT ratification, an anti-nuclear norm does develop, and it is certainly conceivable that the development of such a norm has reinforced restraint and/or helps explain Australia's subsequent embrace of the nonproliferation cause. In any case, these effects -- if true -- occur after Australia made the fundamental choice to renounce nuclear weapons.

The role of electoral politics is extremely limited, but still worthy of comment. For the most part, electoral politics had little or no effect on nuclear outcomes. Nuclear deliberations were held in secret; the public was largely uninterested in nuclear issues in any case, and most of those who were interested were unabashedly pro-nuclear (e.g., the DLP). There is one exception, however, and it is noteworthy. It is clear that intra-party wrangling within the Labor Party led to its strong anti-nuclear position. Once Labor took office, it acted on that position, and ratified the NPT, which in turn, had the effect of taking nuclear weapons off the table. In short, the proximate cause of Australia's nuclear restraint was a regime commitment, but this commitment was made possible by the happy coincidence of intra-party politics and a rare election victory for Labor.

**Table 11.1. Australia and the Explanatory Hypotheses**

| | Hypothesis | Does the Hypothesis Help Explain for Nuclear Restraint? |
|---|---|---|
| **Power** | Lack of threat | No |
| | Bipolarity | No |
| | Security guarantee | No |
| | Pressure | No |
| | | |
| **Resources** | Lack of money | No |
| | Lack of scientific capability | No |
| | **Denial** | **Yes (1954-1963)** |
| | | |
| **Ideas** | Norms | No |
| | | |
| **Institutions** | Democratic government | No |
| | Electoral politics | No |
| | Liberalizing economy | No |
| | **Organizational politics** | **Yes (1964-1973)** |
| | **Regime** | **Yes (1965-1998)** |
| | PD game | No |
| | **International law** | **Yes (1965-1998)** |

By far, the hypothesis that performs best is the organizational politics explanation. The process tracing evidence is very strong, and the congruence tests yield healthy correlations. These correlations link 1) nuclear proposals with the organizations most likely to benefit from those proposals, 2) an organization's position on nuclear policy with its organizational interest, and 3) changes in decision outcomes with changes in the decision group and decision set.

The international law hypothesis also does well. Though the data is limited, it indicates that Australian governments exhibited a healthy respect for their international obligations. The country has no record of violating its treaty commitments, and on more than one occasion, it has been willing to bear nontrivial costs in order to avoid unwanted legal obligations. The little process tracing evidence available also suggests that treaty obligations constrained Canberra's behavior, and that once Australia ratified the NPT, the acquisition of nuclear weapons became a non-issue. This conclusion is further reinforced by the results of the simple regimes test, which shows a rather dramatic correlation between Australia's NPT ratification and the disappearance of pro-nuclear activity.

A third factor -- denial -- appears to have played a role, though its effects were more indirect. Denial of nuclear weapons, particularly by the United States, acted as a roadblock to the

government's pursuit of a bomb option. This had the greatest impact during the procurement phase in the 1950s and early 1960s. The roadblock was not insuperable, however. It could have been circumvented with the help of Britain, if Prime Minister Menzies had been sufficiently motivated. Indeed, the British government offered to move forward with discussions of nuclear weapons, but it was Menzies, not the British Prime Minister, that declined to take up that opportunity.

Why did Australia remain non-nuclear? During the procurement phase (1956-1963), a combination of denial policies, the status quo inclination of the Prime Minster, and, ironically, the collapse of the Test Ban Treaty all contributed to nuclear restraint. (The Test Ban Treaty led Menzies to pursue the nuclear-weapons-on-demand agreement.) During the indigenous development phase (1964-1972), organizational politics and the introduction of the NPT prevented Australia from going for the bomb. NPT ratification, which followed a change in government, then ended any chance that Australia would become a nuclear weapons state.

## B. Egypt and the Atom

Like Australia, Egypt began to seriously consider the issue of nuclear weapons in the 1950s, and like Australia, Egypt pursued the nuclear option, eventually gave it up, and later became an international leader on nonproliferation. From a security standpoint, Egypt had obvious reason for wanting a bomb. Israel, its chief adversary for much of the post-war period, acquired nuclear weapons, and several other governments in the region had nuclear weapons programs. Egyptian nuclear activities were particularly intense in the early and mid-1960s. Its pursuit of the bomb took several forms, including an ad hoc procurement program run by the military, an attempt to establish a complete fuel cycle (providing the capacity for indigenous development of nuclear weapons), and negotiations with other governments for the transfer of weapons and weapons-related technologies.

The Egyptian story is a complex one. On the one hand, the government took a variety of initiatives that were intended to bring the bomb to Egypt. On the other hand, Nasser never made nuclear weapons a priority, never provided the level of political commitment and attention needed for the Egyptian effort to be successful. The rocket program, the war in Yemen, the jet program -- these and other projects enjoyed a higher political priority in the early and mid-1960s. Then came 1967 and Egypt's devastating defeat in the Six Day War. That war dramatically changed Egypt's circumstances and objectives.

Three years after the war, Sadat assumed power, and Egyptian interest in nuclear weapons all but ended. Sadat later formalized his government's rejection of the nuclear option in 1981, when Egypt ratified the NPT. This policy was formally continued under Mubarak, but the Egyptian military had its own ideas, and under General Ghazala, there were a number of ad hoc initiatives aimed at procuring nuclear-related technology and materials. These activities ended when Mubarak ousted his defense minister following a weapons procurement scandal. Since then, there has been no reported Egyptian nuclear weapons-related behavior, and the Egyptian government has continued to press for nonproliferation, both in the United Nations and as part of the New Agenda group of nations.

As with Australia, several of the candidate hypotheses perform quite poorly. The bipolarity, security guarantee, pressure, norms, democracy, electoral politics, and prisoners' dilemma explanations fail their respective tests, and do so decisively. Three other hypotheses also fail their tests, but with less flare: threat, lack of scientific capability, and liberalizing economy.

Lack of threat surely cannot account for Egypt's nuclear restraint. Israel developed and continues to possess nuclear weapons. Notwithstanding these general observations, it is worth pointing out that interest in nuclear weapons increased as the level of threat increased, i.e., after the revelations about the Dimona reactor a the end of 1960. Still, even this effect did not prove to be very powerful.

