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Alternative Governance: A Tool for Military Laboratory Reform

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Overview

Throughout the Cold War, the United States maintained an edge over adversaries by fielding technologically superior warfighting systems. This strategy depended on a strong research and development (R&D) effort in both the public and private sectors, and the community of military laboratories in the Department of Defense played an essential role in the overall effort. Because of the importance of these labs during the Cold War, defense planners continually focused on ways to improve and strengthen them.

The end of the Cold War, however, shifted the focus away from laboratory improvement toward consolidation, closure, realignment, and personnel downsizing, as many came to believe much of the R&D done by the military laboratories could, and even should, be done by the private sector. Scrutiny of the labs greatly increased as a constant stream of base realignment and closure and other cost-reduction efforts sought to decrease their roles and size. Because these actions focused almost exclusively on *efficiency*, little attention was paid to improving the *effectiveness* of the labs—their ability to carry out their assigned missions. Most activity directed at improving laboratory operation has dealt with incremental modifications of the current governance model. Currently, the military labs are Government-owned, Government-operated organizations. As many studies have noted, this governance model puts the laboratories at a great disadvantage and complicates their ability to accomplish their assigned missions. Alternative approaches have been suggested by lab reformers but have never been implemented. Since the current governance model is well known, and attempts to modify it are well documented, this paper discusses several alternative governance models for the labs, with emphasis on the Government-owned, contractor-operated and Government-owned corporation models. While there would be issues with regard to conversion of an existing military lab to a Government corporation or comparable entity, the long-term, mission-enabling benefits of such a conversion could far outweigh any near-term complexities.

Studied to Death

The tenuous nature of Government ability to remain technically competent has been a matter of concern for some time. The military labs historically have been an important component of the technical competence of government. Therefore, the matter of the viability of these labs has generally emerged from studies that have addressed Government ability to fulfill its stewardship role. For example, in April 1962, David E. Bell, then director of the Bureau of the Budget (now Office of Management and Budget), submitted a report to the President on Government contracting for research and development (R&D).[1] The report noted with concern that "the developments of recent years have inevitably blurred the traditional dividing lines between the public and private sectors of our nation. A number of profound questions affecting the structure of our society are raised by our inability to apply the classical distinctions between what is public and what is private." Moreover, it pointed out that:

> the decisions which seem to us to be essential to be taken by government officials, rather than being contracted out to private bodies of any kind, are the decisions on what work is to be done, what objectives are to be set for the work, what time period and what costs are to be associated with the work, what results expected are to be, and the evaluation, and the responsibilities for knowing whether the work has gone as it was supposed to go, and if it has not, what went wrong and why, and how it can be corrected on subsequent occasions.

The Bell Report also argued that Government should "have on its staff exceptionally strong and able executives, scientists, and engineers fully qualified to weigh the views and advice of technical specialists," noting "a serious trend toward eroding the competence of the government's research and development establishment—in part owing to the keen competition for scarce talent which has come from government contractors." The Bell Report concluded that it is "highly important to improve this situation by sharply improving the working environment in the government, in order to attract and hold first-class scientists and technicians."

H.L. Nieburg, in his treatise "In The Name Of Science," expanded upon the themes and concerns expressed in the Bell Report. He summarized the testimony of Jerome B. Wiesner before the Bell Commission as follows:

> Jerome Wiesner testified that his job as Science Advisor to the President was to try 'to bring good people into the agencies' and to make government 'a place where scientists can have a most attractive career in science and engineering. . . .' But, he said, '. . . t he situation is actually still deteriorating.' The best-qualified people were still leaving and 'once this begins . . . then the next echelon leaves . . . you may keep the buildings full, you may spend the money,' but the trend continues implacably and the public interest is increasingly naked before hungry contractor cliques.[2]

Harold Brown, then Director, Defense Research and Engineering (DDR&E) and a member of the committee that prepared the Bell Report, viewed the military labs as an essential ingredient for fulfilling the Government function articulated by Bell. Brown touched on this point in a 1961 lecture at the Naval Research Laboratory (NRL), in which he articulated four roles that he expected a Government laboratory to fulfill:

- First, the Defense Laboratories should form a spearhead which must provide the Armed Forces with at least two essential services.
  - They must continuously investigate rapidly changing fields of science and engineering to find materials, techniques, processes, and ideas which may prove to have some as yet undetermined military value;
  - In the course of their investigations in the fields of advanced technology, the Defense scientists and engineers must bring the problems of the Armed Forces before the broad scientific and technical community expressed in the terms of technical discourse.
- Second, we require objective scientific and engineering advice on contract research and development programs. Most of the Defense RDT&E [research, development, testing, and evaluation] funds are expended on contract, and properly so. The advice of the Defense laboratories is critical not only because advice which is sensitive to the Government's interests must be available to management, but because that advice must be particularly sensitive to the needs of the military users;
- Third, we need laboratory organizations to manage or help manage weapons systems development and test programs. Experience has been a harsh teacher and we are aware that it is not always wise or economical to try either to have a large project directed by a military user who does not understand whether what he wants is feasible, or to let the contractor be his own director, or to set up a small management office without technical support;
- Fourth, we need the in-house laboratories as an essential part of the system of technical education for military officers. We recognize that without the actual experience of working in the laboratory it will not be possible to develop the cadres of technically proficient officers required for the operation of modern, rapidly changing armed forces and for the understanding needed to set military requirements in a military situation in many ways unrelated to any previous one.[3]

