



ACQUISITION REFORM — LEAN 94-03

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Many in and out of government believe that the weapons acquisition process is in need of reform. They argue that our weapons cost too much, frequently miss their promised performance targets, and rarely proceed according to their intended schedules. A long series of official studies of those failings have produced literally hundreds of proposals for reform, many of which have been implemented. But the belief remains that the acquisition process is in need of further reform. Here we review the major acquisition studies of the past and the underlying causes of the continual search for, and frustration of, reform. This review is a preliminary step toward policy recommendations for acquisition reform, but no such recommendations are offered here.

Six reports command our attention. They are the ones commissioned directly by the President or the Congress with the goal of system-wide reform. Dozens of others have been produced, but most of these are quite limited in scope, are technically focused, or are confined to a single system or service.

The six reports are the first and second Commissions on the Organization of the Executive Branch of the Government (First and Second Hoover Commission), the President's Blue Ribbon Defense Panel (Fitzhugh Commission), the Commission on Government Procurement, the President's Private Sector Survey on Cost Control (Grace Commission), and the President's Blue Ribbon Commission on Defense Management (Packard Commission).¹

Complaints about the government acquisition system fall into a few general categories. One, there have long been complaints about cost. The government is generally seen as paying too much either due to its own ineptitude or exploitative contractors. Two, regardless of whether costs are high or low, there are complaints about the quality of the weapons procured by the government. The traditional charge is

¹ These six reports are reproduced in facsimile form in the House of Representatives' Armed Services Committee *Defense Acquisition: Major U.S. Commission Reports (1949-1988)* (Washington, DC: Government Printing Office, 1988).

that contractors are selling substandard items to the government. Recently, complaints about quality have focused on problems with high-technology weapons systems, as critics have raised questions about reliability, failure to meet established performance goals, and a range of “mission definitions” questions. Three, since the 1940s there have been concerns about the length of time it take the government to procure items. Complaints range from the effects of overly-complex regulations, which make buying even low cost items a drawn-out and expensive process, to the decade-long design cycles of military aircraft. In sum, whenever the government buys anything, critics claim it pays too much and is likely to be stuck with shoddy goods, which it also never gets on time.

The Reports

The federal procurement system is very well studied. Most of the reviews have focused on weapons acquisition, and virtually all major studies have at least touched on defense-related issues. Many of these studies have been limited to single systems or are on a single, often quite technical, aspect of the procurement system. The sheer volume of these reports makes it impractical to examine each of them, despite the innovative approaches some represent. Here, with but brief exception, we focus on the most broadly-oriented reports, each of which was created with a Presidential or Congressional mandate. These reports illustrate both the change and the significant continuity in thinking about acquisition reform in the years since the Second World War.

The reports begin with the Commission on the Organization of the Executive Branch of the Government, popularly known and hereafter cited as the first Hoover Commission, which reported in 1949.² The first Hoover Commission spent relatively little time examining defense procurement, being more interested in addressing the role of

² The Commission on the Organization of the Executive Branch of the Government, The National Security Organization (Washington, DC: Government Printing Office, 1949).

the Secretary of Defense and general questions of what the overarching structure of the American military should be. The second Hoover Commission, which shared the same formal sponsorship and direction, reopened in 1955.³ It examined the defense procurement process in greater depth, although it was primarily concerned with achieving efficiencies in the purchase of commodity goods, such as soap or mops, rather than reviewing how advanced weapons systems were produced. The second Hoover Commission is notable in conceiving the administration of the Defense Department as if it were a large corporation rather than a military organization. This mode of thinking — adopting commercial practices for the government — has been a nearly pervasive feature of subsequent acquisition reform plans.

There were no major reports on acquisition reform for fifteen years after the second Hoover Commission. The primary causes of this dearth of critical thought seems to have been the presence of Robert McNamara as Secretary of Defense. McNamara took the approach of a manager of a large American business, as he once was at Ford, and attempted to apply it to the Defense Department. In essence, the critics were in control. Relevant to acquisition, Total Package Procurement (TPP) was the most well-known of the McNamara innovations. TPP involved offering weapon contractors the entire procurement early in the development cycle for a fixed price, the total package. This system quickly became untenable as a number of major programs exceeded projected budgets, threatening their prime contractors with bankruptcy and the military with the total loss of the expected weapons. Secretary McNamara also launched a concerted campaign to reduce “unnecessary” duplication in acquisition, from belt buckles to fighter planes. The most well known effort along these lines became known as the TFX controversy, a project to acquire the F-111 for the Air Force and the Navy. It

³ The Commission on the Organization of the Executive Branch of the Government, Business Organization of the Department of Defense (Washington, DC: Government Printing Office, 1955).

was in the resulting environment of civil-military, contractor-government conflict that the next round of acquisition reform reports began to appear.⁴

In 1970 the Blue Ribbon Defense Panel, known as the Fitzhugh Commission, reported.⁵ The Fitzhugh Commission was the first detailed examination of the weapons development process by an independent, government-sponsored panel. As such, it offered a number of recommendations for changing the development strategies the services followed. In contrast to the two Hoover Commissions, the Fitzhugh Commission spent little time on commodity items or joint purchasing, instead focusing firmly on weapons systems. The Fitzhugh Commission was also the first major report to address the political environment of defense acquisition, if only in a limited way with a warning that Congress was developing a tendency to micromanage the Defense Department.

The Commission on Government Procurement began its work at about the same time as the Fitzhugh Commission, but covered a much broader agenda and did not report until 1972, nearly two years after the Fitzhugh.⁶ Like Fitzhugh, the Commission on Government Procurement recommended a number of management improvements, contracting regulations changes, and even touched on the role of Congress. In contrast to the Fitzhugh Commission, however, it urged Congress to become better informed on defense matters. The Government Procurement Commission saw Congress' role as a check on the acquisition process, integrating cost, budget, and strategic considerations. The differences between the Fitzhugh Commission and the Commission on Government Procurement can be seen as stemming from the emerging conflict between the Nixon administration and the Democrat-controlled legislative branch. The Fitzhugh

⁴ For critical examinations of McNamara's reforms, see William Lucas and Raymond Dawson, The Organizational Politics of Defense (Pittsburgh, PA: International Studies Association, 1974) and James Roherty, "The Office of the Secretary of Defense: The Laird and McNamara Styles," in John Lovell and Phillip Kronenberg, eds., New Military Relations (New Brunswick, NJ: Transaction, 1974).

⁵ Blue Ribbon Defense Panel, Report to the President and the Secretary of Defense (Washington, DC: Government Printing Office, 1970).

⁶ Commission on Government Procurement, Report of the Commission on Government Procurement (Washington, DC: Government Printing Office, 1972).

Commission was formed by the president, while the Government Procurement Commission was created by an Act of Congress. The conclusions of the two commissions on the role of Congress in the acquisition process reflect their origins.

With the end of the Vietnam War, public attention drifted away from defense-related issues, including acquisition reform. It was not until the Reagan Administration began a significant military buildup that acquisition reform once again appeared on the national agenda. As in the Nixon administration, the reform discussion involved political jockeying between the Executive branch and the Congress. Democrats in Congress tended to use “defense reform” as a politically acceptable way for advocating lower defense spending, while Republicans tended to use reform proposals as a way both to protect the Reagan buildup from the typical accusations of “waste, fraud, and abuse” and to protect themselves as individuals from constituent charges of being overly soft on defense.

The first of the studies during the Reagan administration was the President’s Private Sector Survey on Cost Control, more popularly known as the Grace Commission.⁷ The Grace Commission’s report in 1983 covered the entire government, rather than just the Defense Department, and concentrated on management reforms to avoid wasteful public spending. However, the Defense section of the report went far beyond advocating changes in contracting procedures to examine the regulatory environment in which the procurement process took place. Although it was not the first to do so, the Grace Commission strongly criticized the excessively complex set of regulations which had sprung up around the acquisition process. The Commission also took a new tack by examining the cost impact of program changes in weapons acquisition. In particular, the Grace Commission criticized the Congress for “micromanaging” weapons acquisitions programs. It urged the Congress be made more aware of the cost impact of such interference.

⁷ President’s Private Sector Survey on Cost Control, Task Force Report on the Office of the Secretary of Defense (Washington, DC: 1983)

In 1986, the second major acquisition reform report of the Reagan period was released.⁸ The President's Blue Ribbon Commission on Defense Management was headed by Nixon's Deputy Secretary of Defense David Packard, after whom the Commission was informally named. Packard had received the 1970 Blue Ribbon Commission's report and was only too aware of the unresolved problems which remained. The Packard Commission's report focused on acquisition strategies. Technology should be deployed to reduce cost, the Commission argued, and prototyping was advocated. The Packard Commission also repeated the Grace Commission's call for more stability in defense programs and in the defense budget generally. Essentially, the Packard Commission ended up asking all the participants in the acquisition process — the executive branch, Congress, the military, and defense industries — to work together better and to form more trusting relationships. How this was to be accomplished was not addressed. A 1989 report by Secretary of Defense Dick Cheney reviewed the DoD's efforts at implementing the Packard Commission's recommendation. Although generally positive, Cheney's review found many areas where implementation was not moving forward fast enough.