The "lack of scientists" hypothesis fails its tests, but it has to be conceded that Egypt was not far above the threshold of scientific capability. It had a better scientific base than Pakistan and Iraq, but developing a nuclear weapons would have been a difficult project -- not undoable, but difficult. In any case, there is no evidence that Egypt, in fact, decided to go for the bomb but had to stop because of technical difficulties, nor is there any reason to believe that Egyptian leaders were deterred from going down the nuclear path, because they anticipated it would be too difficult. The absence of a strong bomb program had more to do with a lack of political will than a lack of scientists or scientific capacity.

The liberalizing economy hypothesis is one of those explanations that looks best at a distance. The closer one examines it, however, the more untenable it becomes. To the hypothesis' credit, there appears to be a rough correlation between Egyptian moves to liberalize its economy and its rejection of nuclear weapons, but it turns out that the actual sequence of events does not follow the predicted path. Egypt did not join the NPT regime until seven years after it announced economic liberalization. Moreover, it did not engage in other regime-related behaviors that one would have expected if the hypothesis were true.

**Table 11.2. Egypt and the Explanatory Hypotheses**

| | **Hypothesis** | **Does the Hypothesis Help Explain for Nuclear Restraint?** |
|---|---|---|
| **Power** | Lack of threat | No |
| | Bipolarity | No |
| | Security guarantee | No |
| | Pressure | No |
| | | |
| **Resources** | **Lack of money** | **Yes (1967-1973)** |
| | Lack of scientific capability | No |
| | **Denial** | **Yes (1961-1967)** |
| | | |
| **Ideas** | Norms | No |
| | | |
| **Institutions** | Democratic government | No |
| | Electoral politics | No |
| | Liberalizing economy | No |
| | **Organizational politics** | **Yes (1974-1981)** |
| | **Regime** | **Yes (1981-1998)** |
| | PD game | No |
| | **International law** | **Yes (1981-1998)** |

Other hypotheses do help explain Egyptian behavior, at least in part. Lack of money does not provide a general explanation for nuclear restraint, but it does appear to be a factor in the years immediately following the '67 War. The denial of nuclear transfers by India, the USSR, and China play an obviously important role in preventing Egypt's entry into the nuclear club and provide the most consistent explanation for outcomes during the 1960s. The denial explanation has its limits, however. Though it was unable to obtain an outright transfer of nuclear weapons, Egypt had several chances to significantly expand its nuclear infrastructure, but failed to act on those opportunities.

The organizational politics hypothesis does not neatly fit the Egyptian case, in part, because bureaucratic organizations do not function in a military government like they do in a democracy. Even at its best, the hypothesis would only explain outcomes after 1973. Still, there is evidence that organizational politics influenced nuclear policy, including the military's pursuit of nuclear weapons in the 1980s, the Ministry of Electricity's hostile takeover of the Atomic Energy Establishment, and the Egypt's ratification of the NPT. The last two events had the effect of consolidating the government's decision to give up the nuclear option.

The results for the international regimes/international law hypothesis are also less than decisive. The NPT may have been a factor in President Mubarak's rejection of the nuclear option, but the evidence is thin, and in any case, would only account for a few decisions late in Egypt's nuclear history. Egyptian nuclear activity *is* much lower in the post-NPT ratification period, but the case for the international law hypothesis is mixed. In the past, Egypt violated its treaty obligations, most obviously in its use of chemical weapons during the Yemen war. More recently, however, Egypt's refusal to join the CWC suggests that it may now take such obligations seriously and would prefer not to join a treaty, in spite of the costs of non-participation, rather than to join and cheat.

Why did Egypt remain non-nuclear? Again, certain hypotheses are all but disconfirmed. The positive explanations, however, are generally weaker than their Australian counter-parts. Denial and lack of money -- and to a lesser extent, organizational politics, and the regime -- all contributed to, or reinforced, nuclear restraint, but none of the hypotheses provides much in the way of a general explanation.

## C. Comparing Australia and Egypt

Having reviewed the results of the hypothesis testing for each of the cases individually, one can now compare the results *across* the cases. The first objective is to identify the common results: hypotheses that failed for both cases and hypotheses that have explanatory leverage in both cases. A second objective to identify what the hypotheses do not explain for both cases, and then to ask "what is missing?" What alternative explanations or variables are suggested by both cases that might account for the unexplained outcomes?

### Common Results

Box 11.3 provides a summary of the findings, indicating for each country those hypotheses that help explain these countries' behavior. Successful hypotheses common to both countries are in bold, and unsuccessful hypotheses are left uncoded.

**Table 11.3. Why States Forgo Nuclear Weapons: Performance by Category**

| | Hypothesis | Does the Hypothesis Account for Nuclear Restraint? | |
|---|---|---|---|
| | | Australia | Egypt |
| **Power** | Lack of threat | | |
| | Bipolarity | | |
| | Security guarantee | | |
| | Pressure | | |
| | | | |
| **Resources** | Lack of money | | Yes |
| | Lack of scientific capability | | |
| | **Denial** | **Yes** | **Yes** |
| | | | |
| **Ideas** | Norms | | |
| | | | |
| **Institutions** | Democratic government | | |
| | Electoral politics | | |
| | Liberalizing economy | | |
| | **Organizational politics** | **Yes** | **Yes** |
| | **Regime** | **Yes** | **Yes** |
| | PD game | | |
| | **International law** | **Yes** | **Yes** |

Is there a correspondence between these two very different cases? Yes and no. On the one hand, these results show a surprising degree of consistency. In many ways, these countries could not be more dissimilar. Yet despite varying economies, political structures, and security environments, almost every hypothesis that fails in one country, fails in the other. Included in this list would be the power hypotheses (threat, bipolarity, security guarantees, pressure), the norms hypothesis, and selected resource and institutional hypotheses (lack of scientific capability, democratic government, electoral politics, liberalizing economy, and prisoners' dilemma). The only exception is the "lack of money" hypothesis, which helps explain Egyptian outcomes between the 1967 and 1973, but does not account for Australia's nuclear restraint.