Since the publication of the Bell Report, perhaps 100 major studies of Government laboratories have been conducted during both Republican and Democratic administrations. Most have restated the Bell Report findings and have defined the roles of the laboratories as similar to those articulated by Harold Brown. However, some 40 years after publication of the Bell Report, little has been done to deal with the issues it and subsequent reports have articulated. As a result, many of the most recent studies have asserted that the number of first-class laboratories within the Government has been reduced substantially, a deterioration that has accelerated since the end of the Cold War. While this may not be true for all DOD labs, it is evident that the general trend is and will continue to be downward unless something is done to reverse it.

Reform

An outsider might find this lack of progress toward solving well-documented problems especially curious, particularly after reviewing the many attempts by the services, DOD, and Congress to address laboratory issues. For example, a 1987 Defense Science Board (DSB) report recommended the creation of a Laboratory Demonstration Program (LDP) to address long-standing lab problems, such as difficulty in attracting and retaining high-quality scientists and engineers, legislative and regulatory barriers to the adoption of good business practices, and lack of authority and accountability for lab managers.[4] Congress endorsed this recommendation in the fiscal year (FY) 1990 National Defense Authorization Act (NDAA), which directed DOD to establish an LDP to allow selected laboratories to evaluate their operations under a different management system.[5] In November 1989, the Deputy Secretary of Defense issued several related memoranda requiring each service to select at least one "demonstration laboratory" that would focus on the technical director's authority and use of funds, recruiting/retaining personnel, facilities, and procurement. The plan included initiatives for relief from legislative, regulatory, and service-imposed barriers to efficiency. Despite serious attempts to pursue implementation, bureaucratic resistance and statutory barriers allowed only modest reforms. In April 1993, an attempt was made to reinvigorate the LDP by rechartering it as the Laboratory Quality Improvement Program (LQIP). The following year, the LQIP became a "Science and Technology Reinvention Laboratory" under Vice President Al Gore's National Performance Review, and many of the reforms recommended by the DSB and endorsed by the Deputy Secretary of Defense were attempted under this umbrella. While a few yielded positive results, most foundered because of bureaucratic resistance and a lack of consistent, unqualified, high-level support.

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Congress has also served as the catalyst for serious attempts at reforming the DOD laboratories. Legislative initiatives include Section 342 of the NDAA for FY95, Section 246 of the FY99 NDAA, Sections 245 and 1109 of the FY00 NDAA, Sections 1113 and 1114 of the FY01 NDAA, and Section 241 of the FY03 NDAA. While well intentioned, most of these initiatives have had, at best, a modest effect. The language in some was poorly crafted and was determined by the Office of the Secretary of Defense (OSD) to be moot or otherwise unimplementable. Others were opposed by the concerned OSD staff office and were simply ignored because the language was precatory, not mandatory. For example, in May 2000, the DOD Office of General Counsel determined that NDAA 99 Section 246 and NDAA Section 245 do "not give, or purport to give, the Secretary of Defense any new authority that he does not otherwise already possess."[6]

The most important of the authorities granted to the labs by Congress was Section 342 of the FY95 NDAA, which permitted establishment of "personnel demonstration" projects at selected "science and technology (S&T) reinvention" labs. These demonstrations were fashioned after the milestone demonstration personnel projects established in 1980 at the Naval Weapons Center, China Lake, California, and the Naval Oceans Systems Center, San Diego, California. The China Lake demonstrations tested several personnel features, most notably a more flexible classification system in which similar job occupations were grouped into five career paths, each of which was divided into broad pay bands. The other noteworthy feature of these projects was performance-based pay—that is, salary increases and bonuses contingent on job performance rather than on time in grade alone. The results of the demonstration projects were evaluated and determined to be favorable by both the Office of Personnel Management and the Navy centers involved.[7]

The Section 342 S&T reinvention labs were able to expand the use of the China Lake authorities, and all have reported they have improved ability to recruit and retain quality staff.[8] These results have been used to justify initiatives, such as the personnel system for the Department of Homeland Security, and have been the basis for many of the authorities requested by DOD for a new personnel system for the entire department. Section 1114 of the FY01 NDAA is cited as the proposed authority to accomplish this initiative.

