

foreseen that in its ultimate consequences the scientific revolution might dis-Greece the whole magnificent edifice of modern science. No one could have diminish human liberty.

But it has brought us back full cycle. Science—the vital area of knowledge today—is for most of us virtually a closed book; again it has become the monopoly of a small elite. This is not the fault of the scientists. Unlike ancient priesthoods, they have no wish to bar others from knowledge or to use it to enslave the ignorant. Many scientists make strenuous efforts to explain science to the lay public. Nevertheless, we find ourselves in much the same position as the ancient Egyptians whose very lives depended on knowing when the waters of the Nile would rise and fall—knowledge possessed by their priesthood alone.

As in the past, it is not the knowledge gap per se that is most detrimental to freedom, not the fact that the majority cannot follow scholars into the realm of higher mathematics and science; rather it is the effect ignorance of science has on public attitudes toward science and science-based technology. The impact of technology, in particular, on the individual and on society at large is profoundly affected by prevailing concepts of what technology is and what purpose it should serve.

If people understood that technology is the creation of man, therefore subject to human control, they would demand that it be used to produce maximum benefit and do minimum harm to individuals and to the values that make for civilized living. Unfortunately, there is a tendency in contemporary thinking to ascribe to technology a momentum of its own, placing it beyond human direction or restraint—a tendency more pronounced in some countries but observable wherever there is rapid technological progress.

It manifests itself in such absurd statements as that technology *demand*s some action the speaker favors, or that "*you can't stop progress.*" Personalizing abstractions is a favorite means of semantic misdirection; it gives an air of authority to dubious statements. Most people are easily pressured by purveyors of technology into permitting so-called progress to alter their lives, without attempting to control it—as if they had to submit meekly to whatever is *technically feasible*. If they reflected, they would discover that not everything hailed as progress contributes to happiness; that the new is not always better, nor the old always outdated.

The notion is also widespread—doubtless fostered by users of technology—that, having wrought vast changes in the material conditions of life, technology perforce renders obsolete traditional concepts of ethics and morals, as well as accustomed ways of arranging political and social relationships. Earnest debates are currently taking place whether it is *possible* to act morally in the new technological society, and proposals have been made—quite seriously—that science must now *replace* traditional ethics! We have here a confusion that must be cleared up.

Through technology we are relieved of much brutal, exhausting, physical labor as well as boring routine work; we are provided with numerous mechanical servants who do certain kinds of work faster, cheaper, and more efficiently than people. Why should the ease and affluence technology makes possible affect moral precepts that have guided Western man for ages? This may brand me as old fashioned but I have not yet found occasion to discard a single principle that was accepted in the America of my youth.

Technology is tools, techniques, procedures, things; the artifacts fashioned by modern industrial man to increase his powers of mind and body. Marvelous as they are, let us not be overawed by these artifacts. Certainly they do not dictate how we should use them nor, by their mere existence, do they authorize actions that were not anteriorly lawful. We alone bear responsibility for our technology. In this, as in all our actions, we are bound by the principles governing human behavior in our society.

Does it make sense to abandon principles one has lived by because he has acquired better tools? Tools are for utilizing the *external* resources at our disposal; principles are for marshaling our *inner*, our human resources. Tools enable us to alter our physical environment; principles serve to order our personal life and our relations with others. The two have nothing to do with each other.

This should be obvious, but erroneous concepts of science and technology abound because people tend to confuse the two. Not only in popular thinking but even among the well-informed, science and technology are not always clearly distinguished. Characteristics pertaining to science are frequently attributed to technology, even as science itself is confounded with ethics.