There is also a seemingly strong correspondence for the positive results, i.e., the hypotheses that are successful in accounting for nuclear outcomes. Unfortunately, this correspondence is not as strong as it may first appear. The organizational politics and regimes/international law hypotheses are very strong in the Australian case but much weaker in the Egyptian case. This weakness is manifest both in the explanatory range of the hypotheses and in the quality and quantity of evidence.

The one hypothesis that is strong in both cases is the denial hypothesis, and interestingly enough, the problem with this hypothesis plays out the same way for both countries. Simply put, denial played an important role in both countries, even though a) each possessed some latent nuclear

capability of its own, b) each had numerous opportunities to acquire imported technology, and c) in the period under review, a formal denial regime did not exist -- no nuclear supplier group, no NPT, no full-scope safeguards, etc.

**Outcomes Unexplained by the Hypotheses**

For both countries, there are outcomes or periods that are not fully explained by these hypotheses. For Australia, the explanations of post-1964 behavior are fairly compelling, but the only hypothesis that exhibits any strength during the earlier procurement period is the problematic denial hypothesis. The hypotheses generally exhibit less explanatory leverage in the Egyptian case but are particularly weak for the period from 1961 to 1967. Here again, the only hypothesis that is sustained is the denial hypothesis.

**Table 11.4 Explanations for Restraint Across Time**

| Country | Explanations | |
|---|---|---|
| **Australia** | Before 1964<br>Denial | After 1964<br>Organizational Politics<br>Regime/International Law |
| **Egypt** | Before 1967<br>Denial | After 1967<br>Lack of Money<br>Organizational Politics<br>Regime/International Law |

The comparative weakness of the Egyptian explanations and the periods that remain unaccounted for in both countries raise an obvious question: "what is missing?" What other factors might be at work and can these be introduced without additional sacrifices of parsimony? As it turns out, the Australian and Egyptian case narratives do suggest a possibility, and though confirmation of its importance will have to await testing against new cases.

**Proliferation's Political and Institutional Requirements**

This study has evaluated the fifteen most widely cited hypotheses on nuclear restraint, and yet it is clear that something is missing. One clue can be found in the resource hypotheses. These hypotheses attempt to explain nuclear restraint by pointing to the *material* requirements for a successful bomb program -- money, scientists, etc. Left out of these hypotheses, however, is attention to the *political and institutional* requirements for a successful bomb program.

Decisions about nuclear weapons are not like most political phenomena. Unlike health care policy or ethnic conflict or political elections, decisions about nuclear weapons involve an extremely small number of identifiable players who must be highly committed to the project. For a country starting from scratch, a bomb program can take a decade or more to yield results, even without the burdens imposed by export controls. It takes time to build reactors, to train personnel, to construct reprocessing or enrichment facilities, to produce fissile material in sufficient quantities, to work out the inevitable bugs and problems, to weaponize, and so on. These time costs combined with the

sheer size and managerial complexity of the program make nuclear weapons a politically costly affair. Some one or some organization must be willing to expend significant political resources to shepherd an enormous program though a ten year birthing process. It also requires a very high level of commitment from the other relevant actors and obliges that they work cooperatively for an extended period of time. Changes in the players or in other circumstances can quickly cripple a bomb program. It can be said, therefore, that the most important requirement of a bomb program is *political sustainability.*

The importance of political commitment and sustainability is reflected in the case histories of the countries that successfully sought the bomb. The US had to launch a Manhattan Project. Stalin demanded a Soviet bomb. Israel's Ben Gurion was obsessed with the "final weapon." Pakistan's Bhutto vowed that his citizens would eat grass if necessary to fund its nuclear program. In almost every case of proliferation, there is a highly motivated official or set of officials who make nuclear weapons a personal and political priority.

A successful bomb program also calls for integrated domestic institutions -- typically a chief executive, a nuclear establishment, and a military who support the project and are willing to work together. Militaries have often tried to acquire the makings of a bomb on their own, but do not have a track record of success. Science bureaucracies may have the ability but cannot marshal the necessary resources without political backing, and presidents are unlikely to pursue the bomb unless the scientific establishment certifies that the project is feasible. The most potent combination is a coalition that brings together all three.

Without the political prerequisites in place, developing a nuclear weapon is very difficult. Even when the necessary political coalition is constructed, events can quickly lead to a reversal. A change in power, the dismissal of a defense minister, a scandal involving the atomic agency, the immediate demands of a war against a neighbor -- these an other events can serve to weaken, break up or remove a pro-nuclear political alignment.

In order to assess whether a country has met or continues to meet the political and institutional requirements for building a bomb, a researcher must focus on a state's nuclear decision making process, and in particular on the decision actors and the conditions that produce decision opportunities. In the case of pre-1964 Australia, two of the three bomb constituencies were in place (the military and the nuclear bureaucracy). The most important player -- the prime minister -- was not an enthusiastic supporter, however. In pre-1967 Egypt, the strongest supporter of a bomb program was the head of the atomic agency, Salah Hedayat. Both Nasser and the military were pro-bomb, but for neither was it a top priority. Nasser was more concerned with the war in Yemen; Amer ( the head of the military) was more interested in rockets and jets, and both were pre-occupied with their growing rivalry. All parties favored the acquisition of nuclear weapons, but neither Nasser nor Amer gave it the sustained attention and priority required to make the bomb a reality. Instead, the program alternated between fits of activity and periods of delay and inaction.

An explanation based on political sustainability is attractive for three reasons. First, it helps explain unexplained outcomes in both cases. Second, it does so without adding to the total number of variables. If anything, this explanation is more parsimonious, because it can incorporate the organizational politics and international institution hypotheses (see Section II below) into a single integrated explanation. Third, it helps explain other anomalies. Consider, for example, the previously discussed problems with the denial hypothesis.

The puzzle with the denial hypothesis is that it appears to partially explain some outcomes, even when the potential proliferator possesses a latent nuclear capability.[1] From the perspective of the political sustainability, the denial of nuclear weapons but not nuclear technology is tantamount to removing procurement, but not indigenous development, from the list of options. Procurement represents a cheaper alternative, but its chief advantage is political, not financial.

Indigenous development requires a higher level of political commitment (intensity of preferences) over a longer period of time (agenda tenure) and often involves a larger decision group (i.e., more veto points). These are onerous requirements, particularly when compared with acquisition by procurement.