Section 1114 of the FY01 NDAA amends Section 342 by giving the Secretary of Defense the same authority over the Section 342 personnel demonstration projects as that ordinarily exercised by the director of the Office of Personnel Management. In principal, the Secretary could use this authority to set up a completely separate personnel system in the Section 342 personnel demonstration labs. So great is the potential of Section 1114 that a recently released tri-service DOD lab study, conducted under the auspices of the Naval Research Advisory Committee (NRAC) and chartered by the DDR&E, recommended that the Secretary fully utilize this authority, and any other authorities granted by Congress, "to establish a separate personnel system for the scientists and engineers in the Services' corporate research laboratories."[9]

However, rather than using the Section 1114 authority to implement the NRAC recommendations, OSD is aggressively pursuing implementation of a new civilian personnel system for the entire department. The first phase has been entitled Best Practices Personnel System. A subsequent phase involves a legislative package that would create a National Security Personnel System (NSPS) patterned after that recently established for the Department of Homeland Security. Neither of these proposals appears to recognize that governance models appropriate to the DOD bureaucracy at large are unlikely to be optimized for the operation of major R&D labs—nor would the reverse be true. It is also important to realize that governance is much broader than personnel matters. It must facilitate the accomplishment of mission within the constraint of proper stewardship of public funds. This includes such matters as the acquisition of goods and services and the renewal of physical plants and equipment suites and the rules under which relationships with non-Federal entities are established and conducted. Restructuring attempts to date have not focused on such issues.

Restructuring

Since the end of the Cold War, the military labs have undergone nearly 15 years of personnel and infrastructure cuts as the management focus on the labs shifted from improving their effectiveness to making them less expensive to operate. There is continuing pressure within DOD to cut back even more. As a result, Congress recently approved an additional base realignment and closure (BRAC) round for FY05. While BRAC decisions are partly based on such important factors as long-term military value, they often give greater consideration to such measures as excess capacity and age of buildings. While such measures are useful in guiding reductions in military bases and industrial facilities, such as shipyards, they are far less helpful in assessing whether to close a laboratory (which usually has horizons that extend well beyond near-term, well-defined services), and can even lead to serious mistakes in regard to closure decisions.[10]

Lacking BRAC authority, most recent streamlining and reduction initiatives at the labs have focused on actions that could be implemented without congressional authority. The result has been numerous attempts to achieve savings by cutting laboratory overhead, primarily through personnel reductions. Furthermore, many of these cuts have been carried out in response to externally imposed goals, such as liquidating budget "savings wedges," or meeting outsourcing targets mandated by the Office of Management and Budget.

Congress has also called for studies of the labs to streamline them and reduce their overhead. This churning environment, together with abundant employment opportunities in the private sector throughout the 1990s, caused the labs significant problems in recruiting and retaining the best and brightest technical talent. Moreover, as a result of early buyouts, restructurings, and impending retirements, many of them may soon lack experienced leaders.

Conversion

There is mounting evidence that the systemic problems facing the military labs cannot be solved through marginal, incremental changes. Rather, converting these laboratories to some form of alternative governance scheme may be the only way to keep them capable of accomplishing their assigned missions. The previously mentioned 1987 DSB study highlighted the attractiveness of governance forms other than the existing Government-owned, Government-operated

(GOGO)model, especially that of the Government-owned, contractor-operated (GOCO) model. The 1991 congressionally mandated Federal Advisory Commission on Consolidation of Defense Research Laboratories was tasked with examining the feasibility and desirability of various military lab improvements, including that of converting some or all of them to GOCOs.[11] Other alternative governance models have been mentioned in the literature, including Federally Funded Research and Development Centers (FFRDCs), public-private partnerships (PPPs), and Government-owned corporations.

Although converting a laboratory to another form of governance frequently is touted as a solution, DOD has never attempted it, even as part of a pilot effort. Primary obstacles cited include conversion costs, legal impediments, and political difficulties. Nevertheless, alternative governance models maintain their attractiveness because they may offer the opportunity to draw more effectively upon private-sector experience than can be achieved under existing GOGO models, and they also could deal with the reality that all labs are not the same and thereby avoid the typical one-size-fits-all solution. This could improve the ability of the labs to attract and retain high-quality scientists, engineers, and managers. Moreover, such laboratory models could be designed to facilitate partnering and other collaborative work with the private sector and to allow them to capitalize infrastructure and equipment as does the private sector. While such attributes continue to recommend the alternatives, it should be noted that they have their own disadvantages. Below are brief descriptions of some alternative organizational models that have received attention in the past and could receive consideration in the future. They include Government-owned, collaborator-assisted (GOCA), FFRDC, PPP, GOCO, and the Government-owned corporation. Greater attention is paid to what appear to be the two most promising options: GOCO and the Government-owned corporation.