Since the Packard Commission reported, there have been a number of reports of lesser stature. Here we note two of them because of their importance in the acquisition reform debate as it has taken shape since the end of the Cold War. The General Accounting Office's (GAO) 1992 report Weapons Acquisition: A Rare Opportunity for Lasting Change⁹ examined the agency's past studies and attempted to glean lessons from the problems that had been previously identified. Although the GAO report offered numerous recommendations, it is the core of their analysis that most interests us.

⁸ President's Blue Ribbon Commission on Defense Management, A Quest for Excellence (Washington, DC: Government Printing Office, 1986).

⁹ General Accounting Office, Weapons Acquisition: A Rare Opportunity for Lasting Change (Washington, DC: Government Printing Office, 1992).

The GAO described an “acquisition culture” involving all the various government and contractor participants, and extending out to the media and defense policy research and public interest groups, all of whom had sought benefits from acquisition decisions. This analysis was important because, for virtually the first time in a government report, it put the acquisition process squarely in a political context. The problems were not simply technological, managerial, or regulatory; they were the results of many groups with very different interests seeking to gain in the acquisition process.

By contrast, the DoD Acquisition Law Advisory Panel, better known as the Section 800 Panel, took almost completely the opposite approach.¹⁰ Operating within its mandate, the Section 800 Panel looked solely at the actual laws governing defense acquisition and evaluated whether their impact on the process justified their retention. The 800 Report sought to identify regulatory obstacles that could be cleared, and it explicitly noted that it did not evaluate the wisdom of any regulations with respect to their underlying political value (e.g., the socio-economic benefit of promoting small business) or any other non-efficiency-based metrics. The report is the clearest example of a purely managerial approach, and its narrow focus explains the present political difficulty faced by attempts to implement many of its recommendations. Specifically, the political process has recognized certain values which may be enhanced by defense acquisitions such as “Buy American” and “Small and Disadvantaged Business Preferences” despite the added expense which they entail. Attempts to wish them away by labeling them as unproductive are not likely to be successful.

The last year also saw the release of the Vice President Gore’s National Performance Review.¹¹ Again, this report took a view of acquisition which covered the whole government, not simply defense. Vice President Gore’s approach was also technocratic, only considering the efficiency aspects of particular regulations.

¹⁰ DoD Acquisition Law Advisory Panel, Streamlining Defense Acquisition Laws (Washington, DC: Defense Systems Management College, 1993).

¹¹ Office of the Vice President, The National Performance Review (Washington, DC: Government Printing Office, 1992).

The Findings

The recommendations of over four decades of reports range over almost every imaginable aspect of the defense acquisition system. Their sheer bulk makes it impossible to summarize all the findings in a meaningful or comprehensible fashion. However, we can identify certain major themes, especially those which have endured over the course of decades. Somewhat uneasily the recommendations can be categorized into six main types: centralization of procurement; professionalization of the acquisition corps; management improvements; changes in contracting procedures; new development strategies; and legislative/executive relations. By tracing the history of complaints and cures in each category, we can see what has changed and what has not.

Centralizing Procurement

Centralization has long been a favored strategy for commodity item purchasing. The first Hoover Commission believed that a single purchasing agency for all the branches of the military would be the most efficient approach, but stated that the political climate of the time, marked by violent conflict over unification of the services, prevented this position from being advocated. Instead, it recommended that each service should have sole responsibility for purchasing some of the items used by two or more of the services. Thus, the Army might buy paint and distribute it to the Navy and the nascent Air Force, while the Navy bought paper clips for everyone, and so forth. The second Hoover Commission went a step further to urge the establishment of a central agency for the purchase of all “common supplies” of a commercial nature. This would come to fruition as the Defense Supply Agency (DSA) in 1962. The argument for the DSA was recently taken to its logical extreme in the General Service Administration’s Multiple Work Schedules Program (MWSP), which offers a standard price list for purchase by any government agency in an attempt to concentrate the government’s

market power as a buyer. However, because all of the MWSP contracts are sole source and encompass small lot prices, the MWSP usually costs more than comparable, less-centralized procurements. Also as part of its procurement centralization, the second Hoover Commission recommended establishing the post of Assistant Secretary of Defense for Logistics to improve the business practices of the Pentagon. This recommendation was also implemented.

The Fitzhugh Commission had criticized these efforts to centralize management as being ineffective. They noted that the DSA had not been able to produce the expected savings, perhaps because it only managed about half the items in the defense supply inventory. Most importantly, this 50 percent by item count only represented 13 percent of the dollar value of the inventory. Two years later, the Commission on Government Procurement's report urged the establishment of an Office of Federal Procurement Policy within the Office of Management and Budget to direct the unification and rationalization of military and civilian government procurement policies and procedures. The Office was established in 1974. The Government Procurement Commission also made recommendations on the general roles of Congress and the DoD in the weapons acquisition process, essentially urging better oversight, especially in the setting of initial needs and goals.

The Grace Commission's report in 1983 marked a new stage in the policy march toward centralization. For the first time, centralization was urged not to increase the efficiency of commodity item purchasing, but to improve the process of developing new weapons systems. Day-to-day acquisition processes were to be consolidated at the level of the Office of the Secretary of Defense (OSD), managed by two new appointees — an Undersecretary of Defense for Research and Engineering and an Undersecretary of Defense for Acquisition. Contract administration was to be centralized in the OSD as well. Budgeting improvements were to be obtained through cost estimation overseen by

the DoD Comptroller's Office, taking the higher of the estimates provided. Commodity item purchasing was not completely ignored. Noting that the Defense Logistics Agency (DLA), as the DSA had been renamed in 1977, had statistically superior results to those of the services, the Grace Commission recommended that a further 900,000 of the 1,200,000 items then managed by the services should be overseen by the DLA. The numbers cited, one must note, ought to give pause about the ability to manage let alone centralize defense. This is especially the case when one realizes that 900,000 is precisely 75% of 1,200,000, an indication of the precision guess-work that even efficiency advocates slip into in this business.

By 1986, the Packard Commission was willing to go a step further than the Grace Commission in recommending a fleshed-out hierarchy for centralizing weapons system acquisition. In addition to once again calling for an Undersecretary for Acquisition, the Packard Commission wanted Service Acquisition Executives (SAE) in each branch, with a number of Program Executive Officers (PEO) under each of them, overseeing a number of programs. The programs themselves would still be overseen by Program Managers (PMs). It is worth noting that the attempt to centralize procurement had now gone so far as to place the actual PMs three levels removed from the Secretary of Defense (through PEO, to SAE, to SecDef). The Commission had actually considered subordinating the SAEs to the Undersecretary for Acquisition, but realized that this would remove the PMs from the SecDef even more, rather than centralizing the process.

In general, Congress has been resistant to the efforts to centralize procurement authority. A decentralized structure allows more access points for a Representative to influence individual weapons programs. Congress' resistance to indirect diminutions of its authority has been a stumbling block for attempts to implement the recommendations.¹²

¹² Robert Art, "Introduction: Pentagon Reform in Comparative and Historical Perspective," in Reorganizing America's Defense, Robert Art, Vincent Davis, and Samuel Huntington, eds. (Washington, DC: Pergamon-Brassey's, 1985).

It should be noted that Vice President Gore recently urged a decentralization of government and that the most modern management techniques (“empowerment management”) urge devolving responsibility to lower rather than higher levels in an organization. Specifically, Gore’s recommendations are highly consistent with the philosophical underpinnings of the “lean production” paradigm, making the present study particularly topical. A 1993 RAND Corporation brief has also focused on the disconnect between the trend to decentralized, horizontal corporate organizations and the centralization bias of past acquisition reform.¹³

Professionalization of the Acquisition Corps

Professionalizing acquisition personnel has always been a recommendation of the reports, although the emphasis and purpose have changed. The first Hoover Commission had nothing to say about acquisition personnel, being concerned with much broader issues. The second Hoover Commission urged the establishment of career paths solely in the procurement services. This was intended to counteract the rapid rotation of personnel through these positions. The problem was that holding any slot, especially a procurement slot, for an extended period did little for the promotion chances of military officers. On this note, the Commission specifically recommended against the temporary assignment of “tactical” (i.e., “line”) officers to procurement positions for reasons of personnel administration convenience. The first Hoover Commission wanted to ensure that procurement personnel did not spend their entire tenures learning the job, only to leave as soon as they had mastered it. Accordingly, it also supported common training programs for military and civilian procurement personnel, rather than “on the job” training. Military and civilian personnel should also have the same standards applied to them, and upper

¹³ George Donahue, Mark Lovell, Giles Smith, and Wayne Walker. “DoD Centralization: An Old Solution for a New Era?” *RAND Issue Paper*, (Santa Monica, CA: RAND, April, 1993). The RAND group attempts to show that past centralizing reforms in the U.S. have failed to add efficiency to the acquisition system and that the more centralized systems of other countries (notably France) produce lower quality weapons at greater cost than the present American process.

grades should have their pay increased, to “attract and hold able administrators.” The second Hoover Commission also urged the relaxation of conflict-of-interest laws which forced political appointees to liquidated their holdings when they assumed office.