(It is also interesting to compare the political demands of indigenous development against those of renunciation. NPT ratification is certainly less demanding in terms of the intensity and duration of the preferences required, and unlike the indigenous development option, an unsigned treaty is always there to be signed if the conditions are favorable.)

In short, denial policies prevented procurement, the least politically demanding pro-nuclear option. The remaining options were indigenous development or renunciation. In general, it has been easier for anti-nuclear presidents to sign a treaty than for pro-nuclear presidents to build the bomb. Understood from this perspective, the denial's effect is not a matter of resources, but instead, an issue of political sustainability.

**Summary**

This review of the findings for Australia and Egypt highlights five key points. First, the negative findings (the hypotheses that failed) are very strong and comparable across the two cases. Second, there is a surprising level of similarity regarding in positive findings, though the explanations are generally weaker for Cairo than they are for Canberra. Third, at the level of explanatory *categories*, there is also strong consistency: power and norms hypotheses generally fail, while the successful hypotheses are drawn from the resource and institutional categories. Fourth, the hypotheses by themselves fail to provide a full account of outcomes for either country, i.e., some behaviors go unexplained. Fifth and finally, a focus on the political and institutional requirements of nuclear weapons helps account for unexplained behaviors and helps resolve other explanatory puzzles.

# II. Nuclear Decision-Making and International Politics

In attempt to understand Australian and Egyptian nuclear behavior, this study has examined everything from the Australia's second preference voting scheme to the Egypt's university system. Alliances, economic policy, domestic politics, and regional relations have all been part of this

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[1] The denial hypothesis is even more curious given a) the widely held view that dedicated proliferator can always beat a control regime and b) the evidence that shows that both Pakistan, Iraq were able to pursue nuclear programs even after the development of Nuclear Suppliers Group and efforts aimed at coordinating export controls. In any case, the denial hypothesis has been traditionally used to account for why countries *without* indigenous capabilities have been unable to import *dual use* technologies.

inquiry. It should be no surprise, therefore, that this study has been able to generate a broad range of findings that extend beyond the puzzle of limited proliferation. In this section, a review of these findings will be limited to those having to do with nuclear decision making and selected issues in international politics.

The results include a number of unexpected findings. Some are found in the study's descriptive findings, which for the first time document each country's nuclear ambitions and eventual decision to forgo the bomb. Australia's attempts to acquire nuclear weapons were more numerous and serious than anyone imagined. Egypt, contrary to many predictions, renounced the bomb even as other countries in the region moved forward with their nuclear programs. Both countries followed a path from nuclear aspirant to global nonproliferation leader. This and other research on Italy and Indonesia leads this researcher to conclude that even more surprises await those who investigate the undocumented cases.

A second surprise concerns the character of nuclear decision making. The common way of thinking about nuclear decision making focuses on the decision. "The" decision is the point at which a country decides it wants the bomb. Once "the" decision is made, it is expected that a state will develop an indigenous capability.[2] A survey of nuclear decision making in Australia and Egypt suggests that nuclear proliferation does not turn on "the" decision. Instead, there are many decisions. In Australia, the AAEC regularly proposed the acquisition of a weapons capability until 1973. Sometimes the proposals were rejected; other times they were accepted, only to be reversed later. Then, the process would begin again. Up and down, back and forth, the relevant players would struggle to get a proposal approved or defeated. The result looked less like the neat image evoked by "the" decision and more like a rugby scrum.

These dynamics are not inconsistent with decision processes observed in some nuclear weapons states. In both India and France, for example, one sees this same "back and forth" dynamic in which a decision to seek nuclear weapons is repeatedly considered, and sometimes endorsed, only to be redecided after a setback or change in leadership.[3] As long as there is an enduring advocate for nuclear weapons -- in these two cases, the nuclear bureaucracy -- the question of nuclear weapons continues to return to the agenda until such time as a leader is willing to "carry the ball over the line" or until the government commits for formal renunciation.

A third set of implications has to do with the causes of proliferation. This study has concerned itself primary with the causes of *non*-proliferation, but in doing so, it has looked at pro-nuclear decisions as well. These record suggests that increases in threat or declines in allied commitments can stimulate pro-nuclear behavior. It also points to two factors that are not frequently discussed: organizational politics and fraternization with nuclear weapons states. Organizational politics has

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[2] Less traditional methods of acquisition (e.g., purchasing or procuring weapons from another country, collaborative development with other have-nots, theft) have been largely discounted. I had so completely internalized these views that I downplayed early evidence that Egypt had tried to buy a nuclear weapon. After uncovering Australia's attempts to buy the bomb and documents claiming that Indonesia may have done the same, I realized I had been hasty in setting aside evidence of Egyptian procurement efforts.

[3] This dynamic occurs probably with less frequency in authoritarian states with committed leaders who enjoy long tenures, e.g., a Joseph Stalin or Saddam Hussein.

already been described as a factor that can generate nonproliferation outcomes, e.g., a treasury opposing weapons-related reactors or a ministry of electricity pushing for the NPT. Organizational politics can also be a powerful force that favors pro-nuclear outcomes, as, for example, when an air force or nuclear agency is able to organize support for weapons acquisition.

A fraternization or contagion effect can also stimulate an acquisition impulse. Exposure to a states with nuclear weapons provides a country with reasons for wanting their own nuclear weapons. Though most writing on proliferation emphasizes the way in which superpowers dampen the demand for nuclear weapons through security guarantees, the record shows that the opposite can be also be true. Having allies that have or want nuclear weapons can increase, not displace, a state's desire to acquire its own weapons. Australia was encouraged by the American and British example, and Egypt's collaborations with Iraq may have fueled a similar interest on the part of the Egyptian military. From this vantage point, alliances and other points of contact are branches of transmission, paths of through which ideas and interests spread.

More generally, the study's results speak to a number of issues involving international law and international organizations. One of the most important questions is whether and how international law constrains state behavior. The results obtained here indicate that international law can influence outcomes irrespective of norms, respect for international law, two-level games, or the resolution of prisoners' dilemmas. Treaties can accomplish this effect by altering a country's process of internal deliberation. Treaties act as agenda setters that can influence the composition of the decision group, delimit the set of alternatives being considered, and define the time frame for consideration.[4]

The establishment of the NPT, for example, gave decision actors a reason and a deadline for considering their nuclear policy. The treaty's provisions also shaped the composition of the decision group.[5] It encouraged a decision group that extended beyond the big three (the president, the military, and nuclear weapons scientists) to include the foreign office and treasury officials.