Government-Owned, Collaborator-Assisted. The Air Force proposed the GOCA model in a July 1999 report concerning the S&T workforce at the Air Force Research Laboratory (AFRL).[12] This study was precipitated by a DSB study and by Section 912(c) of the NDAA for FY98. The GOCA model envisioned continued Government ownership of the AFRL plant and equipment; however, Government civilian scientists and engineers would decrease in number, while the number of military and various contingent employees (such as temporaries, postdoctoral fellows, and Intergovernmental Personnel Act assignments) would increase. In essence, the GOCA model is a hybrid of a GOGO and a GOCO, the key idea being to couple a significant core group of civil servants, who bring continuity, with an integrated team of outside collaborators, who bring fresh ideas. These collaborators would include employees of a private S&T organization of national standing, an industry lab, an FFRDC, or a university. Despite initial enthusiasm, progress toward full implementation of the GOCA model has been slow.

Federally Funded R&D Centers. FFRDCs originated during World War II as a way to meet specialized military research needs that some argued could not be met by existing military labs. Since then, they have played a significant role in maintaining the defense technology base of the Nation. FFRDCs are operated by universities or privately organized, not-for-profit corporations, through long-term contracts with the Federal Government under statutory authority provided by Congress.[13] They differ from military labs in that the contractor owns the laboratory site, buildings, and equipment and also provides the employees and managers. The employees are in the private sector and cannot represent the Government.[14] A 1995 DSB task force reported on the role of FFRDCs in accomplishing the overall DOD mission.[15] The Congressional Research Service has also produced a number of studies.[16]

Currently, 11 FFRDCs managed by 8 parent DOD organizations support the military establishment. They fall into one of three categories:

- studies and analyses (S&A) centers, which advise their DOD sponsors in support of policy development, decisionmaking, alternative approaches, and new ideas on significant issues.
- systems engineering and integration (SE&I) centers, which support areas not available from sponsors' in-house capabilities by assisting with system concepts and architectures, and technical system and subsystem requirements and interfaces. They also help their sponsors initiate and evaluate activities undertaken by firms in the for-profit sector.
- R&D laboratories, which fill voids where military and private-sector R&D centers cannot meet certain DOD needs. They focus on the evolution and demonstration of advanced concepts and technology and technology transfer.

Despite the importance of their work, FFRDCs have encountered significant criticism. For example, the General Accounting Office (GAO) has raised a number of concerns about the appropriateness of their work, the objectivity of their advice, and the effectiveness of DOD oversight, and whether DOD adequately considers cost-effective alternatives. Their fees and compensation also have been criticized.

Public-Private Partnerships. A PPP is yet another attempt to capture the different strengths of the public and private sectors. The idea is to convert a laboratory into a semiprivate company with partial Government ownership to do for-profit work for both the Government and private-sector companies. In principle, a PPP could range from near-total public ownership and control through near total private-sector involvement, ownership, control, and financing.

The best-known example is provided by a recent attempt by the British Ministry of Defence (MOD) to convert its former Defence Evaluation and Research Agency (DERA) into a PPP. DERA previously incorporated the bulk of the United Kingdom's nonnuclear research, technology, and test and evaluation establishments, and was Europe's largest research organization. The conversion effort, however, was difficult and widely criticized.[17] A major concern was how to segregate defense work from commercial work in a way that would avoid inappropriate transfer of technology or intellectual property between the two. Critics also argued that a for-profit PPP might be less inclined to engage in basic research because of its risky nature. They pointed out that, whereas military organizations focus on national security, a corporation's top goal is profit. In the end, the MOD decided to privatize only part of the DERA. The privatized part—now called QinetiQ—was formed in July 2001 as a special-purpose corporate vehicle in the private sector. It encompasses the majority of DERA and incorporates the bulk of MOD nonnuclear research, technology, and test and evaluation establishments. The government-retained portion is smaller and

will provide the government-to-government interface with overseas partners such as the United States. It is too soon to assess the effectiveness of this arrangement.

Government-Owned, Contractor-Operated. The Department of Energy (DOE) national laboratories, such as Sandia National Laboratory (SNL), Los Alamos National Laboratory (LANL), and Lawrence Livermore National Laboratory (LLNL), provide examples of defense-related GOCOs. In this scheme, the Government owns the laboratory site, the buildings, and the equipment, while the contractor (a commercial company, university, or nonprofit) provides the employees and managers. SNL, for example, was originally managed by AT&T and later by Lockheed Martin. GOCOs have considerably more management flexibility than military labs now have; they can hire more quickly, pay more competitive salaries, and more readily acquire new facilities and equipment. They also have fewer restrictions on employee termination, thereby expediting workforce refreshment and reshaping. It is important to remember that, in spite of their special relationship with the Government, their employees are private-sector contractor employees and cannot speak for or commit the Government. Also, their parent organizations can legally lobby the Government.