The Fitzhugh Commission parroted the second Hoover report, calling for specialist careers in many fields, including procurement, and urging longer assignments to procurement posts to suppress personnel turnover. In between the two reports conflict-of-interest laws had actually tightened, and the Fitzhugh Commission called for relaxation of laws restricting the pre-government activities of appointees. Instead, the Commission favored restrictions on post-government activities, now familiar as lobbying and “influence peddling” restrictions. The contemporaneous Commission on Government Procurement paid scant attention to the acquisition corps, except to recommend the use of civilians as PMs.

The Grace Commission repeated general pleas for improvement in procurement personnel policies. It called for the development of better trained acquisition officials capable of making decisions and taking responsibility within broad guidelines. This, of course, tied into a quest for regulatory reform. The Packard Commission added little to the discussion of the acquisition corps, calling for better qualified acquisition personnel, which it thought would allow staff cuts. More flexible personnel policies were also considered desirable. The Packard Commission diverged somewhat from earlier reports which urged relaxation of the conflict-of-interest laws. In contrast, it called for vigorous enforcement of ethics regulations and the prosecution of criminal violations of acquisition laws. The political climate in which the report was issued, as well as David Packard’s personal probity, must be cited as important factors in this apparent about-face. It is interesting to note that since the beginning of the 1980s there has been growing attention to the formal education of acquisition personnel, with minimum levels of schooling established for each grade.

Management Improvements

As we have seen, most official analyses of the defense acquisition process have treated the problems as essentially managerial in nature. Accordingly, most of the major reports that we reviewed have recommended numerous managerial improvements. The chorus for change has been joined by the horde of minor reports, many of which focused on very specific management practices and possible improvements, ranging from the introduction of accounting systems to alteration of contracting procedures within various defense agencies. Interestingly, the first Hoover Commission offered very broad recommendations for management improvements. Although the Commission gave no specifics, it noted that in many cases top civilian officials had only general supervisory authority, while statutory authority was delegated to various subordinate departments. This observation particularly pertained to the Secretary of Defense himself, and it reflected the struggle to establish the authority of that office and to assert centralized civilian control of the military in the post-war era. The second Hoover Commission delved deeply into the workings of the Defense Department and produced a number of highly detailed recommendations. These included the aforementioned call for the establishment of the DSA and an admonishment to improve financial controls given the rapid expansion of the Department.

The Fitzhugh Commission reported in the wake of the many, many managerial changes instituted by Secretary McNamara. As a result, although there were detailed recommendations too numerous to describe, there was only one Commission recommendation which stood out. The role of PMs needed to be clarified, it argued, especially regarding their authority and responsibilities relative to other officers involved in the program, including the official contracting officer. The Commission discussed the role of the PM in various types of program organizations. The report specifically discusses vertical organizations (PM has total control over personnel), matrix organizations (personnel temporarily “seconded” to PM), and coordination (no control

of personnel by PM), examining the strengths and weaknesses of each, as well as the effect of each on the role of the PM. A central recommendation that emerged from this examination was that it was essential for a PM's rank to be appropriate for the importance of the project. Otherwise they could not command sufficient respect either within the project team or with other parts of the defense establishment. Despite past recommendations, the role of the PM remains an important issue in acquisition reform: some commentators urge a further concentration of decision authority in the office of the PM, because the PM is most familiar with program details, while others seek to place decisions within the Office of the Secretary of Defense to encourage a broad, strategic view.

The managerial improvements recommended by the Commission on Government Procurement were numerous, some even more detailed than the Fitzhugh Commission's work and some much broader in focus. As previously mentioned, the Government Procurement Commission addressed management issues at the highest levels, examining the roles of Congress and the top echelons of the DoD in the acquisition process. More detailed recommendations included revamping the reimbursement system for Independent Research and Development (IR&D) and Build and Proposal (B&P), which will be addressed later. Budgetary procedures included a call for improved cost-estimating capabilities in the wake of several severe cost overruns in projects begun in the late McNamara years. Perhaps the most significant call for reform was for a change in focus from initial price of new systems to total cost, or as we now refer to it, life-cycle cost. Life-cycle costs were expected to enable better long term budget estimates, as well as to provide a more realistic basis for comparison between acquiring new systems and upgrading existing systems. This change largely went into effect in the years following, but its effects have been highly contentious.

The Grace Commission repeated the call for better cost-estimating abilities, indicating that regrettably little had changed in the decade since the Government

Procurement Commission reported. Better cost-estimation would allow controlling the number of new system starts and superior integration of each new system into the overall budget, according to the Grace Commission. Beyond simply limiting the number on new program starts, the report called for a complete re-estimation of cost — the establishment of a new “baseline” — at Milestone m as the basis for a complete reexamination of the need and affordability of a new system. The Grace Commission wanted Milestone m to be far more than a rubber stamp on the path to production. Finally, in a detail point, the Grace Commission repeated the call for easier IR&D reimbursement, especially calling for elimination of the technical review of IR&D submissions.

An explicit call for DoD to emulate commercial practices was the theme of the Packard Commission’s report. It emphasized the virtues of competition between systems and between contractors. But the Commission also recommended that the DoD not focus so heavily on price in judging competitions. Instead, price should be weighed against quality and the established performance record of the contractors, the method used by industry. The Commission additionally called for a greater capability for industrial mobilization in crisis or war, which required the DoD to greatly improve its data on contractors and subcontractors, and to change its management systems to deal with the need for surge capacity. Finally, as mentioned previously, the report called for vigorous enforcement of ethics regulations and statutes as integral to successful management. Unfortunately, there is significant tension between the additional auditing and inspection requirements of this ardor and general commercial practices which are based on noninterference with internal decisions of suppliers.

Contracting Procedures

Closely related to management improvements are contracting procedures. The two Hoover Commissions, with their general approach and concentration on either lines of authority or business procedures, did not treat the subject. Interest was high, though,

after the Planning, Programming, and Budgeting System and Total Package Procurement innovations of the McNamara years. The Fitzhugh Commission weighed in with strong opinions. First, it thought that Total Package Procurement was a failure. The evidence offered was the massive cost overruns of several TPP contracts and the resulting contract renegotiations which obviated the entire point of the TPP system. Second, the Commission urged the use of much less detailed contracts. Rather than spelling out exactly what performance specifications the system should have, covering virtually every aspect of its design, the Fitzhugh Commission wanted general, mission-oriented specifications which would allow contractors to exercise their initiative. This approach was followed in the successful Light Weight Fighter competition that gave birth to both the F- 16 and F- 18. Mission-oriented specifications also became identified with Deputy Secretary of Defense David Packard. This looser form of contracting is also closely associated with the “Fly Before You Buy” development strategy which the Fitzhugh report espoused and which was also identified with Packard.

The Fitzhugh Commission criticism of TPP fits into a broader, perennial debate over preferred contracting schemes. During the post-World War II era, the popularity of fixed price (FP), cost plus fixed fee (CPFF), and incentive contracts varied substantially — in addition to the brief Total Package Procurement fad. Each of these schemes has several advantages, but each specific advantage has an important trade-off such that no system is free from *ex post* criticism. Consider the several major contract forms.¹⁴

Fixed price contracts (incidentally, the standard commercial practice) precisely cap the cost to the government of a particular project, but overburden contractors with the enormous risks inherent in the defense market. Firms cannot afford to accept FP contracts that require innovation or large, up-front capital investment. Even on production contracts, a fixed price arrangement tends to discourage new capital investment Furthermore, it is very difficult to stick

¹⁴ There are many good discussions of the menu of contract types. An important example is Thomas L. McNaugher, *New Weapons, Old Politics: America's Military Procurement Muddle* (Washington, DC: Brookings Institution, 1989).

to the terms of a fixed price contract: if the cost of the supplied product turns out to be less than the specified price, the government often is pressured to re-negotiate that price; if the contractor is threatened with losses due to unexpectedly high costs, the government often is pressured to step in with a bail-out.

