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The Mission of the National Science Foundation

For 30 years the National Science Foundation (NSF) has demonstrated a remarkable ability to address the nation's concern for the support of the sciences. Although to those in the field funds have never appeared adequate, there is no question that today, by any measure, the scientific effort in the United States stands at the forefront of the world. The NSF has played a significant role in making this happen, and I see no indication that the foundation's interest in or commitment to this role has diminished.

Recently there has been increasing concern about the problems developing in engineering and the vitality of the U.S. technological enterprise. In these areas, too, the NSF has long played a role. The foundation has supported basic engineering research and engineering education as part of its program from its inception. Further, since its organic act was amended in 1968, the NSF has experimented with a variety of modes of support for applied research. Plans for a reorganization recently announced by the foundation are intended, it appears to me, not to diminish the emphasis on fundamental science but to recognize the importance of maintaining a strong basic engineering program as well. At the same time, there is once again the opportunity to recognize the blurred, often artificial, distinction between basic and applied research and to strengthen the foundation's overall support for programs in basic engineering and in the natural and social sciences. The reorganization will also strengthen unified programs of disciplinary support.

Engineering is in some ways unique. It deals with a broad spectrum of activities ranging from fundamental research to product design and development. The principal difference between engineering and science, as they are usually understood, is that engineering is basically oriented toward the environment created by man. A close linkage exists between fundamental engineering research and traditional scientific research, for example, in biology, chemistry, mathematics, and physics. And new relationships have developed, as in bioengineering.

The programs of the proposed NSF Directorate for Engineering would support engineering activities that span the spectrum from fundamental research to applied research to experiments in technology transfer with industry. At the same time, under this plan it is clear that the responsibility for conducting applied research would rest in all NSF basic research directorates, including the Directorate for Engineering. This is intended to encourage closer links between basic research developments and focused research, while preserving the special funding and management techniques required to support applied research.

This concern for engineering reflects a maturation process at the NSF which has always recognized the importance of engineering as an integral and essential part of our nation's scientific fabric. It also reflects a concern that, while America's innovative and productive spirit is lagging, the foundation, under its broad mandate from Congress, can further stimulate first steps in the innovation chain that leads from the library and the laboratory into the marketplace.

The NSF's proposed realignment of responsibilities is neither a cosmetic nor a quick response to recent concerns expressed by all those interested in the future role of engineering. It is intended to provide a workable structure for timely and mutual support of activities in all NSF directorates.

—NORMAN HACKERMAN, *President, Rice University, Houston, Texas*