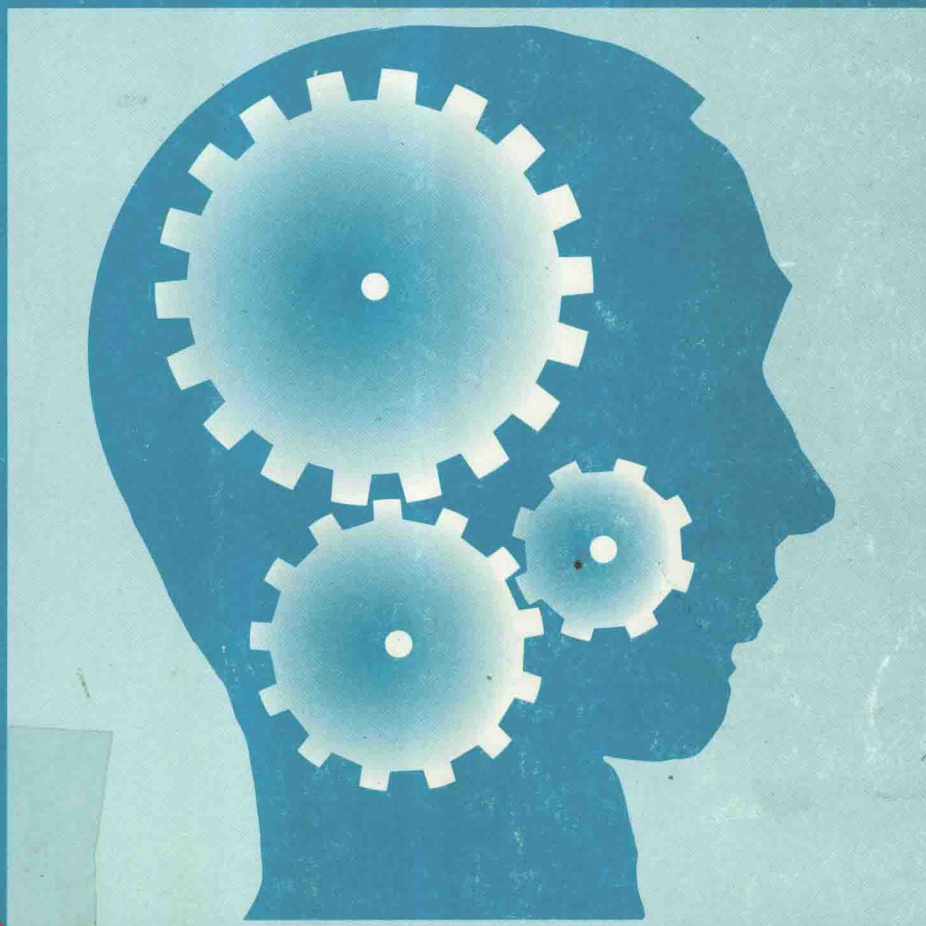


Technology in Context

*Readings in Technology
and Society*



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and Society*

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Artifact/Ideas and Political Culture

Langdon Winner

This is a time of great excitement about the fruitful possibilities of new technology, but also a time of grave concern about what those possibilities mean for the future of our society. Horizons visible in microelectronics and photonics, biotechnology, composite materials, computing, and other fields hold out prospects of sweeping change in our way of life. How should we regard these prospects?

As individuals, groups and nations anticipate technological change nowadays, they usually focus upon three questions.

First: How will the technology be used? What are its functions and practical benefits?

Second: How will the technology change the economy? What will it contribute to the production, distribution and consumption of material wealth ?

Third: How will the technology affect the environment? What will its consequences be for global climate change, pollution of the biosphere, and other environmental problems?

While these are important issues, another crucial question is seldom mentioned: What kind of world are we building here? As we develop new devices, techniques and technical systems, what qualities of social, moral and political life do we create in the process? Will this be a world friendly to human sociability or not?

These are questions about the relationship of technological change to the evolution of modern political culture. In what ways do the development, adoption and use of instrumental things affect our shared experience of freedom, power, authority, community and justice? How might we respond creatively to the role technology plays in contemporary political life?