Cost-plus-fixed-fee contracts are designed to transfer the inherent risks of weapons design and manufacture to the government: the defense budget absorbs all contractor costs and pays a pre-set profit to the producing firm based on a percentage of the pre-design or pre-production cost estimate. Although contractors have a clear preference for this payment scheme and although the government receives the benefit of willing participation in innovative weapons designs, CPFF contracts provide little incentive for contractor efficiency, because the contractor bears none of the brunt of less-than-best practices. In fact, because pre-production cost estimates for future contracts are often indirectly based on the reimbursed cost of past contracts, contractors have a perverse incentive to increase costs on a given project in order to augment guaranteed profits on future CPFF agreements. Finally, since the government reimburses all contractor costs, firms under CPFF derive a direct benefit of higher costs in terms of a better ratio of cash flow to fixed capital investment.

Incentive contracts are intended to provide for risk sharing between the government and contractors. A target price is agreed to and specified in the contract. If actual costs are higher than the agreed price, the contractor and the government split the overrun payments; if the actual cost is below the agreed price, the government and the contractor split the savings, allowing the contractor to increase its profits. This type of contract, however, imposes the greatest monitoring and accounting burden on the system, a significant deadweight loss. Incentive contracts may also encourage the contractor to raise direct costs of a program above the initial price because the resulting loss on the profit line is split with the government while the contractor recoups some of

its share as overhead payments increase concurrently. Overhead is calculated as a percentage of total direct cost. The government, as a result, often ends up paying more than it expected -and perhaps even paying more than it values the end products.

It is evident that the Fitzhugh Commission criticisms of Total Package Procurement, while valid, do not end the contracting procedure debate. The trade-offs among the options continue to be important guides for future defense reform. Moreover, the issues in contracting do not end with the range of possible contracting schemes. The Commission on Government Procurement took a somewhat different tack from the Fitzhugh report by looking at the regulatory environment of contracting. The report urged the simplification of the confusing mass of procurement regulations, the volume of which was growing by leaps and bounds. The OFPP was also to reconcile military and civilian procurement regulations into one coherent body. Contractor initiative was to be stimulated by easing reimbursement for Independent Research & Development and Bid & Proposal efforts. Perhaps most importantly, the recommendations linked back to management reforms with a call to break the contracting phases down so that production contracts would not be let until the need for the system had been reconfirmed and independent Testing & Evaluation in near-operational conditions had been completed.

A decade later, the Grace Commission repeated the call for simplification of the Defense Acquisition Regulations. The Commission hoped to replace detailed regulations with broad guidelines, which would then be administered by an improved, highly competent acquisition corps. In a similar vein, they called for fewer Military Specifications (MilSpecs), again hoping to allow more judgment by PMs, contracting officers, and the contractors themselves. The recent revisions in the Defense Instruction 5000.2, "Defense Acquisition Program Procedures," provide PMs with the authority to waive many MilSpecs, but the challenge remains in convincing the PMs to exercise this authority because working "by the book" entails less risk for them. The Grace Commission also reiterated the need for easier IR&D reimbursement as a spur to

innovation. On the other hand, the report recommended that contracts be reformulated so that contractors should bear a larger share of cost overruns, which represented something of a return to the goals of the McNamara-era TPP policy. Furthermore, the Commission wanted to deny DoD budget data to contractors in the pre-award stage so that they would be unable to underbid their internal cost-estimates in order to fit within the anticipated budgets. Of course, such a constraint would also prevent contractors from using design to-cost methods or recognizing the need for particularly innovative solutions to meet fiscal constraints.

Concurrent with the Grace Commission findings — and consistent with its recommendations — the Reagan Administration increasingly used a contracting option known as “dual sourcing,” that arranged for two designated contractors to compete continuously during production of a single design with frequent cost-based adjustment of the allocation of purchases between the two suppliers. As in fixed price contracting, dual sourced contractors face extreme risk of losing money, but hope springs eternal for a large production run, leading firms to participate in dual source arrangements. Historical evidence on dual sourced contracts is mixed: they apparently save money for the government only when few other contracts are available to defense firms and competition for scarce procurement dollars is at its height.¹⁵ Although the scarcity of post-Cold War era procurements apparently bodes well for dual sourced contracts’ ability to reduce the government’s cost burden, firms may decline to participate when the resulting total production run is unlikely to be large. The government’s interest in preserving some weapons production capability will limit the desirability of further risk transfer to suppliers.

Yet another call for a wholesale simplification and recodification of defense procurement laws and regulations was the centerpiece of the Packard Commission’s recommendations on contracting procedures. David Packard also helped to wage war

¹⁵ Dan Boger, et al. Competitive Weapon Systems Acquisition: Myths and Facts (Monterey, CA: Naval Postgraduate School, March, 1989).

on the proliferation of MilSpecs and excessively detailed contracts and Requests for Proposals, in favor of competitive procurement strategies. The Packard Commission also urged a clarification of rights to technical data in government acquisition programs. This problem had been briefly touched on in some of the previous reports and had been the subject of a knockdown, drag-out fight between the world wars. The issue was never adequately resolved then, and only the coming of the Second World War allowed differences to be papered over as military spending flooded industry with funds.

Development Strategies

As with contracting procedure, the two Hoover Commissions had little to say about development strategies. The system the military operated under in the early years of the Cold War was essentially the same as they had used in the Second World War, and problems had not yet become so apparent. As in many other fields, the first big changes came under the leadership of Secretary McNamara, and they primarily were spin-offs from the TPP contracting methods. TPP assumed that technological advances could be predicted and that costs for systems could be accurately measured even before detailed design had begun. When several systems began to run into significant cost overruns, several also suffered from performance shortfalls. Bringing performance up to specifications raised costs even further.

In reaction to these developments, the Fitzhugh Commission urged that technological risks be reduced by demonstrating actual hardware before entering Full Scale Development (FSD, now known as Engineering and Manufacturing Development, or EMD). This strategy called for more prototyping and more competition between systems. The commission also called for more comparisons between upgrades of existing systems and entirely new systems. This entailed a general strategy of more subcomponent development. All of this was to be linked to improved Operational Test & Evaluation (OT&E), which would provide hard data on the performance of systems,

rather than relying on estimates derived from preliminary engineering studies and the requirements in the original RFPs. These strategies became enshrined as the “Fly Before You Buy” approach, championed by David Packard during the Reagan administration.

Many of these ideas were echoed by the Commission on Government Procurement, which similarly called for better examinations of alternative means of meeting requirements. This might involve competing new systems or a choice between an upgrade and a new system. As previously mentioned, the report called for delaying the decision to enter full-rate production until OT&E was finished and it was possible to reevaluate the system and the original need. This represents the main, although subtle, divergence from the Fitzhugh Commission. Fitzhugh had wanted decision-making done at a much earlier stage, using prototypes a la the Light Weight Fighter fly-off; the Government Procurement Commission wanted to run all the way through the expensive FSD process and then engage in a “bottom up review” of the program. This review would not be so much competitive (that is, between alternatives), as specification-driven, examining how well the system met the requirements, and whether those requirements still made sense if the strategic or technological situation had changed. Secondly, the Commission on Government Procurement also urged more sharing of ideas between various government agencies and better government-industry cooperation so as to avoid re-inventing the wheel in various programs.

The Grace Commission similarly urged more data exchange between the DoD laboratories and the military services in order to better integrate new and emerging technologies into the weapons acquisition process. However, it also urged the laboratories to distance themselves from the later stages of the development cycle in order to keep their focus on emerging technologies and to allow the technologies in the systems to stabilize. Cross-service design standardization was another initiative put forward by the report. This entailed the use of common parts, sub-systems, and components in weapons systems used by the several services. For instance, all the

services used fuses in anti-aircraft missiles, and such fuses might be standardized. A radar from a new Air Force fighter might be used in a Navy interceptor. This “building block” approach bears considerable similarity to the “modular aircraft” concept which is the basis of the current Joint Advanced Strike Technology program, the successor to the F-16 follow-on MRF.

A return to the prototyping strategy of the Fitzhugh report was the centerpiece of the Packard Commission’s direction for development strategy. The Packard Commission also hoped to use technology to reduce costs, demonstrated through prototyping. This approach required an increased consciousness of the trade-off between cost and performance, and the importance of both parameters. Packard also urged more use of “off the shelf” technologies, referring to the “make or buy” decision. Although “off the shelf” systems might not be quite as capable, they were considered to often be cheaper, and their immediate availability was another benefit. An existing system could obviously be tested more easily to establish its actual, rather than theoretical performance.

