Chapter II

Assistance and Procurement Relationships

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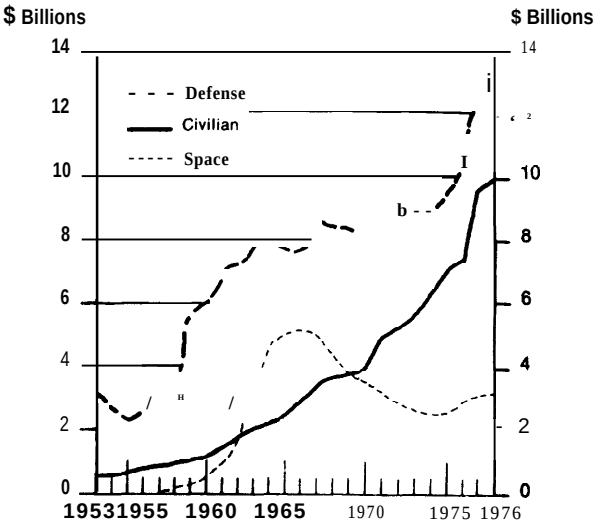
Since World War 11, the great bulk of the transactions the Federal Government has entered into with non-Federal parties for performing **R&D** has been for national security and space exploration. Over the past two decades, however, the Federal Government increasingly has sought to apply scientific and technical knowledge to the solution of social and economic problems. This reorientation of national priorities is clearly illustrated in figure 1 by the continued increase in the civilian R&D budget relative to the space and defense R&D budgets. Efforts to more effectively harness the power of science and technology to meet civil sector needs have led to the creation of R&D programs in such diverse fields as energy, environment, health, housing, transportation, education, manpower training, and law enforcement.

We wish to review the evolution of the R&D system in light of the requirement of the Grant and Cooperative Agreement Act to distinguish between assistance and procurement relationships. Therefore, we first examine the different objectives, expectations, and administrative practices associated with these two classes of Federal/non-Federal relationships. We then consider how the procurement system has evolved into a very effective instrument for drawing upon the scientific and technical resources of the Nation to meet national needs in the areas of national security and space exploration. We also consider the limitations of that system for drawing upon these same resources to meet national needs in the civil sector, and the extent to which these limitations might be overcome by an assistance perspective. Finally, we consider the issue of balancing public benefits and private gain in assistance relationships with commercial firms, and the role of openly competitive assistance awards.

Figure 1.—Obligations for Defense, Civilian, and Space R&D



SOURCE: Special Analy8is P, 1978 Budget.

Characteristics of Assistance and Procurement

The Grant and Cooperative Agreement Act differentiates between procurement and assistance relationships by restricting the use of alternative legal instruments to specified types of relationships. For example, contracts are to be used for procurement relationships, whereas grants and cooperative agreements are to be used for specified types of assistance relationships. Before considering the specific criteria established for the use of these alternative legal instruments, it is instructive to focus just on the implications of distinguishing **assistance relationships** as a class from **procurement relationships.** It is the difference between these two relationships which affects the conceptualization of the Federal role in applying the results of R&D to civil sector needs.

For Federal procurement, the basic need to acquire goods and services at fair value for the Government's sake has led to a set of highly developed procedures. To protect the Government's interest and to provide fair and equitable treatment of alternative suppliers, the Government maintains the usual buyer-seller, arm's-length relationship and relies principally upon competitive bidding for making awards. Sole source awards can be made only in special circumstances and with sufficient justification. The operational rules for guiding procurement transactions which are embodied in the Federal Procurement Regulations and the Armed Services Procurement Regulations,* include procedures for formal advertising, reviewing bids, making awards, conducting negotiations, and ensuring adequate and timely performance on the part of contractors. The rights and liabilities of the respective parties in procurement transactions are well defined by established legal precedents.

