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## Federal R & D—Outmoded Management Policies

One of the most significant trends in federal research and development in the 1970's has been the shift in emphasis to a domestic market. Until recently, the preponderance of federally supported R & D was targeted to military, space, and other objectives, where the government itself was the primary customer. Most of the present national research institutions, laboratories, and management policies have evolved since World War II with this direction. But we have now entered a new era in which the federal government will not be the primary customer. The new customers are industry, local government, and private citizens. The proportion of federal R & D directed to the civilian sector has increased from 23 to 35 percent over the last 6 years, and it will undoubtedly grow in the future with the growth of government involvement in energy, transportation, food production, recovery of nonrenewable natural resources, environmental protection, and a host of other areas involving the private sector. But an important policy question is not being faced. It is not at all clear that funneling federal R & D funds through existing federal institutions will come within a country mile of accomplishing the intended purpose.

The objective is to move the products through the marketplace to the consumer. But the decision-making process of the marketplace is circumvented by a different, politically oriented form of decision-making in the Executive and Legislative branches. The barriers to moving new products and processes from federal agencies and laboratories to private consumers are formidable, and we are making slow progress, if any, in understanding and reducing them. Private companies tend to divide into two groups. One looks on government contracts as an end in themselves. Its record in commercial business is poor. The other, which includes America's best commercial companies, with a thorough understanding of the marketing problems of the domestic sector, is usually reluctant to involve itself in federal programs. When such companies do get involved, it is not with their best people or with their total resources. One reason is the government's patent policies, such as its reluctance to grant exclusive licenses, licensing policies on prior patents, deferred determination of rights, march-in rights, and various other entanglements.

Management policies for federal R & D directed to the domestic sector need more explicit attention by the Executive Branch and Congress. How should existing federal institutions and policies be modified so that it will have some meaningful influence on the economy? Approaches such as injecting federal monies directly into the private sector through R & D tax refunds or other fiscal devices should be seriously explored. Experience has shown that federal appropriations for civilian R & D may be necessary but not sufficient to push a new technology into the marketplace. A confluence of other important factors is required. Marketplace decision-making should be reflected in the federal budget process and new technologies pulled into the marketplace through incentives rather than pushed through federal dollars. Finally, more thought needs to be given to clearing away legislative and regulatory snares so that the innovation process can operate more freely and hence more effectively in the private sector.

Existing federal agencies are not likely to examine such questions with enthusiasm since changes may not be in their interest. In-house R & D activities in national laboratories and centers should be given careful scrutiny in terms of their ability to translate results into the public and private sectors. The country can ill afford many monuments that find no useful application.

Federal R & D management poses one of the foremost policy questions of this decade. The citizens of the United States deserve a greater economic return on their investment. Feeble attempts have been made to examine these questions in the past. But the stakes are now much larger, they are growing daily, and the hour is late.—RAYMOND L. BISPLINGHOFF, *Chancellor, University of Missouri, Rolla 65401*