FOR BETTER OR FOR WORSE

ALFRED K. MANN

For Better or for Worse

THE MARRIAGE OF SCIENCE AND GOVERNMENT IN THE UNITED STATES

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To my wife, Jayne, who did not live to see this book published, and to our children, Stephen, Cecile, David, and Brian, who helped me to see it through to the end.

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Preface

Early in the twentieth century, when funds from wealthy individuals and private foundations ceased to meet the needs of modern science in the United States, the federal government began to invest in a national scientific infrastructure. This was done tentatively at first and then in World War II on the largest scale imaginable. The investment was so successful that it virtually demanded to be continued when peace came. So began the development of an American science establishment, today an amalgam of scientists, engineers, universities, industrial laboratories, and federal science agencies. The establishment is a remarkable achievement in its own right, distinct from the science and technology it has helped to produce but an integral part of them. It has been held together for a half century by a federal government determined to foster the benefits of science and technology for its citizens. The government has achieved this using public money to underwrite the cost of the science establishment despite the intrinsic fluidity and ungovernable nature of both the science and the establishment.

By chance, my career coincided with the emergence and growth of the science establishment. In the words of Dean Acheson, I was "present at the

creation." My early impression of the establishment as a loose patchwork of federal agencies and private institutions underwent a significant change as time passed. I once thought them to be independent fiefdoms connected only by a common interest in the federal budget. That perception was replaced by an awareness of their joint dedication to encouraging and supporting science and technology for the benefit of the nation.

The science establishment is not usually acknowledged as a separate entity in what is written about science and technology. I hope to compensate for that omission in this book, which is an overview of the science establishment and its relationship with the federal government. I have traced the development of the four nonmilitary federal science agencies that have been and still are the principal supporters of basic scientific research and technology in U.S. universities, where most of the fundamental research in the nation takes place. I believe that the essential features of the science establishment as a whole appear clearly in this description of the evolution of the individual federal science agencies.

This book is not a scholarly history with any claim to completeness. Instead, it attempts to tell the story of the complex relationship between science and government in the United States as one might tell the story of a marriage between two people. This analogy is not, I think, too finely drawn and helps to make the changing fortunes within the union easier to follow.

It is a pleasure to acknowledge the kindness of individuals who suggested reference material and in many instances furnished it to me. These were the historians: George Mazuzan at the National Science Foundation, Victoria Harden and Sam Josaloff at the National Institutes of Health, Marie Hallion at the Department of Energy, and Stephen J. Garber at the National Aeronautics and Space Administration. In addition, D. Allan Bromley, Richard Mandel, and Sanford P. Markey encouraged me and sent valuable material.

The science editor at Columbia University Press, Holly Hodder, her assistant, Jonathan Slutsky, and the copyeditor, Sarah St. Onge, eliminated occasional awkwardness in my presentation and corrected egregious errors with tact and forbearance. With a sharp eye for mistakes and ever-present good humor, Jean O'Boyle has typed the many drafts it has taken to achieve a finished manuscript.

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