This findings also have implications for a related debate on treaty compliance.[6] Why do the states that abide by international treaties keep their commitments? The data reviewed here suggest that

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4 The political science literature on agenda setting is surprisingly thin. The major empirical works on include John Kingdon, *Agendas Alternatives*, and Public Policies, (Boston: Little Brown, 1984); Roger W. Cobb and C. D. Elder, *Participation in American Politics: The Dynamics of Agenda Building*, (Baltimore: Johns Hopkins University Press, 1983); and Edward G. Carmines and James A. Stimson, *Issue Evolution Race and the Transformation of American Politics*, (Princeton: Princeton University Press, 1989), pp. 3-26. Examples of the media-oriented studies of agenda setting include W. Wanta and J. Foote, "The President New Media Relationship - A Time Series Analysis of Agenda Setting," *Journal of Broadcasting and Electronic Media*, Vol. 38, No. 4 (1994), pp. 437-448; Lydia Andrade and Garry Young, "Presidential Agenda Setting: Influences on the Emphasis of Foreign Policy," *Political Research Quarterly*, Vol. 49, No. 3 (Sept., 1996).

5 On the importance of influencing the composition of the decision group, see Schattschneider, who emphasized what he called the "scope" of political conflict. See E. E. Schattschneider, *The Semi-Sovereign People: A Realists View of Democracy in America*, (New York: Holt, Reinhart, and Winston, 1960).

6 On treaty compliance, see, for example, Abraham Chayes and Antonia Chayes, "On Compliance," *International Organization*, Vol. 47, No. 2 (Spring, 1993), pp. 175-205; R. B. Mitchell, Regime

joining a treaty redefines the status quo, and thus raises the bar for those who want policy to move in an opposite direction.[7] Treaties can also induce compliance by influencing the character future deliberations, e.g., by defining who participates in the decision to abrogate the treaty. Finally, a treaty can alter the character of post-treaty political coalitions. In the Australia, the common nuclear agenda shared by the Ministry of Defense and the AAEC fell apart after NPT ratification. Following ratification, the military saw no reason to support the AAEC's programs, and as a result, its programs were then evaluated solely on the basis of economic viability, not national security. The combination of fewer political allies and heightened scrutiny proved too much. Outside of mining and materials, the Australian nuclear program was essentially halted. In short, the treaty helped break-up the pro-nuclear alliance, and in doing so, severely weakened one of the advocates of nuclear acquisition. Both effects increased the likelihood of compliance.

Perhaps the most unexpected result was the sometimes perverse effect of nonproliferation treaties, which, on occasion, spurred a proliferation decision. Nuclear treaties have been criticized for being weak, irrelevant, misguided, or even dangerous, but rarely has it been suggested that such treaties might actually *induce* proliferation decisions.[8] These effects should not be exaggerated, however. For most states, for most of the time, treaties appear to act as a major constraint. In most circumstances, treaties offer a powerful policy tool for promoting nonproliferation. The evidence of perverse effects does suggest that two areas for caution, however.

In the first situation, a majority of countries already adhere to nonproliferation proscriptions and the target is limited to a handful of states. This was precisely the background for the CTBT and FMCT treaties. One of the main rationales for these treaties -- but certainly not the only one-- was that India, Pakistan, and Israel were not members of the NPT, but could be brought into the nonproliferation regime through the CTBT and FMCT -- the equivalent of NPT substitutes. In essence, this meant using a universal treaty to snare three states. The problem with using global treaties to capture a very limited set of countries is that treaties are blunt and highly inflexible instruments. It is difficult to forecast the state of domestic politics in the targeted country at the time the treaty will come up for consideration. Indeed, in the Indian case, there is some evidence to suggest that the timing of the CTBT actually worked in favor of nuclear advocates.[9] When the target list of countries is small, more flexible strategies may be useful. In the case of Argentina and Brazil, for example, it was possible to work out an agreement without recourse to the NPT or some other global treaty.[10] The Agreed Framework between North Korea, the United States, Japan, and

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Design Matters - International Oil Pollution and Treaty Compliance, *International Organization*, Vol. 48, No. 3 (Summer, 1994), pp. 425-458.

7 George W. Rathjens, Abram Chayes, and J. P. Ruina. *Nuclear Arms Control Agreements: Process and Impact.* (Washington, D. C.: Carnegie Endowment for International Peace, 1974.)

8 For one of those rare warnings, see Fred Charles Ikle, "Nth Countries and Disarmament," *Bulletin of the Atomic Scientists*, December, 1960.

9 See, for example, Dinshaw Mistry, "Domestic-International Linkages: India and the Comprehensive Test Ban Treaty," *Nonproliferation Review,* Fall 1998, pp. 25-38.

10 On Argentina and Brazil, , see Michael Barletta, "Nuclear Security and Diversionary Peace: Nuclear Confidence-Building in Argentina and Brazil," *National Security Studies Quarterly*, Vol. 5, No. 3 (Summer 1999), pp. 19-38; John. R. Redick, "Factors in the Decisions by Argentina and

South Korea represents another case that did not lend itself to a global or generic solution but was instead addressed with a policy that reflected the very particular circumstances on the ground.

In the second situation, most states are not already members of a relevant regime. Imagine, for example, a treaty that would for the first time ban the use of robots in war. In this circumstance, one could expect that a treaty will have nonproliferation effects on most of the states but also that a small number of states will actually feel compelled to pursue the proscribed activity. If treaty advocates are aware that this dynamic is likely, they can use the treaty process as a proliferation diagnostic and thereby identify the likely problem states, and perhaps even fashion policy responses that counter these states' proliferation impulses before they progress too far.

A related but separate set of implications has to do with the intersection between domestic and international politics. One of the enduring issues in international relations has been the relationship between these two modes of politics. Some theorists maintain that international politics imposes itself on domestic politics; others insist that domestic politics provides the taproot of international behavior. Still another alternative is the now popular notion that international politics can be thought of as the product of "bargaining." Putnam's two level game, for example, locates policy actors in the middle, mediating between domestic constituencies and foreign negotiators. The politics observed in this study often took forms that were very distinct from the top-down, bottom-up, or bargaining models of international politics.

