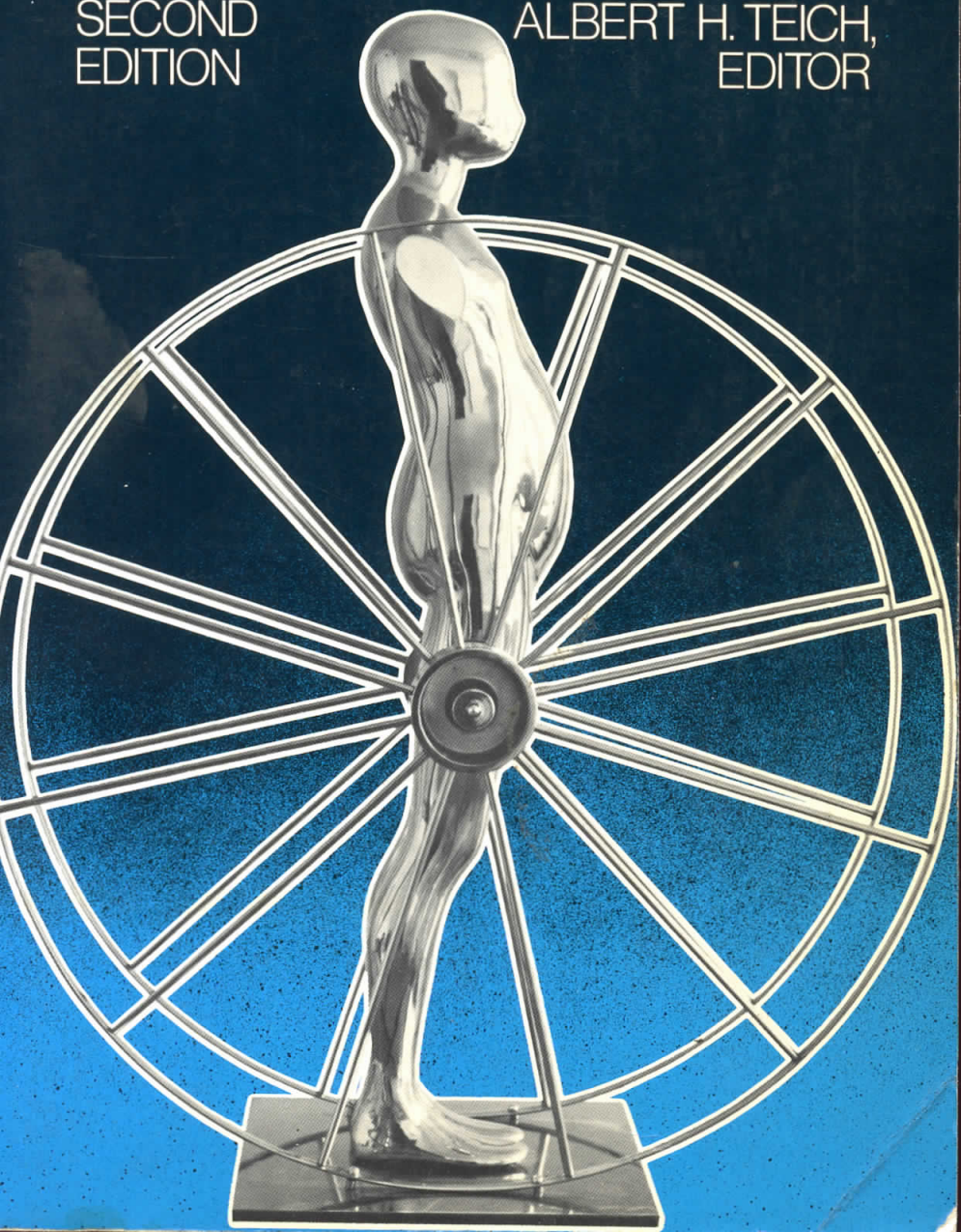


Technology and Man's Future

SECOND
EDITION

ALBERT H. TEICH,
EDITOR

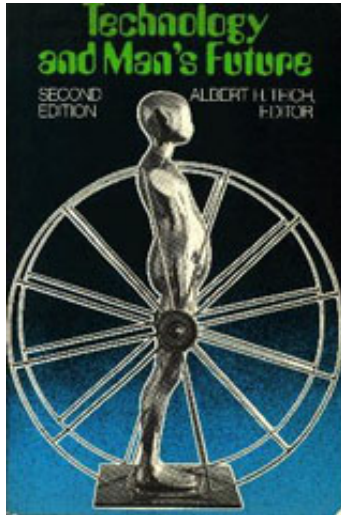


Technology and Man's Future

Albert H. Teich, editor

New York: St. Martin's Press

Second edition, 1977



The first edition of *Technology and Man's Future* was a gamble for St. Martin's Press -- an unknown author in a little-known field. Its success prompted the publisher to invite me to prepare a revised edition for which they provided a more artistic cover and a more generous page budget.

Half of the 22 chapters in the second edition were new and many of the additions reflected growing interest in technology assessment as a means of anticipating and controlling the social consequences of new technologies. Other noteworthy features included an excerpt from *The Limits to Growth*, which had stirred up a major controversy in the mid-1970s, and an essay by Langdon Winner, whose writings have appeared in all subsequent editions.

