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# Federal R & D: Not an Entitlement

The Administration's proposed R & D programs for fiscal year 1984 address two overwhelming national priorities: mobilization of scientific research and industrial high technology to spearhead economic progress, and restoration of national defense strength. Those priorities show up in three ways.

- Defense R & D, consistently neglected for nearly 20 years, is now being addressed. This includes more than $850 million for basic research.
- Basic research in the physical sciences and engineering, underfunded since the mid-1960's, will receive large, selective increases.
- Much of the increased basic research will be directed to universities, where it will also help train new scientists and engineers.

Over the years, in unpredictable, leisurely ways, basic research has led to new technology, which in turn has been the dominant source of growth and of new jobs. But now, in light of what has been happening to the competitiveness of U.S. industries, it is obvious that we cannot simply wait for good things to happen. Science in the universities and the federal laboratories can and must be better attuned to the opportunities of the industrial world. Our leadership in the international marketplace is at stake.

As a result, our fiscal 1984 program emphasizes selectivity. Increases are targeted to areas likely to have the greatest long-term impacts on new technologies—fields such as mathematics, physics, engineering, plant biology, materials science, astronomy, and space sciences—and specifically to universities, where research involves training of people needed in our increasingly technology-dependent economy. In fact, we consider the opportunities so great, and their potential impact so important, that basic research in those fields receives some of the greatest emphasis of any part of the federal budget. For example, overall basic research would grow by 10 percent, and agencies that support primarily physical sciences and engineering would grow by 15 percent. Moreover, in the National Science Foundation some disciplines, such as mathematics and electrical engineering, would grow by about 25 percent. And in the life sciences, with overall level funding, there are large support "spikes" in important subareas such as plant and molecular biology and the neurosciences. Civilian basic research is undergoing some of the most profound changes in decades. The essential point is that these selective increases neither "reward" nor "punish" fields of science. While segments of the research community may view our actions from personal perspectives, I hope they will realize that the increases are the Administration's way of addressing a very real national objective: our economic future.

Just as we have not allocated these funds for the usual reasons, we do not expect them to be used in the usual ways. Naturally, the various disciplines would welcome infusions of money to support more projects, say the next 10 or 15 percent of the proposals—all good—that missed the funding cutoff. But the President has not allocated these growth funds to support "next best" research. The real return on this federal investment will come from focusing on the best projects and permitting those nuclei to grow to world-leading concentrations of research excellence. This approach will yield two invaluable products: front-line scientific advances, and a growing body of superbly trained new scientists and engineers.

In spite of its utility, this kind of highly selective approach may not be popular. But science is not on the list of public obligations—like social security or Medicare or veterans' pensions—that have to be funded according to an egalitarian formula. Discretionary spending, which includes all of R & D, makes up only 22 percent of the federal budget today. Every budget item is under intense pressure, and arguments for increases have to be immensely convincing. The fact that so many arguments for research were so persuasive testifies to the central role of research in national policy.—G. A. KEYWORTH, II, *Science Advisor to the President, Office of Science and Technology Policy, Washington, D.C. 20500*