The effect of regimes, described above, provides one example. Rather than a top-down or bottom-up dynamic, what one observes is something of an interaction effect. The regime originates from the outside, from the realm of international politics. It is not, however, imposed on the state. The state has the option of joining or not joining. What the regime does do, is frame the issue and function as an agenda setter. If the state joins the regime, it constrains the state's behavior, not through force, but by changing the internal politics of the participating state. It is a process that might be called interactive co-optation.

The emergence of cross-national organizational alliances provides another example of a politics that does not neatly fit the traditional or the bargaining models. In both Australia and Egypt, an organization's alliances with its counterpart in another country were often stronger than the organization's relations with competing organizations in its own government. So, for example, the Australian air force's relations with the RAF and the Egyptian army's relationship with the Iraqi army was seemingly closer than the relationship either military had with its civilian leadership. Contrary to the two level game metaphor, policy actor's were not caught in the middle between domestic constituencies and foreign demands. They *sought out* foreign allies based on *organizational affiliation* and interest for help in their battles with domestic opponents. Again, the chief feature of this politics is an interaction between the domestic and the international.

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Brazil to Accept the Nonproliferation Regime," in *Pulling Back from the Nuclear Brink: Reducing and Countering Nuclear Threats*, Barry R Schneider and William Dowdy, eds., (London: Frank Cass, 1998), pp. 67-79.

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This study has generated findings on variety of topics, from nuclear decision making to international institutions to the relationship between domestic and international politics. The obvious question, however, is whether these findings can be applied to other countries and other settings. This issue -- the issue of generalizability -- is the focus of the next section.

# III. Can One Generalize from the Results?

Implicit in the presentation of these results is an assumption that the findings of this study can be applied to other countries and other contexts. But is this really true? How can conclusions derived from analyzing the behavior of only two countries be used for forecasting or assessing the behavior of other countries? Answering that question requires that one first evaluate the sample used in this study and the compare it to the sample of cases currently used as the basis for generalizations about nuclear behavior. The results of that exercise, described below, suggest that one should be cautious about generalizing from these results. They also indicate that it would equally unwise to ignore the potential applicability of these results to a broader set of cases.

## A. The Sample

Though the study involves only two countries, it includes over 140 individual observations. Methodologists would surely point out that more observations for a single case only allows one to have a higher degree of confidence about *that* case and says nothing about its applicability to other cases.

The real issue, however, is the *representativeness* of the sample of observations. A single case would be sufficient if one could somehow know in advance that the observations contained within the case were perfectly representative of the total population. The traditional concern about a small number of cases is that the set of observations is not representative, that there is something about the case that selects for some outcomes and not others.

Now consider the set of observations used in this study. First, the sample includes a wide range of phenomena and outcomes, from attempted acquisition to full renunciation. Unlike most studies of nuclear decision making, it includes attempts to buy nuclear weapons, programs to build them, and acquisition through bilateral agreement. Several forms of nuclear restraint are also analyzed, from the simple rejection of acquisition proposals to formal renunciation via the NPT. The sheer variety and number of behaviors considered in these two countries increases the chances that the sample will capture dynamics found in other countries.

Second, the two countries considered in this study are representative of the majority population, i.e., countries that started down the path to nuclear weapons but later abandoned that pursuit. Of the roughly thirty countries -- not including Belarus, Ukraine, and Kazakhstan -- that considered the acquisition of nuclear weapons, nine became nuclear weapons states, and twenty-one did not. This study examines two cases from the larger group -- a population that is likely to be the most relevant for understanding nuclear restraint.

Third, the two countries selected for study represent very, very different kinds of states, and thus are less likely to exhibit the same kinds of selection effects. One is an advanced, industrialized democracy with European origins situated in Asia. The other is an Arab developing country with an authoritarian government located in the Middle East.

As against this sample, consider the sample that forms the basis for current generalizations about nuclear behavior. The standard "threats and capabilities" model of nuclear decision making is based on a sample that consists of single observation case studies of the nine states that acquired nuclear weapons. (This pool of cases is actually smaller, since very few books have been written on Pakistan, China, Israel, or South Africa.) Moreover, most of what has been written has focused exclusively on "the" decision to go nuclear.

## B. Preliminary Evidence from Other Countries

The first reason to not discount the potential applicability of these results is that the sample used includes a broad survey of nuclear behavior from the most relevant population. A second and separate reason is that preliminary data from other cases appears to support many of the findings documented here. Several examples illustrate the point. This study finds that neither security guarantees nor pressure account for the nuclear restraint observed in these cases. It uncovers evidence that regimes have a major effect on state behavior, and it also finds that organizational politics play a prominent role in both acquisition and renunciation. Each of these hypotheses finds support in other nuclear and non-nuclear countries.

As regards security guarantees, for example, it appears that many of the arguments involving Australia also apply to other countries. Like Australia, a number of countries pursued nuclear weapons *despite* having a nuclear security guarantee from a superpower. France and the UK became nuclear weapons states though they enjoyed the protection provided by the American umbrella. Others including Italy, West Germany, Norway, South Korea, Taiwan, also sought a weapons option even though they were part of the American alliance.[11]

Similar comparisons can be made between Australia and other countries regarding on the pressure hypothesis. Neither the Eisenhower nor the Nixon administrations had any intention of pressuring its allies over the nuclear issue, and indeed, many of the near-nuclear countries -- Italy, Germany,

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11 On Germany, see Catherine Kelleher, *Germany and the Politics of Nuclear Weapons*, (New York: Columbia University Press), 1975 and Jefferey Boutwell, *The German Nuclear Dilemma*, (Ithaca: Cornell University Press), 1990. In the cases of Taiwan and South Korea, pro-acquisition behaviors pre-dated the alliance problems that later developed in the 1970s. One of the most interesting cases is Japan, but too little is known about its nuclear history to render a judgment. On the South Korean and Taiwanese nuclear programs see Michael J. Mazarr, *North Korea and the Bomb*, (London: Macmillan, 1995), pp. 25-28; Don Oberdorfer, *The Two Koreas*, (New York: Basic Books, 1997), pp. 68-74; Mitchell Reiss, *Without the Bomb: The Politics of Nuclear Nonproliferation*, (New York: Columbia University Press, 1988), pp. 78-108; Ta-you Wu, "A Footnote to the History of Our Country's 'Nuclear Energy' Policies," *Biographical Literature*, May, 1988, Translation from Chinese by ISIS; http://www.isis-online.org/publications/ index.html; Joseph A. Yager, "Northeast Asia," *Nonproliferation and U.S. Foreign Policy*, Joseph A. Yager, ed., (Washington: Brookings Institution, 1980), pp. 47-81; Frankel, "The Brooding Shadow: Systemic Incentives and Nuclear Weapons Proliferation," pp. 48-51.

