

## **The Future is Now: Science and Technology Policy in America Since 1950**

Written by Alan I. Marcus and Amy Sue Bix  
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From the creation and detonation of the atomic bombs in 1945 to the importance of the Internet in American culture, scientists have played a significant and necessary role in the shaping of contemporary society. The positions scientists have held during the last fifty years, however, have been tenuous and fragile ones, subject to the whims of the Executive and Legislative branches and federal funding. American science and technology policy has largely been subject to the tendency of the sitting President to support the different fields, whether physics, social sciences, or defense- and military-oriented technology. The talents and accomplishments of scientists have been used to foster economic growth, demonstrate the preeminence of capitalism over communism, to develop military strengths, and to improve the quality of life for Americans.

In *The Future Is Now: Science and Technology Policy in America Since 1950*, Alan Marcus<sup>1</sup> and Amy Sue Bix<sup>2</sup> detail the vital role that scientists play and have played in the evolution of the United States' domestic policy, foreign relations, and societal relations. Marcus and Bix concentrate on how the policies of Presidents, their advisors, and the Legislature function, through the disbursement of federal funding, serve as the principal means of shaping the growth and development of science and technology.

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<sup>1</sup> Alan I. Marcus is a professor of history and the head of the history department at Mississippi State University.

<sup>2</sup> Amy Sue Bix is an associate professor and co-director of the History of Technology and Science program at Iowa State University.

Marcus and Bix trace the government's relationship with science and technology beginning with the creation of the atomic bomb, considering World War II to be the starting point of America's realization that continued dominance in the international scene depends upon scientific and technological supremacy. They explain that the question "what is or has been America's science and technology policy?" is a question that should neither be asked nor can be answered.<sup>3</sup> There has never been an unswerving approach to science and technology as the continued evolution and expansion of issues and developments cause the national policy to be continually in flux. The book concisely and adequately details each administration's approach to science, noting the domestic and international demands and pressures that tailored the distribution of federal funds for research, development, and education.

*The Future is Now* begins with the detonation of the atomic bombs over Japan in 1945. The Manhattan Project became a guiding example of how cooperative enterprises functioned, as individual scientists conducting experiments were soon replaced by "task forces."<sup>4</sup> Research was conducted by several groups independently and simultaneously, as enterprises such as NASA believed that the competitive aspect of this situation would hasten the reaching of the best results and save money. During the Cold War the presidents increased the federal funding for military and defense related sciences, while also using these and societal-oriented technological advances to demonstrate the superiority of capitalism over communism. Marcus and Bix detail the relationship that President Kennedy established between the federal government and scientists in terms of funding for universities, laboratories, and research and development. Kennedy's policies

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<sup>3</sup> ALAN I. MARCUS AND AMY SUE BIX, *THE FUTURE IS NOW: SCIENCE AND TECHNOLOGY POLICY IN AMERICA SINCE 1950* 10, Humanity Books 2007.

established a burgeoning dependence of scientists upon federal funding for their work, as he dramatically increased the amount of funding for science and technology while making it easier for aspiring scientists to obtain degrees.

Because of the importance of federal funding to the continued development of science and technology, scientists found themselves indebted to the political process to secure these needed funds. At the same time, however, scientists were expected to remain impartial, apolitical, and non-partisan, as their work is to benefit society without recognizing socio-economic status or party lines. Marcus and Bix note that despite the belief that scientists should remain above politics, involvement became necessary to ensure receipt of funds even though this compromised the independent and impartial nature of scientific research. Universities became especially dependent upon federal funds for continued success, even as some began to question the virtue of conducting defense-related research during the Vietnam War. As Lee DuBridge noted in his article *Science Serves Society*, “science and technology are no longer separable from political and social problems...science is in politics and politics is in science.”<sup>5</sup>

Marcus and Bix detail the creation of scientific organizations, such as the Atomic Energy Commission, the National Academy of Sciences, and the National Science Foundation, and the role these organizations play within the tenuous relationship between federal government and scientists. The National Science Foundation was created in 1950 to oversee scientific and technological efforts within the government, private, and public groups. It was unable to design or implement policy and was subject to legislative review of its actions. Eventually, the NSF was forced to publish a list of reviewers and must explain why grants were refused to certain applicants after pressure from Congress

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<sup>5</sup> Lee A. DuBridge, *Science Serves Society*, *Science* 164, 1137-40 (1969).

regarding grants. During the first Bush administration, Marcus and Bix discuss the further Congressional infringement upon NSF ability to choose its own research topics when a bill was passed requiring the NSF to research “fundamental laws and systems of science that supports the nation’s technological base, that supports the nation’s economic competitiveness, and that improves the nation’s mathematics and scientific base.”<sup>6</sup> The authors reveal how little autonomy these scientific organizations had in using federal funds for research.

The authors do not concentrate solely on military- and defense-related technology, but include everything from health research and environmental protection to the introduction of processed foods, agricultural endeavors, and kitchen devices. The breadth of the examples of how science and technology contributed to nearly every aspect of American life ground this book in what the average reader can relate to and understand. It is clear how very much of what is researched depends upon the current administration, in particular the President’s views towards scientific research, his advisors, and the influence of the scientific organizations.

*The Future Is Now* is a comprehensive look at the past fifty years of science and technology policy in the United States. The authors set out to show the reader that there has been no static policy towards scientific and technological research and development, but rather there is a constantly mutating and varying set of actions and policies developed by each administration that determines how the federal funds are allocated and applied to various fields of scientific and technologic research. Marcus and Bix present the material in a manner that brings this potentially complex and multifaceted material down to a level where an average reader, previously ignorant of the subject matter, can put the book

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<sup>6</sup> Marcus, *supra* note 3 at 225.

down with an adequate and comprehensive knowledge of how politics shapes the development of technology. This work is especially relevant at a time like this when the current administration superimposes its own feelings of morality on medical and scientific research.