Assistance, on the other hand, has neither a precise, well-defined meaning nor uniform, widely understood administrative practices associated with it. The term *assistance* generally is taken to connote the provision of money, services, or property to a non-Federal party to accomplish a broad public purpose. The provision of Federal assistance implies a cooperative or partnership-type relationship between executive agencies and the non-Federal recipients with regard to the attainment of public policy objectives. However, the development of an analytical basis for Federal assistance, explicitly delineating those properties shared in common by assistance programs, and distinguishing between operationally significant categories of assistance programs, has not been carried very far. Consequently, the administrative practices based on such distinctions are not well developed. The Procurement Commission found that in the absence of central guidance, the administration of assistance programs has varied widely among different agencies in ways that often were inconsistent. The Commission believed this situation to be not only wasteful and ineffective but also to create unnecessary confusion and frustration for the recipients of Federal assistance.

In particular, questions of responsibility and accountability need to be clarified. In the absence of clearly defining the respective roles and responsibilities of executive agencies and non-Federal parties, questions of who does what and why at the operating level are left ambiguous.[3] The Commission noted that when there is uncertainty regarding the capabilities of recipients to adequately perform the assisted activity, Federal administrators tend to develop more and tighter rules, procedures, and standards. This response to uncertainty on the part of Federal administrators may provide a sense of security in the face of possible scrutiny. However, the unfortunate consequence of this response is that assistance programs lose the flexibility necessary for optimum performance in achieving policy objectives. Recipients cannot become routine appliers of Federal rules and regulations without a consequent stifling of initiative and responsibility. The problem created for the management of assistance relationships is well expressed by the Commission in its report:

> Assuring adequate contractor project management in a procurement context is difficult enough. We have yet to understand the need for, much less provide, guidance on assuring adequate project management in the different, supposedly cooperative, and admittedly more delicate, assistance relationship.[4]

The similarity between the management problem described here for assistance relationships generally and that posed in the procurement of R&D is noted shortly.

The remedy proposed by the Commission and embodied in the Grant and Cooperative Agreement Act is to establish a process whereby the roles and responsibilities of executive agencies

[1] U.S. General Services Administration, Federal Procurement Regulations, Washington, D. C., U.S. Government Printing Office, looseleaf services.

[2] U.S. Department of Defense, Armed Services Procurement Regulations, Washington, D. C., U.S. Government Printing Office, issued annually.

[3] Robert D. Newton, in Hearings before the Ad Hoc Subcommittee on Federal Procurement and the Subcommittee on Intergovernmental Relations of the Committee on Government Operations, U.S. Senate, on S.3514, Federal Grant and Cooperative Agreement Act of 1974, 93d Congress, U.S. Government Printing Office, Washington, D. C., 1974, pp.72-79.

[4] Report of Commission on Government Procurement, op. cit., Vol. 3, p. 137.

and non-Federal parties become more clearly delineated on a transaction-by-transaction basis. Thus, the Act requires that assistance relationships be distinguished as a class from procurement relationships, and it establishes broad guidelines for the use of contracts, grants, and cooperative agreements so that these alternative legal instruments more accurately reflect the underlying relationship between executive agencies and non-Federal parties. Recognizing that these measures provide only a first step in organizing the administration of Federal assistance programs, the Act also mandates a study to be undertaken by the Director of OMB:

> to develop a better understanding of alternative means of implementing Federal assistance programs, and to determine the feasibility of developing a comprehensive system of guidance for Federal assistance programs. [6]

It is not yet clear whether it is either feasible or desirable to develop a system of guidance for assistance programs as comprehensive as that for procurement. What the Act attempts to do is to force the complex issues involved to be effectively addressed on a Government-wide basis. Thus, it establishes a process whereby the Government as a whole can systematically learn from its experience in administering assistance programs.

As previously noted, the principal motivation for the Act is to bring greater discipline to the diversity of Federal assistance programs. Nonetheless, the importance for Federal R&D policy of the requirement to distinguish between assistance and procurement relationships becomes apparent as we trace the evolution of the R&D system from an almost exclusive orientation toward meeting Federal Government needs to an increasing orientation toward meeting civil sector needs.