Switzerland, Japan, South Korea, Belgium, Netherlands, Argentina, Brazil -- were late in joining the NPT. Had American pressure been a factor, one would have expected a more timely accession to the treaty. On the Soviet side, it appears that both Yugoslavia and Romania took steps towards a nuclear capability, despite their membership in the Warsaw Pact and irrespective of the coercive power of Moscow.

Another finding of this study is that regimes can have a powerful effect on the internal politics of nuclear decision making and, in particular, that once countries commit to the treaty, their nuclear options are effectively constrained. Of course, treaty commitments will not prevent every country seeking the bomb, as Iraq and North Korea demonstrate. What is remarkable, however, is not the existence of exceptions but rather the emergence of a general pattern. Like Australia and Egypt, a number of countries were reluctant to forgo their nuclear option. They resisted joining the NPT and demanded that the treaty be reconsidered after twenty-five years. After finally joining the treaty, however, the available evidence indicates that nuclear weapons were no longer a live option. Indeed, by the time of the 1995 renewal conference, these skeptics who had wanted to delimit the treaty all favored its indefinite extension. The effect of the regime also finds corroboration in the general pattern of proliferation. Prior to the treaty, the rate of proliferation steadily increased and peaked in the 1960s. After the treaty, the rate of new proliferators per decade has continued to decline.

Organizational politics also appears to have been an important feature of several countries' nuclear histories. Recent research on India, for example, documents, that the traditional "India got the bomb to counter China" explanation is difficult to sustain. This new scholarship emphasizes the influence of India's science bureaucracy as well as changes in leadership and domestic politics.[12] Studies of the South African bomb program have also described the bureaucratic politics origins of the peaceful nuclear explosions program -- the precursor to South Africa's bomb effort. The nuclear histories of two very different countries -- Iraq and Italy -- are particularly suggestive.

**Iraq**

The evidence available for the Iraqi case is limited but startling. According to Khadhir Hamza, a former Iraqi nuclear official who was present at the creation of the Iraqi program, bureaucratic motivations played a decisive role in the establishment of an Iraq's nuclear weapons effort. Prior to the bomb program, Iraqi nuclear officials worried about the future of their agency.

> Budgets were flat, even declining. Nothing new was going on. The leadership, the code word for Saddam, didn't seem to have much interest in what we were doing.[13]

Later, following the publication of a book on Israel's nuclear program, Iraqi nuclear officials saw an opportunity to save their program. According to Hamza, he met with two senior Iraqi officials who had a plan for proposing a nuclear weapons program. Said one official...

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12 George Perkovich, *India's Nuclear Bomb*, (Berkeley: University of California Press, 1999).

13 Khadhir Hamza, *Saddams's Bombmaker*, (New York: Scribner, 2000), p. 62

> "'...I'm confident that if we made a proposal to match the Israeli program, we would have a very receptive ears from the highest authority.'
>
> It would bail out our floundering program, he went on, renew Saddam's interest in our work.
>
> ..."We've reduced our staff and equipment purchases because nobody is interested in atomic energy up there.' He meant the presidential palace. 'If this continues, we'll be effectively dead, scientifically speaking. The military angle is all they are interested in. If we give them something like this, everything will change overnight.'
>
> ...'If we had a real live nuclear program, even the peaceful part of the program would benefit.' ...[F]abulous amounts of money... would flow to the AE for nuclear power, nuclear medicine, nuclear research if we got a bomb program going. Anything was possible with Saddam's backing. But the only thing that would get his attention was a bomb."[14]

Based on this one account, it appears that Saddam did not order his nuclear program to produce a bomb but instead responded to a proposal by the atomic energy agency -- a proposal that was seen by its authors as a way to expand the program's budget and standing.

**Italy**

A very different, but equally interesting, example of the role of organizational politics can be found in Italy. The Italian military developed an interest in nuclear weapons soon after the war.[15] By the late 1950s, this interest in nuclear weapons was sufficiently intense that the Italian defense minister signed an agreement with his German and French counterparts for the co-production of nuclear weapons during the so-called FIG talks (France-Italy-Germany), though the agreement later collapsed when de Gaulle took power and opted for a purely national program.[16] Pro-nuclear sentiment could also be found in the foreign ministry, where influential officials argued that Italy was as much entitled to a nuclear option as France or the UK. The ever changing civilian government did not appear to have strong views on the subject, but they did not prevent or reject the results of the FIG talks or the purchase of a nuclear weapons-capable ship, the Garabaldi.

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14 Khadhir Hamza, *Saddams's Bombmaker,* p. 65

15 It was thought that tactical nuclear weapons could play a useful role in repelling an invasion though the otherwise vulnerable Po Valley, and the navy was particularly interested in nuclear propulsion and nuclear armed ships.

16 Cesare Merlini, "A Concise History of Nuclear Italy," *The International Spectator*, (Journal of the Istituto Affari Internazionali, Rome) Vol 23, No. 3 (July-September), 1988; Leopoldo Nuti, "Italy and the Nuclear Choices of the Atlantic Alliance, 1955-63," in *Securing Peace in Europe, 1945-62*, Edited by Beatrice Heuser and Robert O'Neill, (London: Macmillan Press), 1992; Steven J. Baker, *Italy and the Nuclear Option*, (Santa Monica: California Arms Control and Foreign Policy Seminar, 1974.