Legislative/Executive Relations

Although both of the Hoover Commissions were deeply concerned with relations between the legislative and executive branches of the government, their focus was not on the weapons acquisition process. Rather, they were concerned with the highest level of government, issues of who had the right to command the American military and where military budgets should originate. These issues were intimately linked with questions of civilian control of the military and how it was to be achieved. Although the Congress had always concerned itself with the purchasing of weapons and had intermittently launched investigations and probes of particular programs, it was the growing conflict between the Congress and the President during the Nixon administration that brought issues of legislative-executive relations to the fore. These conflicts also expressed divisions over military policy stimulated by the Vietnam War.

As we have seen, the two reports from the early 1970's took opposite views of the issue. The Fitzhugh Commission, empaneled by the president, warned that Congress was intruding on the acquisition process and reducing efficiency through its interference. It particularly noted the growing burden of the Selected Acquisition Reports (SAR) and appearances before Congress by defense acquisition officials. Thus, the report urged restraint on the part of Congress in requesting information and attention to not overburdening PMs with paperwork. They should be allowed to concentrate on actually managing their programs. In contrast, the Commission on Government Procurement, created by Congress, recommended that Congress involve itself more deeply in the acquisition process. Congress was needed as a brake on an often runaway acquisition system, and as such needed to be much better informed on defense issues. Obviously, it was going to be difficult for Congress simultaneously to collect more information and be more active in acquisition, and to leave the PMs alone.

The Grace and Packard Commissions' recommendations were far more parallel. Both argued that more stability in acquisition programs would yield significant savings. Stability would allow production to proceed at the most efficient levels and would avoid damaging starts and stops in the development process. Both Commissions called for a five-year plan for DoD and multi-year procurements. The Grace Commission urged that Congress be made acutely aware of the costs of changes in production and development plans. It discouraged "micromanagement" of weapons systems by Congress. The Packard Commission argued that "baselining" programs for their budget impact at the start of FSD, combined with biannual defense budgets from Congress, would stabilize acquisition and save significant amounts of money. The government actually made a stab at a bi-annual budget after the Packard report, but the international scene was in such flux that the attempt collapsed under the impact of rapid changes in the strategic outlook. In short, program stability was impossible when the world was unstable.

Change and Continuity

What continuity and what change do we see in investigations of defense procurement? Clearly, there has been a constant call for more centralization of procurement functions and professionalization of the acquisition corps. Only in the Vice-president's recent report has there been a backing away from centralization of authority. Acquisition corps professionalization is still a prime goal, although related problems of conflict-of-interest laws remain unresolved. Attitudes on these ethics issues have shifted somewhat over time. Until recently, major examinations of defense acquisition urged loosening, not tightening, ethics laws. Management improvements have been constantly suggested, particularly in the "minor," more tightly focused reports we have alluded to but not examined in detail. Many management changes have been made over the years, but the problems they were meant to address have persisted or worsened. Contracting procedures have gone near full circle, from cost-plus (percent of cost) contracts in the Second World War and early cold War, through some variations until replaced with TPP in the McNamara years, and then back to cost-plus-fixed-fee contracting today. Many subordinate contracting questions, such as IR&D reimbursement and technical data rights, remain as uncertain and controversial as ever. Since the end of the McNamara era there has been a general agreement that prototyping saves money and that competition between systems is good. However, the fact that reports continue to repeat this is a good indicator of how difficult it is to implement such procedures.¹⁶ Legislative-executive relations remain problematic, but most studies of the acquisition process note that either congressional interference or lack of cooperation between the branches significantly increases costs. Some of the most recent examinations of defense procurement have explicitly begun to contemplate the political nature of the process and to describe the interests of the various players.

¹⁶ Moreover, some forms of competition, particularly dual-sourcing arrangements, may not be viable in the post-Cold War environment of low procurement budgets and low-rate production.

The Failure of Reform

Knowing what the studies found, we can turn to the question of what they accomplished — or, more precisely, why they failed. Analytically, we can divide the question of the effects of reform efforts into two phases. The first is implementation which is the formal process of adopting reform recommendations by passing new laws, issuing new regulations or instructions, or establishing new offices or organizations for managing the acquisition process. The second is effectiveness which involves both the actual implementation of reforms and a judgment about their the success. Informal implementation represents the acquiescence of the acquisition bureaucracy and other participants in the acquisition process to the desired changes. Reforms that are both formally implemented and accepted by the bureaucracy may still fail to be effective because they are poorly conceived or fail to account for important aspects of the procurement process.

Efforts to reform the acquisition process are nearly constant, although major efforts such as those of the six commissions examined in this study are somewhat less frequent. It is admittedly difficult to determine when we will see new efforts begin. However, we have determined some of the conditions that affect the implementation and effectiveness of reform. We relate these outcomes to the level of international tension, or threat, that the United States confronts and to the level of political uncertainty that the defense effort faces in the domestic political environment.

Implementation and Tension

We theorize that in circumstances of high international tensions reforms will be proposed but not implemented. Generally, defense budgets will be high, and usually increasing. Congress and the public will be willing to bear high cost in order to ensure the security of the United States. Nonetheless, criticism of the procurement process will

arise because of these high levels of expenditure, because real inefficiencies will unavoidably occur during rapid expansions, and because criticism of high levels of defense expenditure is commonly expressed for political reasons as criticism of the efficiency of the procurement process. In this situation, studies and blue ribbon panels may be commissioned, but they will serve primarily as “smokescreens” to defend the level of military expenditures.¹⁷ Even if reform efforts are taken seriously, their recommendations are unlikely to be implemented because of the fear of disrupting the buildup and undermining national security.

When tensions are low, or falling, the defense budget will generally fall as well. This leads directly to a desire for economy in defense expenditures. The military and the civilian defense establishment will support economy measures as much as anyone in times of tight budgets. In addition, due to their past calibration, many structures in the acquisition process will be set up to deal with rapid technological advance and high-rate production, which may no longer be appropriate for the changing strategic situation. In these circumstances, reforms efforts are likely to achieve formal implementation.

The Fitzhugh Commission (1970) is surrounded by circumstances which are not consistent with “smokescreen” arguments. Deputy Secretary of Defense David Packard forcefully favored many of the Commission’s recommendations. If the Fitzhugh Commission had been a smokescreen, we would expect to see an effort to draw out its work for the longest possible time and with greatest political impact, and publicity for its efforts as evidence of the administration’s commitment to reform. On the contrary, Secretary of Defense Melvin Laird implemented many of the Commission’s recommendations before the report’s conclusions were formally announced.¹⁸ The day before the presentation of the report, Deputy Secretary Packard announced that DoD would no longer issue TPP contracts for developmental items, especially weapons

¹⁷ William E. Kovacic, “Blue Ribbon Defense Commissions: The Acquisition of Major Weapons Systems,” in Robert Higgins, ed., *Arms, Politics, and the Economy* (New York, NY: Holmes and Meier, 1990): 63-4, 87-8

¹⁸ New York Times, June 10, 1970, p1.

systems.¹⁹ The Fitzhugh Commission's report drew immediate criticism from both Congress and the Joint Chiefs of Staff because of its recommendations to remove the JCS from the operation chain of command.²⁰ Reporting on the presentation of the Fitzhugh Commission's report focused on the recommendations on the JCS and the resulting controversy to the near exclusion of the acquisition reform efforts.²¹ This was not the desired result if Laird and Packard were trying to demonstrate a commitment to acquisition reform. The later history of the Fitzhugh Commission's report is even less accord with the expectations of a "smokescreen" strategy. The report was not published and released to the public, and this secrecy became a campaign issue in the 1972 Nixon-McGovern election.²²

Implementation failures may express themselves in many different ways. The Packard Commission is perhaps the most famous example of an implementation failure the time of its release. With tensions high in the mid-1980s and a large defense budget there was little incentive to attempt real reform. Moreover, Caspar Weinberger, the Secretary of Defense, opposed the Packard Commission's general approach to reforming the acquisition process.²³ David Packard clearly felt that the acquisition process needed tight management and oversight, which he had tried to provide in the early-1970s when he was in the Department of Defense. Weinberger, and Deputy Secretary William H. Taft IV, opposed what they saw as excessive interference in the acquisition process by OSD and wanted to decentralize procurement authority back to the services. These efforts were popularly known as the Carlucci reforms and were first offered as a

¹⁹ Robert B. Semple, Jr., "Future Defense Contracts to be Awarded in Stages," New York Times (July 28, 1970): 1.

²⁰ Richard Halloran, "Plan to Revamp Pentagon Meets Silence at Capitol," New York Times (July 30, 1970): 8.

