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## Change and Adaptation

A handful of medical researchers is currently working on ways to enable parents to choose the sex of their unborn children. If (or when) these researchers succeed, society will have to adjust to the various imbalances this procedure will create. Sociologists have considerable evidence that more boys than girls will be "ordered," especially among the lower classes. This imbalance, and others like it, may in fact upset many societal institutions, including the monogamous family structure, ethnic relations, and employment and voting patterns. (Democrats ought to be pleased, for men are significantly and systematically less inclined than women to vote Republican.) Some of my colleagues would argue that society would adjust "automatically" by increasing the value of women until a new demographic balance was found. In my judgment, there is little evidence that such an easy solution will be possible. Even after considerable costs, I expect, the adaptation would probably be as inadequate and confused as, to cite a present instance, our adjustment to the proliferation of the automobile.

This recurring problem of the interaction between society and technology is the subject of Elting Morison's *Men, Machines, and Modern Times* (M.I.T. Press, Cambridge, Mass., 1966. 245 pp. \$5.95). Morison, a fine historian and M.I.T. professor of management, first tells us a set of stories about the introduction of certain 19th-century inventions, including naval guns capable of continuous-aim firing, indexing procedures for office filing, and the Bessemer process for making steel rails. He examines the personalities of the innovators (usually eccentric trouble-makers of the sort few government agencies or large corporations would hire today), their first allies and devoted disciples, and the resistance they met from the organizations and societies to which they offered their discoveries. In each case the new machines or methods were vastly superior to the old (the improved naval gun was 3000 percent more effective), and in ways which were easily demonstrable. This

on the one hand makes the resistances to the innovations stand out sharply in their absurdity, and adds much to Morison's narrative; but the demonstrable superiority also explains, in my judgment, why these new technologies did not face still more opposition.

Discussing the difficulties posed by society to the inventors and their inventions provides Morison with an opportunity to present an informal but highly sensitive and insightful study of the way society and its organizational arms function. He shows, for instance, what a tightly knit community the United States Navy is, with its own culture, institutional fears, and worked-out mechanisms to repel those suggestions that force change, as the newly improved gun threatened to do. It took outside intervention, in the form of a different "big gun" and former naval person turned President—Theodore Roosevelt—to scuttle the opposition.

Morison is very much aware that the innovations he reviews do have harmful side effects. He correctly warns that the bureaucrat who comes upon new ways of collating information (once index card systems, today computers) may gain disproportional and otherwise unjustifiable control over the activities of his organization. Morison sees in computers the danger that they may deepen the tendency toward a fragmented and unduly quantified view of life and in so doing strengthen the illusion that what cannot be measured is insignificant. He does not deal with innovations whose *main* effects are harmful.

More than the details of the inventions or the resistances they faced, which he outlines masterfully, Morison is concerned with Thomas Huxley's deceptively simple question: "What are you going to do with all these things?" He stresses that we cannot reverse the process and return to a pretechnological age, any more than we can arrest the march of new technologies—nor should we try. He suggests rather the creation of a new culture (I think he means morality) to guide us. He hopes that new technologies, rather than be allowed to restructure society to their

own demands, will be adapted to the varying human and societal requirements. Urbanely he presents these general views as modest afterthoughts, although they vibrate through the case studies which are the core of the book.

Morison's one weakness is his implicit acceptance of the prevailing liberal approach to his subject. New cultures do not spring up because modern times demand them: a more deliberate, rational, and in this case political expression of societal will is necessary. If technologies are to be adapted to societies and not the other way around, some specific institutional arrangements will have to be made. Morison can be readily exempted from having to provide details of the nature of these institutions, but he must realize that a societal guidance of technology is required similar in scope to that now provided to the economy. Surprisingly, many liberals who have fully accepted Keynesian economic controls take a laissez-faire view of technology. Theirs are the arguments once used to defend laissez-faire economics: that any attempt to control technology would stifle innovation and initiative. Morison does sense a vague need for societal guidance to accelerate beneficial technologies, to curb harmful side effects, and to block destructive technologies. But his studies do not as yet include anything like the marketing of thalidomide, the proliferation of nuclear weaponry, and LSD-triggered psychoses—and they do not lead him to fully face three key questions: Are the unlimited freedom of research and unlimited implementation of findings not outweighed by the sufferings they inflict upon millions? Is technology really a neutral tool, or is some of it manifestly dangerous? And how—politically—will society express itself to regain control of technology?

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