Evolution of the R&D System

World War II provided dramatic examples of impacts that can result from a vigorous scientific and technical enterprise. Such examples include nuclear fission, penicillin, electronics, and aeronautics. These wartime experiences led to the adoption of policies supporting the generation of new knowledge and skills. An effective means for mobilizing the necessary intellectual resources has been the contract system for research and development. [6] The Federal *Government* was faced with the need to develop complex new technologies at, and even beyond, the existing limits of scientific understanding. In meeting this need, the Government turned to private institutions, and even created new institutions rather than rely exclusively, or even primarily, on its own civil service laboratories. Such institutions bring with them their own internal management. It is this technical management capability, as much as the scientific and technical knowledge and skills themselves, that is engaged through the contract system.

The unique demands of procuring new knowledge and complex technological systems have caused a considerable transformation in Government procurement regulations. The rather mechanical manner of contractor selection, based upon price for an item that can be specified in great detail, is simply not applicable for R&D. The first departure from sealed-bid procurement was authorized by the First War Powers Act of 1941. [7] Shortly after the end of the War, the flexibility to negotiate contracts for military R&D in peacetime was authorized by the Armed Services Procurement Act of 1947. [8] The departure from traditional procurement practices was clearly recognized by President Truman who upon signing this Act into law wrote:

> The bill grants unprecedented freedom from specific procurement restrictions during peacetime. That freedom is given to permit the flexibility and latitude needed in present day national defense activities . . . . There is danger that the natural desire for flexibility and speed in procurement will lead to excessive placement of contracts by negotiation and undue reliance upon large concerns, and this must not occur. [9]

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[6] Federal Grant and Cooperative Agreement Act of 1977, Section 8.

[6] Clarence H. Danhof, Government Contracting and Technological Change, The Brookings Institution, Washington, D. C., 1968.

[7] 50 Appendix U.S.C. 601-622.

[8] 10 U.S. C. 22o2, 2303-2314, 2381, 8012a; 19 U.S.C. 1202.

[9] Report Pursuant to Section 4, Public Law 86-89, H. Rept. 1959, 86th Congress, 2d Sess. (1960), p. 11.

Despite the danger of abuse, authority to negotiate contracts for R&D was extended to the civilian agencies by the Federal Property and Administrative Services Act of 1949.10 Thus, the growing importance of science and technology to agency missions and the inherent uncertainty of R&D led to the abandonment of the more objective, traditional procurement practices in favor of the subjective selection procedures based on the perceived scientific and technical merits of a potential performer's capabilities and approach to a problem.

Such an approach places a responsibility upon executive agencies to develop the necessary expertise to select among the many technological alternatives that present themselves and to ensure that the work funded meets Government needs at a favorable price. Despite the need for the executive agency to exercise effective control, sufficient latitude must be given the performer if creative work that meets mission objectives is to be attained. Thus, a delicate balance requiring a high degree of judgment must be struck in the relationships between executive agencies and performing institutions in the procurement of R&D.

The management problems posed by such procurement relationships are strikingly similar to those posed for assistance relationships generally, as described in the previous subsection. Despite their different purposes, both relationships share in common a measure of latitude for initiative and creativity; both involve an effective sharing of responsibility; and both require Federal/non-Federal cooperation to sustain the delicate balance. These aspects reflect the uncertainty and risk in striving for a national policy objective that requires the joint efforts of the Federal Government and a non-Federal party, whether in the public or private sector. It is pertinent to note that such relationships, which were initiated for procurement in time of war and authorized only with great reluctance in peacetime, have become accepted as commonplace. It is not surprising, therefore, that for both relationships there is an inevitable tension between the provision of latitude and efforts to ensure accountability .1'

[10]40 U.S.C. 471 et seq.