²¹ Neil Sheehan, "Nixon Panel Asks Radical Changes for the Pentagon," New York Times (July 29, 1970): 1.

²² Christopher Lydon, "Shiver Asks end to 'Fat' and 'Wate' in the Military," New York Times (October 27, 1972): 24.

²³ Thomas McNaugher, "Defense Management Reform: For Better or for Worse?" in 1990-1991 American Defense Annual (Lexington, MA: DC Health, 1990): 171-2.

Secretary Weinberger initiative in 1982. Packard was effectively criticizing Weinberger's management style and attempting to impose his preferred style on an unreceptive DoD. When Weinberger and Taft would not accept Packard's vision, his commission instead recommended the creation of an Undersecretary of Defense for Acquisition [USD(A)], who presumably would share Packard's views. Naturally, Weinberger and Taft had little desire to see Packard's reforms put into place and directly, though subtly, opposed the Packard Commission's recommendations.²⁴ Direct opposition from within the civilian Pentagon structure is almost certain doom for any reform effort. If the patron of a report or commission ends up opposing the recommendations which emerge from it, implementation is nearly impossible.

The Commission on Government Procurement (1972) is an unusual case. Its motivation was not to create a defensive "smokescreen," but rather to provide and offensive "spearhead." Commissioned by Congress, this report aimed at attacking the Nixon administration's procurement policies and enhancing the ability of Congress to influence the weapons acquisition process in detail.

Although the McNamara reforms of the mid- 1960s are generally outside the scope of this study (since there was not central, defining report to study), they are interesting as an example of reforms which passed the tests of both formal implementation and informal implementation, but still produced a failure.²⁵ The informal acceptance of the bureaucracy was coerced, it is true, but the reforms were put into place and largely followed. The Total Package Procurement policy failed not because of internal opposition, but simply because it was ill-conceived. TPP failed to take account of the technological uncertainty that is always present to some degree in the weapons development process. Forcing the financial and contracting structure to treat weapons development as if systems were technologically mature while still demanding prodigious technological advances to meet

²⁴ "Defense Procurement: Killed in Action," The Economist (October 17, 1987): 33.

²⁵ On the McNamara reforms and their perverse effects see Arnold Kanter, Defense Politics: A Budgetary Perspective (Chicago, IL: University of Chicago Press, 1979).

ambitious operational goals was a combination fated for disaster. McNamara's reforms illustrate the futility of efforts that ignore the key structural relationships of the American political system and the associated, and interrelated, technological and political uncertainty that are characteristic of our acquisition system.

Effectiveness and Uncertainty

The development of advanced weapons is beset with two types of uncertainty. One uncertainty derives from the very nature of high-technology weapons. The second results from the fragmented nature of political authority in our government, the roots of which have already been mentioned. These two uncertainties interact, and to some degree can be traded off with each other. Their inter-relationships give rise to many of the problems with the defense acquisition system examined in the various reports reviewed above.²⁶ The degree of political uncertainty in the American governmental system is the inhibitor of effectiveness in reform efforts. Although formal implementation may go forward, informal resistance or even the formal division of powers in the American constitutional system are likely to prevent significant improvements in the efficiency of the weapons acquisition process.

Technological uncertainty is a product of the process of invention and expansion of knowledge. In our quest to ensure that the United States possesses the best weapons, we constantly push the limits of what is possible with current technology. When the Air Force set out the requirements for what would become the B-36 Peacemaker, no one knew whether it was possible to build an aircraft which could carry such a large load so far.²⁷ Without the experience of war to guide us, we attempt to design systems to carry

²⁶ Harvey Sapolsky, "Equipping the Armed Forces," in G. Edwards and E. Walker, eds., National Security and the U.S. Constitution (Baltimore, MD: Johns Hopkins, 1988).

²⁷ Michael Brown, Flying Blind: The Politics of the U.S. Strategic Bomber Program (Ithaca, NY: Cornell, 1992) examines the problems which have resulted for American strategic bombers.

out such challenging tasks as defending ships against sea-skimming supersonic missiles. Even as we attempt to develop affordable, deployable defenses the threat itself changes, become more capable. This interaction of competing technologies creates even more uncertainty. If we simply had a fixed objective, we might be able to pursue a relatively leisurely development process followed by extensive OT&E before entering large-scale deployment. With a shifting threat such a development strategy becomes impractical, because defenses would be obsolete by the time they were deployed. We simply cannot know whether the missions we have set for our weapons are even possible in many cases.²⁸

Political uncertainty is a product of fragmented authority in our political system. It is a basic, but often ignored, fact that the government of the United States was created with the explicit intent of constraining the exercise of political power. To do so, the Founding Fathers created a system of checks and balances that would pit “interest against interest” It also pitted the Congress, which controlled budgets and expenditures, against the Executive, which had the day-to-day job of running the government. That government has expanded well over a thousand-fold since the signing of the Constitution. As it has expanded, the stakes involved in policy decisions have grown ever larger, and the impact of government spending on the economy has ballooned. At the local level, whether a firm wins a government procurement contract or not can have even more dramatic effects than on the nation as a whole. It is within this system of divided government, with a Congress made up of the elected representative of local interests, that defense policy must be made, and weapons must be bought.

The fragmentation of authority exists not only between the legislative and executive branches, but also within each branch. The Department of Defense consists of many offices and agencies, and even the services are divided into communities, committees, departments, and offices. Within a service branch one community may be

²⁸ Ibid.

deeply committed to a weapon or capability while another may be indifferent or even hostile. Events constantly shift power amongst the factions. The legislative branch is also internally divided. The House and Senate have different bases of representation, terms, and interests. The agglomeration of locally elected representatives has had an increasingly “everyone on her own” character in the past few decades. Within each house committees and subcommittees struggle for dominance. Congressmen worried about the next election are often more interested in claiming credit and winning media exposure than in the long-term effects of policies or what an abstract “national interest” might be.²⁹ Some examinations of this phenomenon have indicated that the strategic climate of the Cold War exercised a restraining influence on pernicious Congressional activity.³⁰ However, with the disintegration of the Soviet Union, this restraint is absent. There is a new degree of political uncertainty for weapons programs due to the lack of a clear threat.³¹

Weapons systems must win the support of many different agencies and interests, and keep that support long enough to go into full production. Program Managers know that success within the military is defined as getting a system into service, regardless of its actual performance, cost, or strategic rationale. Although technological uncertainties may mean that a system ends up militarily ineffective, failure to cope with political uncertainty means that a system will never have the chance to prove itself one way or another. The first requirement of any development project is to limit its political uncertainty by building and maintaining a coalition of support. The one way to build such support is by claiming a proposed system is much more capable than its predecessor. This can be reinforced by arguing that the new system will actually end up cheaper than the one it replaces.

²⁹ David P. Mayhew, Congress: The Electoral Connection (New Haven, CT: Yale, 1974).

³⁰ Kenneth Mayer, The Political Economy of Defense Contracting (New Haven, CT: Yale, 1991).

³¹ Harvey M. Sapolsky, “Financing Science after the Cold War,” in K. Keniston and D. Guston, The Fragile Contract (Cambridge, MA: MIT Press, 1994).

This politically motivated quest for ever higher performance has the effect of increasing the technological uncertainty in the program. The Advanced Tactical Fighter program embodied many types of technological uncertainty: stealth technology, which has experienced recent problems in the B-2 program; the Low-Probability of Intercept radar, a type which has never before been built; supercruise, which requires dramatically new engine technologies; and many others.³² If all of these technologies worked properly, the Air Force argued, the F-22 would be dramatically more effective than the F15s it was intended to replace. This promised increase in effectiveness allowed the project to satisfy many different interests and build a basis for support. Not all the technological uncertainties provided selling points for the ATF. Stealth capabilities, for instance, required that air-to-air missiles be carried internally. However, to meet other requirements, the missile bays are too small to carry the current versions of American missiles. A version of the AMRAAM radarhoming missile with narrower fins will have to be developed to make optimal use of the capacity of the bays. Technological uncertainty spreads from one program element to another in the process of enhancing the project's acceptance.