The first major DOD look at a GOCO option resulted from the previously mentioned 1987 DSB summer study report, which argued that "there is significant advantage for use of the GOCO laboratory mechanism in contrast to the government laboratory mechanism for executing technical R&D work." The following year, a DSB summer study on the defense technology base observed that:

> because the DOD technology base is being weakened by its inability to attract and retain high quality management and technical people, DOD should urgently implement those policies and procedures necessary to adequately compensate and reward high quality technical talent and should propose an organizational structure for select facilities which could enable private sector operation under government control.

The 1988 study recommended that the Secretary of Defense "propose the transition of selected facilities to private sector operation as federally funded R&D centers or government-owned, contractor-operated facilities."[18] About this same time, the Congressional Office of Technology Assessment issued a major report that also recommended that DOD consider alternative organizational structures such as GOCO.[19]

The 1987 DSB study recommended that each service institute a "model laboratory" demonstration project to deal with issues such as hiring and retention of high-quality staff, contracting effectiveness, personnel management, and local laboratory authority and accountability. In response, the DDR&E created a task force on "Management and Performer Demonstration Projects" to oversee implementation. As part of the LDP effort, each service was tasked to assess the costs of creating a model laboratory demonstration project, either in-house (retaining a GOGO model) or by converting the lab to a GOCO model. The three services each selected candidate labs and studied the feasibility and costs (both one-time and continuing) of converting them to model status. Despite OSD support for the concept, the services resisted, citing concerns about conversion costs and the impact that converting just a few laboratories might have on personnel at other laboratories. The idea was abandoned.

While the 1991 Federal Advisory Commission on Consolidation of Defense Research Laboratories also commended consideration of the GOCO option, it too had reservations about conversion, noting that "while GOCO laboratories currently have more management authority and flexibility than DOD laboratories, there are some disadvantages associated with GOCO laboratories. Perhaps the most significant disadvantage is the potential for GOCOs to be less closely connected to their Government customer than DOD laboratories." Consequently, the Commission found that "Conversion of some or all of the [military] laboratories to [GOCO] operations could improve their effectiveness. However, fixing the problem organically is preferable to such conversion." This desire to see problems fixed within the GOGO framework was driven by the concern that lack of service control over the laboratories might distance them from their principal customers and make them more costly and less responsive to the needs of their services.

There is also evidence to suggest that the cost of converting an existing GOGO lab to GOCO may be high. The Naval Research Laboratory (NRL) studied alternative management structures, including GOCOs, during the mid-1990s and found GOCO to be the most expensive option among those considered, in part because of Federal law and regulations governing the establishment and use of all Federally funded R&D centers, which involve significant cost drivers.

For example, in a memorandum of November 1, 1967, the Federal Council for Science and Technology (FCST) set criteria for FFRDCs (formerly called Federal Contract Research Centers). In 1984, the Office of Federal Procurement Policy (OFPP) issued Policy Letter 84–1, which amended the FCST criteria and also codified the rules for establishing FFRDCs. In 1990, the Federal Acquisition Regulations (FAR) were modified to bring them into conformity with OFPP 84–1.[20] These changes to the FAR also added additional criteria to those announced by the FCST.[21] In addition to Federal regulations, there are also legal requirements relating to the use of FFRDCs[22] and to the conversion of commercial and industrial-type functions, such as a GOGO, to contractor performance.[23]

These and other laws and regulations place constraints on what can be done, how it can be done, and how much it will cost. For example, under current regulations, existing employees of a GOGO would all be entitled to Civil Service severance pay, even if they all were guaranteed continuing employment by the new operator. Depending on the actual scenario chosen, NRL calculated that the up-front cost of converting NRL to GOCO operation would range from $56 million to $146 million in 1993 dollars. At the time, NRL concluded that conversion to GOCO would make sense only if Congress specifically authorized the conversion and included language in the legislation that waived some of these restrictions and entitlements.

Although a GOCO form of lab management might solve many problems, it would create others. For example, a 1995 blue ribbon study of DOE National Laboratories recommended that at least some DOE GOCO laboratories should be converted to a different form of management.[24] Called the Galvin Study after its chair, Robert Galvin of Motorola, Incorporated, it found a GOCO laboratory could also be hamstrung by imposed bureaucracy:

> The GOCO system was a promising concept. The Contractors, as contractors, do yeoman work. The system has been employed for

> decades. But in that time it has followed the natural course of government's proclivity to govern more. The owner wants to take charge more. Most able government personnel aspire to add value. Translation: add more governance. This makes work for more government personnel, increasing the size of the operation, increasing still further need for management, ad infinitum . . . Today, the system has evolved to a virtual GOGO.
>
> Consequently, the study concluded, "our first operations recommendation is that we must begin to evolve, over a period of one or two years, the development and implementation of a new modus operandi of Federal support, based on a private sector style 'corporatized' laboratory organization system."