In the titles of a great many books, articles, and conferences these days, the topic is often described as “technology and society” or “technology and culture” or “technology and politics.” But if one takes a

closer look, such distinctions no longer have much validity. In the late twentieth century technology and society, technology and culture, technology and politics are by no means separate. They are closely woven together in a multiplicity of settings in which many forms of human living are dependent upon and shaped by technological devices and systems of various kinds. Our useful artifacts reflect who we are, what we aspire to be. At the same time, we ourselves mirror the technologies which surround us; to an increasing extent social activities and human consciousness are technically mediated.

In this light, any attempt to understand the matter might well begin from either of two basic starting points: (1) the technological world seen from the point of view of human beings and (2) the same world seen from the point of view of the artifacts. Although it may seem perverse to do so, I shall begin with the second perspective.

Many of the things that we like to think of as mere tools or instruments now function as virtual members of our society. It makes sense to ask: Which roles, responsibilities and possibilities for action have been delegated to technological things? Which social features are associated with a particular artifact? For example, does a computer in the workplace function as a servant, slave, controller, guard, supervisor, etc.?

The social roles delegated to the phone answering machine provide a good illustration. It used to be that only executives in business and government could afford to keep a full-time secretary answering the phone, screening calls and taking messages. Now it is possible to buy a small, inexpensive answering machine that does at least some of that work. An alternative would be to answer the phone yourself, have someone else do it for you or simply miss some calls. The machine serves as a surrogate, a kind of non-human agent that has been given certain kinds of work to do.

An interesting fact about these machines is that their initial use often brings some embarrassment. In the little taped message that precedes the beep, there is often something like an apology. "I'm sorry I can't be here to answer your call . . ." or "I'm sorry you have to talk to this machine, but" What one sees in cases like this is, I believe, quite common in modem life: the uneasy feeling that accompanies the renegotiation of social and moral boundaries around a technological change. But what is sometimes at first a source of discomfort eventually becomes a widely accepted pattern—"second nature," if you will.

It is clear that in decades to come a great many things like telephone answering machines and automatic bank tellers will become, in effect, members of our society. As their use spreads, the tone of embarrassment that surrounds their early introduction will gradually vanish. For better or worse, the renegotiation of boundaries will be complete. When I phoned a friend recently, I heard a recorded message that said simply: "It's 1991. You know what to do!"

One can also consider technological innovations from the alternate viewpoint—noticing the roles, responsibilities and possibilities for action delegated to human beings within and around technological systems of various kinds. Now one can ask: Is a person's guiding hand required for the system to function? Does the human give orders or receive them? Is the person active or acted upon? What social qualities accompany the human presence?

I will offer some illustrations in a moment. But first I want to call attention to the fact that once one has entered the twofold perspective I've suggested, one has the beginning of a social and political vision of technology quite different from the one that economists, engineers, and technology policymakers usually employ. One recognizes, first and foremost, that technologies are not merely tools that one "picks up and uses." They can be seen as "forms of life" in which human and inanimate objects are linked in various kinds of relationships. The interesting question becomes: How can we describe and evaluate technologies seen as "forms of life"?

By comparison, in the conventional view of things, the story usually goes that people employ technologies as simple tools for rather specific instrumental purposes, attempting to wrest new advantages over nature and to gain various economic benefits. Once these instrumental advantages and economic benefits have been obtained, other things may happen. There are what are called secondary, tertiary, and other distant consequences of our action, often called the "impacts" or "unintended" consequences, the broader social, cultural, political, and environmental effects of technological applications of various kinds.

For some purposes, it is perfectly acceptable to view technological change in the conventional manner. However, if you take a longer view of history, an interesting fact soon emerges. In the fullness of time, the so-called "secondary" consequences or impacts of technological change are often far more significant than the results thought to be "primary" at the time. This is certainly true, for example, of the kinds of changes we associate with the Industrial Revolution of the eighteenth and nineteenth centuries. One could list the thousands upon

thousands of instrumental advantages and economic benefits obtained during that period—techniques for making textiles, extracting coal, making locomotives run, etc. But that is not what is truly important about the Industrial Revolution. What matters is the fact that a whole new kind of society was created. The truly enduring part of that revolution, the truly significant aspect is the multiplicity of relationships between people and between humans and technology we call Industrial Society, results many of which arose largely as so-called “secondary” consequences of technological change.