By contrast, prototyping and competitions between systems attempt to reduce technological uncertainty at the expense of increasing political uncertainty. By testing actual hardware, especially in competitive test, it becomes easier to tell what the real capabilities of a system are. However, because a test is not a war, and because we have only a vague concept of how future wars will be fought and what threats will develop, even the best OT&E can only yield uncertain results. Such development strategies greatly increase the political uncertainty a system faces by providing concrete arguments on why it will not work or how it falls short of specifications. With such evidence, opponents of a system gain strength. A specification might well be largely unnecessary, like a requirement for high speed at high altitude when the aircraft will actually be used

³² In fact, problems have recently emerged with the "stealthiness" of the F-22. See Vago Muradian, "F-22 Design to be Refined," Air Force Times (March 21, 1994): 38.

mostly at low altitudes.³³ Shortfalls in performance often occur early in development, but can be fixed as the technology is perfected or new technologies are developed. The P-38 Lightning is a perfect example. Its early models failed dramatically in the European Theater of WWII, but later, better developed models went on to win lasting fame in the Pacific Theater. More recently, early models of the M-1 Abrams tank suffered from reliability problems, but during Operation Desert Storm recent models of the M-1 were reported to be even more reliable than expected.³⁴

Of course, reduced costs can also be used to reduce political uncertainty. Although new weapons are almost always priced higher than those they replace, proponents have taken the Commission on Government Procurement's advice to heart. The common argument is that total life-cycle costs will be lower because new technology systems will be more reliable than their predecessors, requiring fewer maintenance man-hours (lower personnel costs) and fewer spare parts (lower replacement costs). However, such an argument relies on technological promise. Although the lifecycle costs of the existing system are well known, the proposed replacement is usually only an engineering study. Its reliability, and thus its life-cycle cost, are a matter of conjecture and argument. If the new technology works out well, costs may well be reduced. If there are problems, costs may go up even further than the basic acquisition price.³⁵

There are, of course, a few things about reducing technological uncertainty that we do know. Actual combat performance always remains uncertain, but the links between development strategies and ultimate system cost are clearer. Essentially, spending money up front to prototype a system and to develop it fully before entering the production phase (most importantly, before buying hard tooling) saves money in the

³³ This may seem to be a trivial example, but both the F-11 and the B-1 saw heavy spending to secure high-altitude super-sonic dash capabilities which are virtually never used operationally.

³⁴ On the M-1's problems, see Chris Demchak, *Military Organizations, Complex Machines* (Ithaca, NY: Cornell, 1992). On the better-than-expected performance of the M-1, see Harvey Sapolsky, "Review of Chris Demchak, *MILITARY ORGANIZATIONS, COMPLEX MACHINES*," *American Political Science Review* (June, 1992).

³⁵ James P. Stevenson, *The Pentagon Paradox* (Annapolis, MD: Naval Institute Press, 1993): 238-45.

long run. Unit production costs tend to be lower, and the system tends to be more reliable.³⁶ Of course, this does not translate into effectiveness as a weapons system. Still, as the defense budget shrinks and systems compete to survive, cost considerations play an increasing role in the political calculus. At the same time, the collapse of the Soviet Union has slowed the technological advance of the threat American weapons may face in the future. A more static threat allows a more leisurely pace of development and more comprehensive testing. The contrary influence is that these strategies involve spending more up front, which increases the political risk. The recent proposal to change the development strategy of the RAH-66 Comanche helicopter reflects this interaction of cost and political uncertainty. The Comanche program was originally scheduled to have six prototype and development aircraft. With the cost of the program escalating and critics raising questions about the very need for the Comanche in the absence of the Soviet threat, program managers acted to reduce the cost of the program, thus reducing political uncertainty. They did so by proposing to cut development aircraft from six to only four, arguing that this would cut costs dramatically. In the short term, this is quite accurate. However, in the long term experience indicates that the new development strategy will increase technological risks and probably end up increasing costs. Of course, by the time those costs become apparent, the program will be deep into EMD, with much higher sunk costs, and much reduced political uncertainty. The program managers for the Comanche are trading increased technological uncertainty for lower political uncertainty.

Whether reforms are effective or not is determined primarily by the degree of political uncertainty in the system. Political uncertainty has always been present due to the structure of the American political system. Relatively speaking, it was low in the 1950s when the power in the Congress was concentrated in the Speaker of the House,

³⁶ Cost savings derive mostly from not having to scrap tooling for parts and assemblies which have to be redesigned during a concurrent development phase. Brown, *op cit.* and Robin Perry, "American Styles of Military R&D," in *The Genesis of New Weapons*, Franklin Long and Judith Reppy, eds., (New York, NY: Pergamon, 1980).

Senate majority leader, and committee chairmen. Political uncertainty was also low because of the overarching political consensus on the threat posed by the Soviet Union. Political uncertainty underwent a secular increase after the late-1960s. The stabilizing Cold War consensus in foreign policy began to crack under the impact of the Vietnam War protests and detente. Simultaneously, power in Congress decentralized as insurgents dismantled important elements of the seniority system and reduced the power of Congressional leaders. This in turn increased the incentives for political entrepreneurship and credit-claiming by individual members of Congress. The authority of the presidency was also undercut by the crisis of confidence set off by the Watergate scandal. Watergate also distracted the Nixon administration and undercut its ability to deal with the other centripetal forces at work in the American political system.³⁷

Naturally, this secular shift in political uncertainty made the weapons acquisition process more difficult just as it might have been possible to take advantage of reductions in technological uncertainty. In aircraft, the 1950s and early-1960s had been periods of tremendously high technological uncertainty. Jet aircraft were introduced and broke the sound barrier for the first time. Fighter aircraft began to integrate radar directed fire control systems and guided missiles. Bomber aircraft were designed for intercontinental range at unprecedented speeds. While the technical advances of the late 1960s and 1970s were impressive, they were not of the revolutionary nature of the 1950s and early-1960s. However, the increase in political uncertainty, as we have seen, created incentives to increase technological uncertainty in order to win approval for new projects from Congress and the myriad interests within the Pentagon.

Political and technological uncertainty combine to make real reform of the acquisition process quite problematic. Technological uncertainty tends to push costs up because of the difficulties inherent in expanding the “state of the art” Political

³⁷ James M. Lindsay, “Congress and Defense Policy 1961-1986,” *Armed Forces and Society* (spring, 1987): 371-401, and Wallace E. Walker, “Domesticating Foreign Policy: Congress and the Vietnam War,” in George Osborn et al., eds., *Democracy, Strategy, and Vietnam*, PP 105-119.

uncertainty produces incentives to “front load” procurements with highly concurrent programs in order to lock in political commitments. It also includes “interference” and “micromanagement” which produce instability in design and schedule, resulting in still more inefficiency. Attempts to reduce political uncertainty tend to involve increasing technological uncertainty, which may be exogenously high. The experience of the Cold War era has generally altered the relationship between but not reduced the overall degree of political and technological uncertainty prevalent in the system, which in turn has meant that the pressure on weapon acquisitions has remained at a fairly constant and high level.

A successful effort to reform the weapons acquisition system must account for many factors simultaneously. Reformers need to be conscious of technological and political uncertainty, and their synergistic interactions. Reforms, like McNamara’s, that pretend that the technological problems of weapons development are always well understood will be counter-productive. Ignoring the multiplicity of participants in the acquisition process, legislative as well as executive, invites direct opposition to implementation and ineffectiveness of the reform effort.³⁸ Timing is also critical — the best moments for reform see a coincidence of low tension and low political/technological uncertainty. These conditions have not been encountered since the Second World War. If political/technological uncertainty is manipulable, perhaps through the development of a new relationship between contractors and the government, then significant reform may be possible.

Current Acquisition Reform Proposals

Acquisition reform bills have been introduced repeatedly in both the House of Representatives and the Senate in recent years. With the publication of the report of the

³⁸ Kovacic, p71.

Section 800 panel and of Vice President Gore's National Performance Review, interest seems to be peaking during the current session. The opportunity for reform is enhanced by the concurrent hold of the Democrats on both the executive and legislative branches and by the end of the Cold War. A bill introduced by Senator Glenn as S- 1587, the "Federal Acquisition Streamlining Act of 1993," has been substantially amended since Congress' winter recess to match the recommendations of the Section 800 panel; similar amendments have also been proposed to a bill re-introduced from past sessions in the House. S-1587 has the general support of the Clinton administration, although the fate of specific changes proposed in an administration "line-in, line-out" of the bill text remains undecided. The bill was reported from the Senate Government Operations and Armed Services Committees on May 2, 1994.

The most visible changes to the acquisition system proposed in the Glenn bill raise the Simplified Acquisition Threshold and establish new Commercial Items chapters in Titles 10 and 41 of the U.S. Code (the titles which govern procurement). The goal in both cases is to waive some government-unique regulations when making purchases of low-cost items (which will be defined as under \$100,000) or of items available or soon-to-be available in the commercial marketplace. In general, the executive branch is interested in broadening the scope of the waivers more than the current legislative vehicle does, for instance by adding commercially leased items to the definition of Commercial Items and by exempting the simplified procurements from additional regulations such as the Buy American Act and the Preference for Labor Surplus. By "streamlining" these acquisition procedures, the bill's supporters hope to entice firms which do not currently serve the defense market for fear of government interference with their business practices into that market, thereby augmenting competition and providing the government access to new commercial technologies. At the same time, current military producers will be freed from some of the purportedly-excessive overhead costs associated with government contracts, allowing them to compete more efficiently in all markets, and specifically to compete more efficiently in commercial markets.