The Galvin Report further noted:

> The Task Force recommends that a clean sheet of paper be applied to the design of a new laboratory governance system by the Congress and the Department. The Task Force notes that over the years creative variations of government structures and funding have been flexibly initiated, including the [Defense Advanced Research Projects Agency], the Federal National Mortgage Corporation, Mitre Corporation, and many others. This precedent justifies the application of imaginative and practical forms and financing of organizations such as we propose. . . .

Old Idea, New Approach

The Government-owned corporation is an old idea, but one that has not been proposed or studied as an alternative structure for the military labs until recently. Several recent studies, including the Galvin Report and the NRL studies of alternative management structures in the 1990s, have noted that there could be advantages in considering such an arrangement.

The Federal Government already "owns" more than 20 corporations, including the Tennessee Valley Authority, Saint Lawrence Seaway Development Corporation, Federal Prison Industries Corporation, and Federal National Mortgage Corporation. None are laboratory-like entities, although it appears that nothing precludes Congress from creating a laboratory. They are Federally chartered entities created to serve a public function of a predominantly business nature. The governance of each is tailored specifically to its mission and situation.

General statutory provisions applicable to Government corporations are codified in Title 31 of the United States Code (U.S.C.), Sections 9101–9110, and establish the various controls (for example, budget approval and audits). Specific authorities applicable to individual Government corporations are included in the legislation that creates them (Section 9102). Some of the more significant authorities and exemptions that distinguish Government corporations from other agencies include funding and financial management, administration and management, and procurement.

Funding and Financial Management. Most Government corporations sell some goods or services that generate most or all of the funds for the operation. These revenues are usually deposited and managed in a revolving fund. Corporations whose operation is fully funded by earned revenues are usually given the widest latitude in use of funds. However, governing statutes require that even those funds be subject to congressional controls—for example, submission of a budget to Congress, audits, and reports. Several corporations are allowed to solicit donations for their revolving funds. Several that continue to receive appropriated funds have a goal of becoming totally self-sufficient and/or to privatize. An example is the Postal Service, which has specific powers to enter into and perform contracts, execute instruments, and determine the character of and necessity for its expenditures; accept gifts or donations of services or property; adopt, amend, and repeal rules and regulations to accomplish its objectives; hold, maintain, sell, lease, or otherwise dispose of property or any interest therein; and have all other powers incidental, necessary, or appropriate to carrying out its functions. (Title 39 U.S.C., Section 401).

Administrative and Management. All of these corporations are managed by an appointed board of directors. They have various authorities regarding hiring and compensating personnel, and sovereign immunity is waived to different degrees. The Postal Service may sue or be sued in its own name and can set salaries at a level competitive with private-sector salaries (Title 39 U.S.C., Section 101). The Saint Lawrence Seaway Development Corporation may appoint and fix the compensation of officers, attorneys, and employees necessary for the conduct of its business, define their authority and duties, and delegate to them powers vested in the Corporation (Title 33 U.S.C., Section 984).

Procurement. All of the corporations have authority to contract. The extent to which the Federal Acquisition Regulations (FAR) must be followed varies. Most follow the FAR with certain specific authority for deviations. For example, the Panama Canal Commission has authority to construct or acquire, establish, maintain, and operate such activities as are necessary and appropriate (Title 22 U.S.C., Section 3612b).

Government corporations are not, however, without disadvantages, many of which are discussed in the publications cited above. For example, to operate outside the FAR, a corporation would have to establish, train, and maintain its own contract force. Such status could also open the corporation to litigation in forums not otherwise available to Federal-sector employees and expose it to collective bargaining (including bargaining over salary and benefits). Moreover, to the extent that sovereign immunity is waived, the corporation and its officers are open to suit and liability for compensatory and punitive damages.

The GAO profiled 22 Government corporations, focusing on their operations with respect to Federal statutes, and its report provides an excellent analysis of the various applicable statutes and authorities.[25] Government corporations are also discussed by Michael Froomkin in a lengthy law review article on the legal implications arising from their character as both public and private entities.[26]

The Public University Analogy

Perhaps a better analog to a military research lab than the types of Federal Government-owned corporations listed above would be a major state university, since many are, in effect, state-government–owned corporations. There are many similarities between the two, including the following characteristics:

- large physical plant
- many specialized facilities

- highly varied workforce (blue collar to Nobel laureates)
- broad-based research programs
- public functions
- adherence to a civil service system
- quasi-independence

The Government-owned corporation would be a radical hybrid approach to managing a military laboratory; there would be substantial private-sector involvement in the management and oversight of the lab, but both the lab and its employees would remain in Government. This would permit both the lab and its staff to act in an official capacity for the Government, render assistance and advice to decisionmakers, and, in general, do the kinds of things expected of military labs. It also would allow the lab to incorporate many of the attractive management features of a GOCO laboratory, while maintaining the desirable attribute of having the lab staffed by scientific, engineering, administrative, and support personnel who are DOD employees. If the concept proved successful, it could be exported to serve as a model for other research-oriented Government organizations. If more flaws than anticipated were encountered, it could still serve as a useful way station on the road toward complete conversion to GOCO. Many of the problems associated with a conversion to GOCO, such as creation of a new personnel system and adoption of modified business practices, would already have been overcome under this hybrid proposal, leaving only the contractual matters to be dealt with later.