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Second Edition

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Introduction

When historians in the twenty-first century look back upon the present period, they are certain to be struck by the proximity in time of two enormously significant but very different technological events. To many of us, the landing of the Apollo 11 astronauts on the moon on July 20, 1969, symbolized the culmination of a path of technological development through which man demonstrated his hegemony over the forces of nature. There seemed to be little that a society such as ours could not achieve, given a sufficiently sustained national commitment. Only four years later, however, in the fall of 1973, the precariousness of our technological society became clear to anyone who drove or traveled in an automobile. Our petroleum-based transportation system nearly ground to a halt as a result of the Arab oil embargo. The "energy crisis" was upon us.

Of course, the Apollo moon landing was not the apex of technological civilization, and, contrary to what some would have us believe, the energy crisis does not necessarily mark the beginning of its decline. But it is remarkable that, so soon after witnessing the most impressive demonstration of technology in recorded history, we were rudely awakened to a sense of technology's limitations.

In the introduction to the first edition of this book, published in 1972, I described my childhood images of a technological future. The picture of tomorrow's world that I carried around in my head throughout my childhood years corresponded, more or less, to that which one might have acquired from any number of science-fiction movies or from such monuments to technology as the Museum of Science and Industry in Chicago. My world of the future was characterized by symmetry and neatness, mile upon mile of gleaming chrome, millions of buttons to push, and endless gadgets to do all the work. All of our "old-fashioned" ways of doing things were, I believed, to be replaced by modern, more efficient ones. A nourishment pill in the morning would save us the trouble of consuming three meals during the day. Automated highways would carry us effortlessly from place to place. When I reflected on these images several years ago I was struck by the fact that the technological future always seemed to be an end in itself. When adults in my life spoke of the future, they implied its inevitability—with some interest and some, but not much, enthusiasm. No one seemed to care very much for the prospect, but this was the course of "progress," and only a fool would try to resist its tide.

Influenced by a major theme of social criticism, and to some extent by the political movements of the late 1960s, I was interested in these juvenile images because of what they implied about the relationship between technological progress and human happiness. What, I asked, is the point of making the tools of society more and more efficient and increasing the material affluence of society if the ultimate result is not satisfaction but alienation of a large segment of the population? Is material progress an end in itself, or is it, more properly, a means to some higher end? Is the development of technology leading toward a more desirable state of human affairs, or is it actually producing a decline in the quality of life? Is technology a tool that human beings are capable of using as they choose, or is it, in a basic sense, a system that has gone out of control?

Five years later these questions have neither been answered nor have they disappeared. Their immediate importance has been overshadowed, however, by another, apparently more urgent, complex of technological problems besetting society. To most people, the energy crisis is the most pressing aspect of the complex. Intertwined with it are a variety of more fundamental issues: how long can society continue to grow in the face of limited reserves of natural resources and the limited capacity of the earth to absorb technology's waste products; can inequities between rich and poor nations be resolved by any means short of global upheaval; can our technological civilization survive in anything near its present form when threatened with an exploding population, environmental catastrophe, and a diminishing resource base.

The tone of discussions on technology and society has changed during the 1970s. Although often couched in unnecessarily pessimistic terms, a growing (and healthy) realization exists among national leaders as well as ordinary citizens that ours has been an extravagant age, wasteful of energy and natural resources, careless about environmental side effects. Whether or not one accepts the "limits to growth" thesis and its frightening implications (see the articles by Meadows et al. and Freeman in part one), it is becoming clear that tomorrow's technology will be qualitatively different from today's—not because of abstract notions about ends and means, but because of concrete requirements of survival. The technology of tomorrow will certainly extend our capabilities in transportation, medicine, data processing, and many other areas. More importantly, however, it will perform many of the same functions of today's technology while using less energy and fewer raw materials.

Notions of technology once regarded as radical have gained increasing currency in our society. Advance assessment of technological consequences

(see part three) is no longer an issue; it is an accepted procedure. The most "sophisticated" or "advanced" technology, many of us have come to recognize, is not necessarily the best. Technology must first of all be "appropriate" to its use. The United Nations has given official sanction to this concept in its assistance programs for developing countries. And in 1976 California was the first state to establish an Office of Appropriate Technology, implementing Governor Jerry Brown's "small is beautiful" philosophy.*

Futurists are fond of reminding us that the only thing we can say with certainty about the future is that it has in store developments that are completely unanticipated today. The readings in this book—with a couple of exceptions—do not attempt to tell us what the future will be like. Their aim, and the aim of the book as a whole, is to provide the reader with ways of thinking about the future, with an understanding of the forces, particularly the technological forces, that will shape the future, and with a sense of how to deal with those forces.

The book is organized into three parts. The articles in part one reflect the views of those who are primarily responsible for creating new technology, namely scientists and engineers. Part two contains selections from the writings on technology of a number of contemporary philosophers, as well as an extended debate on the place of technology in society between two observers with very different political perspectives. The concept of technology assessment and a variety of associated, recent ideas for the control of technology are presented and criticized in part three.

The literature on technology and society is large and growing rapidly. This book samples but a small part of that literature. If it encourages the reader to explore the field more deeply, this book will have accomplished its purpose.

ALBERT H. TEICH

*See E. F. Schumacher, *Small is Beautiful: Economics as if People Mattered* (New York: Harper & Row, 1973).