The overall enterprise seeks to integrate the American defense and commercial industrial bases, as advocated by Defense Secretary William Perry in his writings for the Carnegie Commission on Science, Technology, and Government before he joined the administration.

Defense procurement reform is complemented in this effort by the Technology Reinvestment Program (TRP), a roughly \$500 million per year fund of grants designed to encourage joint ventures exploiting technology from defense industrial firms and marketing skills from firms which traditionally serve commercial markets. Secretary Perry is also a strong supporter of TRP.

Most of the other recommendations of the Section 800 panel have also been added to S-1587, including application of commercial-based practices to contract formation and financing. Two important areas of recommended reform, however, have been excluded from both the Senate bill and the administration line-in: *qui tam* provisions and labor law reform. Although the Section 800 panel affirmed the general utility of *qui tam* claims in encouraging whistle-blowing by persons with knowledge of false contract claims, it recommended substantial limitations on the practice in the area of defense contracts -both with respect to who is allowed to file a *qui tam* suit and with respect to the size of any eventual damage award. Present *qui tam* rules under the False Claims Act are designed for all government procurements rather than for the defense sector in particular, and the latitude given to defense auditors has accorded them much more *qui tam* power than intended in the broader procurement environment — and has consequently scared contractors out of the defense business. However, because of the legacy of 1980s defense procurement reform, in which whistle-blowers were used as a political tool for criticizing the defense build-up, these recommendations of the Section 800 panel have been lambasted in committee and left out of the current reform bills. Similar political motivations are also blocking the inclusion of Section 800 recommendations to relax some stringent requirements of labor laws such as Davis-Bacon and the Service Contract Act, although their exclusion is more closely tied to

Clinton administration efforts to repair its relationship with organized labor after the bruising NAFTA ratification fight.

The current reform effort fits well into our broader framework for defense procurement reform. The primary hypothesis is that the recommendations of major pro-reform reports are implemented only in times of relatively low international tension. Although security crises in Bosnia and North Korea regularly occupy newspaper front pages, the direct threats to the United States are minor compared to the Cold War. Just as the Fitzhugh Commission's proposals were rapidly implemented concurrently with the detente of the early-1970s, some form of S-1587 is expected to pass and become law now that the superpower threat from the Soviet Union has collapsed.

The question of effectiveness of the reform in meeting its stated efficiency goals is entirely separate, however, and fundamentally concerns issues of political and technological uncertainty. One rationale in Secretary Perry's Carnegie Commission writings on integrating defense and non-defense industries is to provide the military sector with faster access to cutting-edge commercial technology. Defense R&D spending now accounts for only one third of total national R&D spending — and only one ninth of the total R&D spending in the West — which means that many innovations must be purchased from civilian sources for military use. Politically, with the recent clear demonstration of the military benefit of technological superiority in Desert Storm and with the increasing emphasis on high-technology economic competitiveness in the commercial sector, capturing some of commercial America's success for the defense sector has become very important. Unfortunately, in major military programs with long lead times and production spread over several years (because of high unit costs for complex systems), the pace of technological change is much faster than the pace of contracting in even a simplified procurement process. A reform that provides the military greater access to rapidly changing commercial technology will only increase the technological uncertainty inherent in the procurement process, thereby threatening the

programs' success: at best, technological goals will remain modest and the new access to the commercial market's technology will not have helped the military — at the cost of giving up the benefits of certain procurement regulations (which, it should be remembered, were not established capriciously); at worst, expectations for new military technology will be raised too high, leading directly to program failures.

At the same time, political uncertainty has radically increased in the post-Cold War world. The political structures of the federal government have not changed (as they did in the 1970s, crippling the implementation of the Fitzhugh Commission report), and, in a rare instance of inter-branch cooperation in defense policy, the recommendations of the Congressionally-sponsored Section 800 panel and of the Vice President's National Performance Review are in basic accord. Implementation of this procurement reform via S1587 will not even be victim to the direct bureaucratic infighting that characterized past reports and should consequently proceed quite rapidly. On the other hand, obtaining agreement about the requirements of future weapons systems will be increasingly difficult in a world with high levels of political disagreement about America's military strategy. There is no longer an obvious superpower adversary limiting this political conflict, as there was even during the low-tension era of detente. Integrating the industrial base is likely to prove impossible as the political process frequently changes its perceived strategic requirements, reacting to the most recent apparent short-term threat during the long haul of development and production of a weapons system.

Outside of the efficiency goals of defense reform, the implementation of the Section 800 recommendations is likely to face other difficulties. The panel explicitly did not consider society's other goals when it examined the procurement process. When the government buys a product, it usually can be more accurately described as a purchase of a bundle of goods -including the military hardware itself, the subcontractor relationships used in production of that hardware, an extremely exacting standard of production quality, and scrupulous adherence to fairness and impartiality in the procurement

process. Because the United States values honesty, for example, politicians — and the American public — are willing to spend more to prevent corruption than they would otherwise lose if that corruption were allowed to flourish. Although this calculation is irrational from the standpoint of pure economic efficiency, it may be perfectly rational when additional social goals are considered.³⁹

A case in point from the current acquisition reform debate concerns the government's commitment to small business subcontracting. Although the Section 800 panel found that prime contractors often face considerable difficulty in finding suitable small business subcontractors to meet the requirement that five percent of total contract value be let to small businesses, the Glenn bill actually may end up increasing the small business set-aside provisions under the Simplified Acquisition Threshold. Similarly, on the TRP side of defense reform, there have been widespread complaints that the first year's awards did not involve enough small businesses, and the program has been adjusted for its second year to weight the grant selection process more towards teams involving small businesses. Some proposals which would have been successful under the old rules will now never be realized for lack of suitable small business participants, but in rejecting them the government will have made a responsible "purchase" serving its Jeffersonian interest in supporting American small businesses. Attempts to integrate military and commercial industry are being subordinated to another goal.

Because the Section 800 panel adopted a managerial approach, using efficiency as its sole metric, and because it neglected to consider fundamental environmental shifts in the post-Cold War world (except as an excuse to approach efficiency reform in a time of declining defense budgets), its recommendations are unlikely to be effective. This is true despite the formal passage of an implementation vehicle in a time of low

³⁹ Steven Kelman, Procurement and Public Management (Washington, DC: American Enterprise Institute, 1990).

international tensions and despite the unusual legislative-executive agreement on the goals of the reform.

A New Acquisition System

The acquisition reforms we have just examined are fundamentally irrelevant for the current situation. The same is true for the set of Administration proposed reforms that is being considered in the Congress. The end of the Cold War changes not only the threat our nation faces, but also the scale of its weapon acquisition enterprise. For more than a half century the national defense budget was capable of supporting the simultaneous development of literally dozens of major weapons systems. There was sufficient work for several contractors to coexist profitably in each major line of business — ships, armored vehicles, fighter aircraft, missiles, helicopters, and satellites. Through much of this period, the armed services eagerly competed for missions, often duplicating each other's efforts to develop new weapon systems. But now none of this seems likely to continue much longer. Concern about the details of contract administration, the burden of MilSpecs, or the training needed for good project managers is best left to historians. Today we should be worrying about what parts of the defense industrial base should be preserved and how that can be accomplished when weapon production of any type is likely to be vanishingly small.

Traditionally, we kept weapon design and production skills alive between wars by sustaining a network of public arsenals and shipyards. Not much was produced by these arsenals and yards during peacetime, but no one seemed to mind. The purpose was to preserve the base of talent and equipment required for war when contractors would be brought in and trained to cope with surge requirements.

The decades of mobilization that followed hard on the Second World War, together with the build ups needed for the fighting in Korea and Vietnam and with the build up that President Reagan persuaded the nation *to* support, made the public arsenals and shipyards appear anachronistic. Several were closed. Many of the rest

were relegated to maintenance activities. Instead, vital weapon design and production skills were largely nurtured in private companies. The network of defense contractors that have become, acknowledged or not, our nation's network of private arsenals.

With perhaps a long peace at hand, what is needed is a definition of the specific arrangements that can sustain the nation's capacity, now largely in private hands, to create and build, when required, the best weapons in the world. We must examine the relationships that exists between the public and the private, competition and monopoly, contracts and subsidy, customer and producer, and among the armed services and centralized procurement agencies in the Department of Defense in the acquisition of weapons. The facts of our current situation have to be faced. We are unlikely to see, for a while at least, defense budgets that keep high the number of viable contractors, the pace of weapons innovation, and the awards for new projects. How then should the acquisition system be structured?