This alternative is analogous to the self-contained management structure employed by the DOE National Laboratories and several other successful models, including such diverse Federal corporations as those listed above. In the past few years, the National Academy of Public Administration (NAPA) has conducted lengthy studies of several Federal Government organizations that are confronting an array of problems very similar to those now faced by the military labs. In at least two of them (Bonneville Power Administration and the Naval Petroleum and Oil Shale Reserves), the NAPA recommended that the organizations be organized as wholly owned Government corporations. This recommendation was based on the fact that these two organizations were industrially funded, quasi-independent entities and did not fit the paradigm of a Government agency.

Government corporations of the type envisioned here would be best codified under Title 10 rather than Title 31. Such legislation might be modeled along the lines of the statute (Title 10 U.S.C., Section 2112) that was originally used to establish and govern the operation of the Uniformed Services University of the Health Sciences (USUHS). This statute provided to the Secretary of Defense broad authorities to establish and operate the university, including the authority to establish salaries, retirement, and related benefits. The law does not describe the details of the employment system, but rather grants authority to establish such a system. A similar approach could be taken in the bill to establish one or more revitalized military laboratories.

The NRL studies of alternative management structures that were conducted in the 1990s envisioned passage of legislation similar to the USUHS section of Title 10, but also borrowed several attributes from the structures in place at many state universities. Such a "new" laboratory would:

- be managed by a Board of Directors with oversight provided by the service S&T executive
- remain a GOGO laboratory
- work for the Government (service or DOD) on a reimbursable (industrial funding) basis
- continue existing lab personnel as employees of the Federal Government
- implement new salary/benefits/retirement and so forth systems comparable to DOE and other first-rank laboratories
- offer existing lab employees the option to remain under Title 5 Civil Service System or convert to the new system. All new employees would be covered under the new system.
- be a self-contained organization with technical program and all support services under the management control of the lab director
- maintain its support services through overhead and a working capital fund.

In the case examined by NRL, the Board of Governors, consisting of six civilians appointed for fixed but staggered terms by the Secretary of the Navy, would conduct the business of the laboratory. It would also have three ex-officio members from Government: the DDR&E, the Assistant Secretary of the Navy for Research, Development and Acquisition, and the director of the laboratory. The Office of Naval Research would act as the administrative arm of the board. The intention would be to strike a balance between the private-sector perspective on management of a large research institution, and specific Navy, DOD, and national needs. Such an arrangement would also accommodate an external peer-review process, while allowing the laboratory to maintain a defense focus.

Analyses performed while developing this NRL model indicated that, while it would probably take several years to implement fully, it probably would entail considerably less effort and expense than conversion to GOCO and produce less upheaval in the workforce. More specifically, it was estimated that the up-front, one-time administrative cost (perhaps $5 million then-year dollars) and somewhat higher annual operating costs would be offset by more business-like operations.

Several of the legal authorities available to a Government corporation could benefit a military lab set up this way. For example, it could be legislatively empowered to raise capital by selling its services; execute a capital purchase program to acquire, construct, operate, and maintain facilities; and fund these purchases as part of an overhead rate charged to customers and from proceeds of such activities as technology transfer to the commercial sector. Moreover, it could be structured to benefit from efficiencies and economies gained by utilizing the best private-sector business practices in such areas as partnering, hiring and retention, facilities construction, and equipment purchases. For example, it could more easily enter into partnering arrangements with other Government and private-sector entities or perform reimbursable work for them, if that were deemed appropriate. The ability to fix salaries and benefits outside the current Civil Service system could enable the laboratory to offer salaries and benefits competitive with those of the private sector, while shortages in military construction funds and constraints on the purchase of equipment could be addressed by allowing the corporatized

laboratory to capitalize these costs through its overhead structure. The customer-funded nature of the arrangement would act to constrain the overhead expense, as it does in the private sector.

Like the GOCO option, conversion of an existing military lab to a Government corporation would likely involve substantial cost, legal issues, and political opposition. Also, neither the GOCO nor the Government corporation may have equal applicability to all the service labs. There are significant differences in the way the services operate their labs (for example, direct versus reimbursable funding), and the models discussed herein may not fit all equally well. However, these impediments could be overcome, should there be a sufficient desire on the part of DOD and Congress to try such an experiment. If successful, the experiment could go a long way toward addressing the concerns expressed in the Bell Report and 100 or so subsequent studies.