'*Bruce L.R. Smith and D.C. Hague, *The* Dilemma *of* Accountability in *Modern* Government, St. Martin's Press, New York, 1971; Bruce L. R. Smith, The *New* Political Economy, Halstead Press, New York, 1975.

The adaptation of the procurement system to mobilize the Nation's scientific and technical talents has produced a whole series of remarkable technological accomplishments in the military and space areas. The question for present purposes is whether this same system can simply be redirected toward meeting civil sector needs or whether more fundamental changes are required. The performance capabilities developed in various technologies for military and space applications provided the basis for well-known civil sector innovations in electronics, computers, and commercial jet aircraft. However, the adaptation of these technologies for civil sector applications was carried out entirely by the private sector and was unplanned and unintended by the Federal Government. If stimulating technological change in a particular part of the civil sector is a public policy objective, it presumably would be more efficient, as well as more effective, to attack that problem directly rather than rely on "spinoffs" h-em military and space programs.

A wide variety of such efforts have been launched. Before World War II, Federal efforts to apply science and technology to civil sector needs were concentrated mainly in the areas of agriculture, health, mining, and civil aviation. These efforts depended largely on civil service laboratories, and in the case of agriculture, upon the land-grant colleges as well. The first major Federal effort to draw upon the contract system of research to meet a civil sector objective was that of the Atomic Energy Commission (AEC) .[12] The AEC had its roots in the wartime Manhattan Project and after the war was charged with the mission of developing peaceful uses of atomic energy. Its Power Reactor Demonstration Project in the mid-1950's was instrumental in the adoption of nuclear power. [13] In the latter part of the 1960's, a number of new agencies were created, such as the Department of Transportation, the Department of Housing and Urban Development, the Environmental Protection Agency, and the Law Enforcement Assistance Administration—all of which utilize the contract system in their research, development, and demonstration

"Harold Orlans, Contracting *for* Atoms, The Brookings Institution, Washington, D. C., 1967.

[13]Arthur D. Little, Inc., Federal Funding *of Civilian* Research and Development, Vol. 2, Part 1 (prepared for the Experimental Technology Incentives Program, National Bureau of Standards), February 1976.

efforts. With the advent of the energy crisis, the AEC was absorbed into the Energy Research and Development Administration, which subsequently was absorbed into the Department of Energy (DOE). There is an especially strong focus on commercialization in DOE. However, all of the above-mentioned agencies, as well as a number of others throughout the Federal Government, are involved in efforts to foster the adoption and use of the technologies they develop.

Nonetheless, there is a fundamental difference in the role these agencies can have in the process of technological innovation and in the roles of the Department of Defense (DOD) or the National Aeronautics and Space Administration (NASA). DOD and NASA not only procure R&D, they also procure and use the products of that R&D. Thus, in these agencies; the innovation process—from the conception of an idea through deployment and use—is under an integrated management control. Not only are technological goals set and met, but they are set and critically evaluated within the context of specific operating conditions. This measure of control over the innovation process is not available to agencies attempting to foster technological change in the civil sector.

From R&D to Use

For agencies whose mission includes the support of certain activities in the civil sector, the use of procurement to perform the R&D necessary to carry out this mission should be clearly distinguished from procurement to provide for internal needs. The use of the Federal procurement system to meet what are essentially non-Federal needs appears, in this regard, to be a mismatch between ends and means. Since an agency has no control over the adoption and use of the products of its R&D, its responsibilities might be envisioned as being limited to setting and meeting scientific and technological goals.

Transactions with non-Federal parties–the purpose of which is to meet civil sector needs through the support of R&D—would fall under the heading of assistance relationships. It is obviously desirable to accurately designate Federal/non-Federal relationships in terms of the purpose of such relationships. However, whether there is a deeper significance in the requirement to distinguish between assistance and procurement relationships depends on whether this distinction is likely to affect the conceptualization of the Federal role and responsibilities in meeting specific civil sector needs through the support of R&D. To try to answer this question, it is useful to review the record of Federal efforts to meet civil sector needs through R&D.