One constituency, however, remained fiercely anti-nuclear: the civilian atomic energy agency. The civilian agency's antipathy towards a nuclear weapons program reflected several factors. First, following defeat in WWII, the Italian military was widely perceived as a discredited institution, and a large fraction of civil society -- including the nuclear scientists -- remained suspicious of the military. Of equal importance was the fact that from a bureaucratic standpoint, the civilian agency had no need for a bomb program. Unlike their counterparts in Iraq, the Italian nuclear scientists worked in a large program that was expected to grow larger without reliance on the military. Also important was the fact that interaction between the military and the highly skilled civilian scientists was virtually non-existent, i.e., there was an extremely low level of institutional integration.

The result was nothing short of amazing: even though civilian scientists designed and built their own experimental reactor using 90% enriched uranium -- what one scientist described as the functional equivalent of a nuclear weapon -- the military remained unaware of this feat and was never able to harness the civilian nuclear bureaucracy for military purposes. In the absence of an anti-nuclear civilian agency, or alternatively, in the absence of the institutional firewalls that separated these two organizations, Italy could have easily become a nuclear weapons state.

All of these examples are simply that -- examples. They do not constitute rigorous tests of the hypotheses against new cases. What they offer, however, is a certain "face" plausibility. They raise the possibility that the findings from this study may be usefully applied to other cases.

## C. Existing Problems with Current Generalizations Regarding Nuclear Behavior

Whether the results of this study should be treated as generalizable depends, in part, on the strength of the generalizations that already exist. As noted before, most scholars and policy makers have had few qualms about developing generalizations about nuclear decision making based on a small and skewed sample of cases.

If the extant generalizations were especially strong, then one would want to be cautious or even skeptical about extending results that run against these generalizations. Yet the fact of the matter is that the traditional "threat and capabilities" model has performed quite poorly. The puzzle of limited proliferation is a puzzle precisely because of the disjunction between the expectations derived from widely accepted generalizations about nuclear behavior and the empirical record. In short, something is amiss with our current conceptualization of nuclear behavior, and in this context, scholars should be more open to the potential for alternative generalizations.

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None of this is intended to suggest that the results obtained here can be applied to most cases of nuclear decision making. Humility and caution should guide the use of these findings. It is also clear, however, that humility and caution should temper the use of conventional generalizations. Indeed, the most probable future outcome is that will scholars continue to over-generalize using the conventional model.

# IV. Rethinking the Concept of Proliferation

This inquiry began with the puzzle of limited proliferation. Why are there so few nuclear weapons states? What factors lead countries to renounce the most powerful weapon in the history of human warfare? The study offers answers big and small.

The most general finding is a simple one: building or not building the bomb is a matter of politics, a contest over choices by interested players. Getting or giving up the bomb is not determined by threats or technology or money. Rather, it is determined by an identifiably small group of organizations and individuals working within a particular decision process. Domestic and international institutional arrangements structure the decision politics, as does the propitious confluence of events and advocates. Scholars and policy makers have consistently overestimated the rate of proliferation, in part, because they have overemphasized threats and technology and underestimated the role of politics and institutions.

Over time, the cost of a nuclear weapon has dropped, and the basic technology has become more widespread, but the political and institutional requirements for acquisition have remained onerous and even increased. Nuclear weapons require a high level of institutional cooperation and a multi-year commitment. These "natural" barriers have not changed over time, but what did change was the construction of an additional obstacle -- the NPT -- which served to reinforce domestic political barriers.

In some states, the NPT commitment had the dramatic effect of closing down the nuclear option. For others it has had the modest but salutary effect of reinforcing a status quo presumption in favor of nonproliferation. And in a few cases, the NPT appears to have stimulated pro-nuclear behaviors. In general, however, the combination of natural and artificially constructed barriers has been enough to slow and even halt the spread of nuclear weapons. This is a stunning result, arguably the most unexpected outcome of the 20th century.

This study suggests that politics and institutions provide the answer to the puzzle of limited proliferation, but confidence in that explanation can only come with future research on additional cases. A broad-based research program would have at least three parts. First, there is a desperate need for basic descriptive studies of the non-nuclear weapons of states that considered acquisition but reversed course. Australia and Egypt add to our knowledge of this group of states, but the body of available research remains overwhelmingly skewed towards nuclear weapons states. The absence of book length-length studies of nuclear decision making on Iran, South Korea, Taiwan, and Japan is particularly noteworthy. On a related note, scholars need to revisit some of the established cases and determine whether reinterpretation is warranted. New scholarship has enabled a reconsideration of the Indian case, and a closer examination of other cases might yield similar results.[17]

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[17] Israel would seem to constitute a particularly promising possibility. The standard view of the Israeli bomb is that it is one of the purer cases of the threat model. The research conducted for this study, together with other Israeli sources, suggests that view may be misleading. The correlation between threat and nuclear decision is problematic at best. Israel weaponized sometime before the '67 War, when by all accounts -- including the Israeli, Egyptian, American, and Soviet militaries --

Second, there needs to be a more systematic treatment of the data that already exists. The US, UK, Soviet, and Indian nuclear programs have been the subject of intense scholarship of exceptional quality. The task that remains is taking those narrative histories and parsing them into individual decision sequences and more rigorously and systematically analyzing causes and effects. Indeed, one goal should be to collect and combine data on nuclear decisions and outcomes from nuclear weapons states and non-nuclear countries into a single database. The result, a world nuclear decisions database, would enable scholars to better test their hypotheses and compare observations across a variety of dimensions.

A third piece of the research program should focus on role of agenda setting, both for nuclear weapons and for international politics more generally. The aim here would be to establish a stronger empirical base for describing which international issues gain entree on to a state's decision agenda and under what circumstances. This research would provide a larger context within which one could judge the influence of agenda setting on nuclear decision making.

New research and the better use of existing research will enable scholars to move beyond the provisional findings and theorizing of this study. In the process, scholars may learn something new about something important, namely, how states respond to fundamental questions of power and survival, and how their ability to create new politics and new institutions can redefine those possibilities -- even in the nuclear age.

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Israel enjoyed a commanding military advantage. It pushed ahead with its program after 1967, despite the fact that it came out of that war even stronger in relative terms. Today, though Israel is arguably stronger than it has ever been, there is a strong consensus favoring nuclear weapons. This stands in sharp contrast to the skepticism and divisions associated with the program in its formative years. An alternative explanation would emphasize the particular role and psychology of Ben Gurion, the nature of Israel's internal politics, and growing organizational influence of the military and nuclear bureaucracy.