The Vannevar Bush Legacy

Science—The Endless Frontier. A Report to the President on a Program for Postwar Scientific Research. VANNEVAR BUSH. National Science Foundation, Washington, DC, 1990. xxxiv, 192 pp., illus. Paper. Reprint with new introductory material. Distribution limited.

American Science Policy Since World War II. BRUCE L. R. SMITH. Brookings Institution, Washington, DC, 1990. x, 230 pp., illus. $34.95; paper, $14.95.

American science is about ready to celebrate an important anniversary of the founding of its modern policy framework and institutional structure. Fifty years ago, some time between the establishment of the National Defense Research Committee in 1940 and the enactment of authority for the Office of Naval Research in 1946, the concrete was poured and the pipe laid for the unique and wonderful edifice that supports American science to this day. The chief architect surely was Vannevar Bush. In celebration of its own 40th anniversary, the National Science Foundation has republished Bush's *Science— The Endless Frontier* with a new and lengthy preface by Daniel Kevles entitled "Principles and Politics in Federal R&D Policy, 1945–1990: An Appreciation of the Bush Report."

Kevles's purpose is to trace the continuing influence of Bush's powerful ideas on the manner of federal science support. The central importance accorded to basic research in academic institutions and the necessity that the organization of scientific research programs be under the control of independent scientists are the most enduring of these ideas. Bush clearly stated the view inferred from wartime experience and readily endorsed by academic scientists that basic research is essential to genuine advance in three essential parts of American life—defense, industry, and health. He strongly recommended that the federal government assume responsibility for its support. He also clearly believed that only the scientific imagination could sustain that perspective. He surely thought but less clearly said that bureaucrats—military or civilian—and politicians were likely to be short-sighted and to push science into applied efforts. Kevles handily traces the dispute between Senator Harley Kilgore and Bush about basic vs. applied research and merit selection vs. equity distribution that Bush won in principle. The victory was pricey, however. The delay in authorization forestalled any possibility of the dominant and centralized role in science policy and management that Bush envisioned for the NSF. The Kilgore-Bush "debate" was, as Kevles makes clear, a prototype for the continuing debate about scientifically determined over socially targeted research programs as well as for the role of independent science in making science policy. This reprint and retrospective make a handsome and handy book.

Bruce L. R. Smith in *American Science Policy Since World War II* has set out to examine such science policy questions as What is the best structure of the "research system"? What is the state of university, government, and industrial laboratories? Do their interactions need attention? Is the relationship between defense and non-defense objectives in science "unhealthy"? and Can the use of science in regulation be improved? Smith has been a student and analyst of the American science scene for many years, and his selection of historical highlights and observations about them carry a certain weight on that basis. The book covers a lot of ground in a sophisticated and worthwhile fashion.

Smith has chosen a foreshortened historical approach that divides the story into a prelude from the 18th century to World War II, a golden age from *Science—The Endless Frontier* to mid-Johnson, a time of troubles up to the first Reagan budget, and a subsequent renaissance in the decade begun in 1981. According to his interpretation a postwar consensus lasting to about 1965 was propelled by enthusiasm derived from victory, from a belief in progress, and from assessment of science's contribution to both. The consensus was enabled by prosperity underlying economic and budgetary growth. In the middle '60s budget demands, exposed social divisions, and campus turbulence carried over into science policy. The debate about priority of applications was revived. The "utility" of basic research was challenged, the "value" of an independent role for scientists was questioned, and priorities among problems were disputed. A renewal of consensus began with the Carter defense budgets designed by Harold Brown and the alternative-energy-sources projects of that era. It culminated with renewed faith in basic research to support American competitiveness and vastly increased defense R&D in the Standing Tall atmosphere of Reagan's administration. Smith concludes with some general assessments of the situation of American science and identification of a number of current unsolved difficulties in science policy.

Science policy is a matter of interest and concern to scientists and others with a stake in social and economic activities that have a significant component of science or science-based technology. In any study of science policy we really need to start by defining our subject. What can we legitimately consider to be the science policy of the federal republic, or for that matter of the government of the United States? Is it government policy aimed at fostering scientific activity in government and outside, à la Vannevar Bush? Does it comprehend education and training of scientists and practitioners of science-based professions such as physicians and engineers? Is it government effort to apply the findings of science to the development of new technologies in government and out? Is it policy that draws on science to understand events and forecast the future? Is it policy to grapple with social, physical, economic, or whatever kinds of problems have been perpetrated by science and particularly new technology?

Smith has taken the position: all of the above. I am not sure his capacious approach is an optimal strategy. Though the narrative makes sense, it is not clear that it illuminates in particular the deep and complex matters that he set out to scrutinize. Nor is any other organizing principle readily apparent. Rather, one is left wondering why this selection of material rather than some other. In the end we have an accessible brief history of a complicated matter, but the challenging questions raised at the outset remain largely unexplored.

DAVID A. WILSON
Department of Political Science, University of California, Los Angeles, CA 90024

Working with Experts

The Fifth Branch. Science Advisers as Policymakers. SHEILA JASANOFF. Harvard University Press, Cambridge, MA, 1990. xvi, 302 pp., illus. $27.95.

In the November election, California voters faced a number of health and environmental initiatives, the best-known of which was "Big Green." Scientific experts arrayed themselves on both sides of the debate, including former Surgeon General C. Everett Koop, who urged defeat of the measure in television commercials. Most voters, thoroughly confused about the political, scien-