Experiences with demonstration projects are particularly pertinent in this regard—they serve as policy instruments for bridging the transition from R&D to use. In a companion report, OTA reviews this experience. [14] That report covers demonstrations of both social and physical technologies to compare their similarities and differences and thereby develop a better understanding of the criteria and conditions for their successful use. For demonstrations aimed at implementing policy objectives, diffusion of the technology from the site of demonstration is the measure of success. In this regard, the record of demonstration projects has been very disappointing because of only a limited number of successes in stimulating the diffusion of a technology.

The companion study concludes there are two principal factors that determine the scope of opportunity for policy implementing demonstrations: 1) the nature of the technology, and 2) the nature of the institutional environment into which the technology is introduced. In general, when a technology is sufficiently well developed to be reliably reproduced from site to site, the opportunities for diffusion are enhanced. Similarly, opportunities for the diffusion of new technologies are enhanced when the institutional participants in a given policy sector have a tradition of using the results of R&D. In such cases, the necessary means of moving new technologies from R&D into use are in place and functioning in an effective manner. A well-developed institutional environment implies a certain measure of consensus among the key participants in a policy sector as to the criteria for desirable innovations. It further im-

[14] Office of Technology Assessment, *The Role Of Demonstrations* in Federal R&D Policy, U.S. *Government* Printing *Office,* Washington, D. C., *1978* (in press).

plies an acceptance of the Federal role in that policy sector with regard to fostering technological innovations to meet national policy objectives. These factors impose certain basic constraints which determine the scope of opportunity for effectively bridging the transition from R&D to use. The distinction between assistance and procurement relationships obviously will not affect these fundamental constraints.

The potential importance of this distinction lies in its effect upon exploiting those opportunities that do exist. In this regard, the companion study reveals further factors that influence the success of demonstration projects. These include:

1. participation in the demonstration project by representatives of various segments of an institutional environment who understand the requirements for success in that policy sector,
2. initiative for a project coming from non-Federal parties, and
3. willingness of non-Federal parties to share a substantial fraction of the costs and risks of a demonstration.

These factors emphasize the need to effectively engage in Federal efforts to meet civil sector needs of the appropriate non-Federal representatives in a given policy sector. It is these non-Federal decisionmakers who ultimately determine the success or failure of technological innovation.

However, in procurement it is clearly a Federal responsibility to set the criteria for acceptable performance and to judge whether those criteria are met, Yet, Federal officials can hardly be expected to possess detailed knowledge of non-Federal users' needs. Without such knowledge, the definition of the problem at the Federal level is likely to be fundamentally deficient. Furthermore, in the absence of such knowledge, the technological pathways pursued can easily diverge from those which would meet the intended objective. Thus, the Federal responsibility to assure adequate project management in procurement is inadequate to assure critical evaluation of a technology's capacity to meet specific civil sector needs. It is therefore not surprising that the products of federally supported R&D frequently encounter difficulty in bridging the transition from R&D to use in the civil sector.

One response to the concern about getting the results of Federal R&D out of the laboratory and into use in the civil sector has been the formation of a large number of technology transfer programs. A recent directory of such programs includes descriptions of 43 different Federal technology transfer programs .15 The methods employed in these programs to promote technology transfer or research utilization include demonstration projects, colloquia, distributing reports, and field agents. The effectiveness of these programs is still problematical, inasmuch as there is little adequate evaluation of their effectiveness. 16 For R&D undertaken against a backdrop of national need, it is natural that an effort be made to promote its utilization. However, the formation of special technology transfer programs is itself symptomatic of the difficulties encountered by federally supported technologies in making the transition from R&D to use.

