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SCIENCE

Humane Technology

In cocktail party sociology, where slogans serve as substitutes for thinking, technology is often depicted as anathema to a humane, just, "liberated" society. The defense made by the friends of technology is equally simplistic: "Technology is a set of neutral means; whether it is used to good or evil purposes is not determined by the technology itself."

Both of these viewpoints are as valid as half-truths usually are. In fact, most technologies do have fairly specific uses; no one has yet been killed by a cable television. And, while some technological developments do promote an impersonal, efficiency-minded, mass-production society, other technologies are essential for a more humane society.

Some recent technological developments take over routine and repetitive jobs, freeing people from the drudgery of counting, calculating, remembering numerous dull details. It is also true that these same technologies, those of the computer for instance, generate such routine work as key punching. But they eliminate more drudgery than they impose. Automatic switchboards of telephones do routine work which would require several million people, while generating little menial work. And, the way to combat remaining and newly created routines is to advance technology—to create, for example, computers that understand spoken English—surely not to condemn the machines.

Beyond this, new technological developments contribute to the solution of societal problems very close to the hearts of the deriders of technology, often making progress precisely where nontechnological attempts have failed. Thus, one of the barriers to arms limitation was the demand for human, on-site inspection, a demand quite unacceptable to the U.S.S.R. and unattractive to U.S. corporations worried about their trade secrets. The development of powerful inspection satellites made this issue obsolete. Another example: a cost-effectiveness study made by the Department of Health, Education, and Welfare shows that it is much more economical to avert a death by means of seat belts, a technological innovation, than driver education. The birth control pill, a chemical technology, is much more potent in reducing family size than are efforts to educate people to have smaller families. Instructional television saves teachers the time often used to repeat exercises to their classes ad nauseum; it allows pupils to view the lesson when they choose, as often as they need to, and, soon, at the pace they wish; and it is as effective as or more effective than live teaching—tune in "Sesame Street" some time.

As for the future, pollution will be reduced through the development of less polluting, substitute technologies, not by a return to the pretechnological age. Distance and isolation will be further bridged through technological means such as two-way cable television and more suitable housing patterns. More and more people will be able to enjoy increased free time, culture, education, and each other because more of their chores will be done by machines and supervised by machines, whose excesses are corrected largely by other machines.

All of this is surely less romantic than the world depicted by the advocates of a return to nature, but it is also more likely to be realized, and it promises a *more* livable world, by practically any humane standard, than our Stone Age past. The task before us is to marshal more of technology to the service of human purposes, not to put technology into a self-destruct, reverse-thyself gear. This will not be achieved by a blind, wholistic approval of technology, but by carefully developing those tools which can be geared to advance our true values.—AMITAI ETZIONI, *Professor of Sociology, Columbia University*, and *Director, Center for Policy Research, 475 Riverside Drive, New York 10027.*