Conclusion

Throughout the Cold War, defense planners recognized the vital role military labs played in national defense as the United States engaged in a race to maintain technological superiority over the Soviet Union and the planners worked steadily to make them more effective. The end of the Cold War shifted the focus away from effectiveness toward economy without regard to functionality. The result has been a succession of laboratory infrastructure and workforce reductions accompanied by mandated overhead cuts and relentless pressure on the labs to outsource work to the private sector, thereby further reducing effectiveness and exacerbating the concerns expressed by the Bell Report. These actions also diminished the ability of the labs to fulfill the expectations articulated by Harold Brown and the Bell Report.

The few reform efforts undertaken since the end of the Cold War aimed at improving laboratory mission effectiveness have been largely prompted by congressional action. Most have resulted in a piecemeal, incremental approach instead of a strategic and systematic one. An alternative approach, and one that could be considered in future laboratory reform efforts (for example, those conducted as a part of the next round of BRAC), would be to reexamine the notion of governance for some or all of the military labs, with particular consideration given to the model of a government-owned corporation.

Notes

[1] Bureau of the Budget, "Report to the President on Government Contracting for Research and Development" (Bell Report), April 30, 1962.

[2] H.L. Nieburg, *In the Name of Science* (Chicago: Quadrangle Books, 1966).

[3] Harold Brown's speech is given as an exhibit in Federal Budgeting for Research and Development, a compilation of material related to hearings held July 26–27, 1961, before the Subcommittee on Reorganization and International Organizations of the Committee on Government Operations, United States Congress.

[4] Defense Science Board, "Report on 1987 Summer Study on Technology Base Management," December 1987.

[5] Michael E. Davey, Congressional Research Service, "Defense Laboratories: Proposals for Closure and Consolidation," January 24, 1991.

[6] DOD Office of General Counsel, memorandum to Director, Operational Test and Evaluation and Deputy Director, Defense Research and Engineering, May 8, 2000.

[7] Office of Personnel Management, Report no. 11, "Turnover in Navy Demonstration Laboratories, 1980–85," December 1988; Brigitte W. Schay, K.C. Simons, E. Guerra, and J. Caldwell, "Broadbanding in the Federal Government," Technical report (Washington, DC: Office of Personnel Management, December 1992); and Brigitte W. Schay, "Broad-Banding in the Federal Government, A 16-Year Experiment," *ACA Journal* (Autumn 1996).

[8] Alexis Adams Shorter et al., "2002 Summative Evaluation DOD S&T Reinvention Laboratory Demonstration Program" (Washington, DC: Office of Personnel Management, August 2002).

[9] Naval Research Advisory Committee, "Science and Technology Community in Crisis," May 2002.

[10] For a discussion of the BRAC process as applied to the labs, see Don J. DeYoung, "The Silence of the Labs," *Defense Horizons* no. 21 (Washington, DC: National Defense University Press, January 2003).

[11] Federal Advisory Commission on Consolidation and Conversion of Defense Research and Development Laboratories, report to the Secretary of Defense, September 1991.

[12] "Science and Technology Workforce for the 21st Century," report prepared for the Acting Secretary and Chief of Staff of the Air Force, Office of the Chief Scientist of the Air Force, July 1999.

[13] See Title 10, United States Code, Section 2304(c) (3)(B).

[14] A good history of FFRDCs can be found in a 1995 report by the Congressional Office of Technology Assessment, "A History of the Department of Defense Federally Funded Research and Development Centers," Report No. OTA–BP–ISS–157, June 1995.

[15] Defense Science Board, "Task Force on The Role of Federally Funded Research and Development Centers in the Mission of the Department of Defense," April 25, 1995.

[16] Congressional Research Service, "DOD's Federally Funded Research and Development Centers," 93–549 SPR, June 3, 1993. Congressional Research Service: "DOD's Federally Funded Research and Development Centers," 95–489, SPR, April 13, 1995.

[17] "Britain's New DERA Proposal Irks Industry," *Defense News* 15, no. 17 (May 1, 2000).

[18] Defense Science Board: "Final Report of the Defense Science Board on the 1988 Summer Study on The Defense Industrial and Technology Base," vol. 1, October 1988.

[19] Congressional Office of Technology Assessment, "Holding the Edge: Maintaining the Defense Technology Base," July 1989.

[20] *Federal Register* 55, no. 24 (February 5, 1990), 3885.

[21] OFPP Policy Letter Policy Letter 84–1 was subsequently rescinded on March 30, 2000. See *Federal Register* 65, no. 62, March 30, 2000, 16968.

[22] United States Code, Title 10, Section 2367.

[23] United States Code, Title 10, Section 2461.

[24] Secretary of Energy Advisory Board, Task Force on Alternative Futures for the Department of Energy National Laboratories, "Alternative Futures for the Department of Energy National Laboratories," February 1995.

[25] General Accounting Office, "Government Corporations: Profiles of Existing Government Corporations. General Accounting Office," December 1995.

[26] Michael A. Froomkin, "Reinventing the Government Corporation," *University of Illinois Law Review*, 1995, 543.

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