The approach indicated by the requirement to distinguish between assistance and procurement relationships is fundamentally different. Fostering technological innovation in the civil sector should be carefully distinguished from promoting the utilization of R&D or the transfer of technology. The latter emphasizes finding uses for the products of R&D already in hand. The former emphasizes supporting the process whereby unmet social needs are satisfied through technological change. That is, it focuses first on needs and on the overall process of the adoption and diffusion of a new technology to meet those needs. Only secondarily does it focus on the R&D required as part of that larger process.

Thus, the requirement to distinguish between assistance and procurement relationships establishes a broader context for Federal efforts to

"Federal Council for Science and Technology, ***Directory of Federal Technology Transfer,*** U.S. Government Printing Office, Washington, D. C., 1975.

[16]National Science Foundation, ***Federal*** Technology ***Transfer:*** An Analysis ***of*** Current Program Characteristics and Practices, prepared for the Federal Council for Science and Technology, 1975.

meet specific civil sector needs through R&D. It thereby provides a Government-wide, institutional means of broadening the scope of concern of Federal R&D program managers to the entire process of technological innovation, rather than just the setting and meeting of technological goals.

This is not to suggest that the use of procurement methods precludes a focus on technological innovation and the specific requirements that federally supported technologies must satisfy if they are to be adopted and used in the civil sector. Individual program managers can and have recognized such requirements. However, the designation of assistance provides an institutional rather than an individual recognition that such requirements are to be met. Consequently, it facilitates the conceptualization of the Federal role appropriate for meeting these requirements. It further allows for a systematic, rather than ad hoc, delineation of the Federal and non-Federal responsibilities most effective for meeting these requirements. The delineation of responsibilities in the procurement system is for the express purpose of meeting Federal, not non-Federal needs, and the system admits of only limited flexibility in this regard.

It should also be noted that a focus on scientific and technological goals is entirely appropriate when the principal objective is the generation of new knowledge. Insofar as such knowledge is not for the Government's own use, it would be designated assistance rather than procurement. Nonetheless, a principal focus on innovation is appropriate only when specific needs are being addressed.

It might also be noted that in its discussion of civil sector R&D, the Commission on Government Procurement focused primarily on the role of the Federal Government in building a science and technology knowledge base for innovation. In this regard, the Commission considered the important role that technological advances in military and space programs had in stimulating well-known civil sector innovations. Correspondingly, most of the Commissions discussion of the Federal role in supporting civil sector innovation was under the heading of procurement of R&D. " However, insofar as the principal purpose of individual transactions is for broad public purposes rather than the Government's own use, the recommendations of the Commission embodied in the Grant and Cooperative Agreement Act would require that such transactions be labelled assistance rather than procurement.

Before proceeding to the specific means provided by the Act for more clearly delineating Federal and non-Federal roles and responsibilities in assistance relationships, it is useful to consider the issue of assistance relationships with commercial firms.

Profitmaking Organizations

As already noted, the term *assistance* encompasses a wide variety of meanings, most of which refer to grant-type programs for State and local governments and nonprofit institutions. For example, the Grants Act of 1958[18] authorized all agencies which possessed the authority to support basic scientific research through contracts to also support such research through grants. However, it restricted the recipients of such grants to institutions of higher education and nonprofit institutions whose primary purpose is the conduct of scientific research. The Grant and Cooperative Agreement Act places no restrictions whatsoever upon candidates for assistance awards. Unless authorizing statutes exclude profitmaking organizations, they are therefore eligible for assistance awards. In view of their central role in technological change, they are clearly important candidates.

Insofar as innovation entails the deployment of commercial technologies, private gain is a prerequisite for the realization of public benefits. However, when the award of public funds entails private gain, care must be taken that such awards are made in a recognized and impartial manner. Furthermore, the connotation of assistance is generally to support and stimulate activities that provide widely distributed public benefits without

"Report of the Commission on Government Procurement, op. cit., Vol. 1, Part B.

"42 U.S.C. 1891-1893.

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direct private gain. The use of the term *assistance* in this context, therefore, has the potential for creating serious confusion and deserves further attention.

It is important to distinguish between assisting ongoing functions in the civil sector and assisting the process of technological innovation. In assisting the activities of State and local governments and nonprofit institutions, aid often is awarded on the basis of need or geographical distribution. The connotation of subsidy is perfectly consistent with public policy objectives. The recipients of such assistance awards provide a clear locus of responsibility for carrying out the reasonably well-defined functions and activities being assisted.

However, no one can be responsible for technological change per se. Executive agencies may be charged by Congress with supporting and fostering innovation in various policy sectors, but they exercise no administrative control over the process itself. Innovation involves a variety of participants having different roles and being driven by their own particular motivations.

Regarding State and local governments, there is little need to distinguish between assisting their ongoing delivery of services and assisting improvements in the delivery of those services through technological innovation. Regarding commercial firms, however, it is essential to distinguish between assisting the process of technological innovation and assisting a particular firm. The purpose of the assistance is clearly a widespread distribution of public benefits, not the welfare of a particular firm.

The Government's objectives and those of the firm may be in agreement as far as achieving the production, use, and widespread diffusion of a socially beneficial technology. Insofar as market incentives are deemed inadequate to bring about such a technology without Federal assistance, there is a common objective shared by the Government and the firm. However, there is also a sense in which the firm and the Government have an inherent divergence of interests. Whereas the firm seeks to capture for itself as much of the benefits of the innovation as it can, the Government seeks to assure a widespread distribution of such benefits at the lowest cost to the general public. In a market economy, competition is the principal means relied upon to accomplish these public objectives.

Competition also provides a means for making procurement awards in a recognized and impartial manner. Competitive bidding not only serves the Government's interest in obtaining a favorable price; it is intended also to assure that the Federal Government selects among alternative suppliers in an equitable manner.

However, the means for selecting among alternative recipients of assistance awards are relatively undeveloped. Thus, Federal administrators generally have tended to use the procurement system for supporting efforts such as development and demonstration projects to meet specific civil sector needs. The explicit inclusion of such efforts within the class of assistance relationships points up the need to develop a system for making assistance awards that are equitable as well as effective.

If assistance to a firm is effective, it would tend to give that firm at least a temporary competitive advantage. Such assistance also runs the risk of displacing private funds with public funds, thereby enhancing private gain without corresponding increases in public benefits. Openly competitive assistance awards would minimize these difficulties. Moreover, the Grant and Cooperative Agreement Act encourages the use of competition, where appropriate, in the making of assistance awards.

It should be emphasized that procedures for making competitive assistance awards to *com*mercial firms ought to differ in fundamental ways from the corresponding procedures for procurement awards. Assistance awards would be aimed at stimulating the widespread adoption and diffusion of a new technology. However, Federal officials generally would have inadequate knowledge of the market factors which govern a new technology's rate of adoption and diffusion. And contrary to the case in making procurement awards, Federal officials likely would lack the knowledge necessary for setting the terms of an award to ensure that it meets the desired objective. Thus, in setting the terms for such competitive awards, there would be a need for in-

volvement of representatives from the various segments of a given policy sector who understand the requirements for successful innovation in that sector. It would clearly be the responsibility of Federal officials to assure that this be done in an open manner and with all-interested parties represented to protect against abuse.

Such an approach presumes that there is a basis for cooperative dialogue between the Federal Government and the non-Federal participants in a given policy sector. Without mutual acceptance of the Federal and non-Federal roles and responsibilities in a given policy sector, the opportunity for effective Federal support of technological innovation in that sector is limited.

In the next chapter, we briefly discuss the issue of openly competitive assistance awards within the context of the OMB study. We also offer an example of how the terms for such awards might be set in the hypothetical scenario presented in appendix B. However, it is well beyond the scope of this report to prescribe detailed procedures that would strike the proper balance between equity and effectiveness in making assistance awards to commercial firms. Rather, the intent is to focus attention on an issue raised by the requirement of the Grant and Cooperative Agreement Act to distinguish between assistance and procurement relationships.