If one looks carefully at contemporary technological innovations in their broader human context, one often finds emerging forms of political culture. Several years ago Maevon Garrett, a woman who had worked as a telephone operator in Baltimore for 18 years, was called into her supervisor’s office and abruptly fired. She was informed that a computer had been installed to monitor the performance of telephone operators and that data gathered by the computer showed that she was less efficient than the average worker in processing phone calls. At that moment Maevon Garrett became the victim of norms of productivity and efficiency embodied in the workings of a new technological system.

What is interesting, however, is not only the fact of Ms. Garrett’s firing, but her response to it. She pointed out that some portion of her time each day was spent talking with people who dial a telephone operator because they are lonely or in distress—elderly people who live alone, or “latchkey children,” youngsters who come home after school to an empty house because their parents are still at work. Ms. Garrett argued she would not hang up on such people just to meet the phone company’s hourly quota.

It is reasonable to conclude that she was behaving responsibly, serving a role in civic culture, but not a role recognized by the norms of efficiency and productivity in the system that employed her. This is a case in which conditions of technical rationality and cultural rationality meet in flagrant conflict.

The good news is that after a union protest Maevon Garrett’s job was restored. The bad news, however, is that the systems design, the technopolitical regime that caused the problem, still exists and looms before us as a rapidly spreading form of life. A study released by the Office of Technology Assessment of the U.S. Congress several years noted that approximately seven million American workers now live under rapidly spreading systems of computerized surveillance, an

unhappy spin-off of office automation. The title of that report is, appropriately, *The Electronic Supervisor*. To an increasing extent in today's workplaces, computers are delegated the role of supervising; human beings have been assigned roles that involve working faster and faster while engaging in less social conversation—all in the name of a system called "communications," but one that drastically limits people's ability to communicate in a human sense.

The term "regime" seems perfectly appropriate in such cases. For once they have been designed, built and put in operation, sociotechnical systems comprise regimes with features that can be described in a political way. It makes perfect sense to talk about freedom or its absence, equality or inequality, justice or injustice, authoritarianism or democracy, and the kinds of power relationships technological instruments and systems contain.

This is true of extremely simple as well as complex technologies. For example, if one visits the agricultural fields of the southwestern U.S.A., one finds workers using a hoe, "el cortito," a tool with a short handle. There's nothing political about the length of a wooden handle, is there? Well, that depends on the broader social relationships and activities in which it plays a part. To use "el cortito" you must bend over or get down on your knees. A casual observer might say: If you're digging in the ground, isn't it sometimes more comfortable to stand up

Why, then, has the handle been shortened? The reason is, in large part, that the foremen who manage the work can look across a field, even at a great distance, and tell who is working and who is not. Those who are bending over are the ones working; those standing upright are not and the foreman can apply discipline accordingly. In that light, even the length of the handle of a hoe expresses a regime, a regime of power, authority and control.

Embodied in the tools and instruments of modern technology is a political world. I am suggesting that we use metaphors and rhetorical devices of political speech to unpack the meaning of various technologies for how we live.

Everyone understands that political ideas can be expressed in language. But ideas of this kind present themselves in material objects as well. In this form they might be called artifact/ideas. In their very silence, artifact/ideas have a great deal to say. They tell us who we are, where we are situated in the social order, what is normal, what is possible, what is excluded. The technological world is filled with

artifact/ideas of great consequence for modern political culture. Things often speak louder than words. Among the many ideas present in the structure of contemporary technological devices and systems are the following:

- Power is centralized.
- The few talk and the many listen.
- There are barriers between social classes.
- The world is hierarchically structured.
- The good things are distributed unequally.
- Women and men have different kinds of competence.
- One's life is open to continual inspection.

As they are expressed in the shape of material objects, ideas of this kind are covert. They seldom become topics for discussion in the political sphere as it is usually understood. One reason that artifact/ideas tend to be covert is that most people buy the functional account of the meaning of material things. We are inclined to say: "This is a car which enables us to go from point A to point B." "This is a hoe which helps us to dig in the fields."

Another reason why ideologies in things tend to be covert is that they have been implanted there by those who do not wish those ideas to be known or widely discussed. The apparent solidity of useful things sometimes provides a mask for persons and groups who wish to exercise power while avoiding responsibility. Their alibi is usually something like: "This is the most effective way to do things" or "This is most efficient. "

But whatever the source of specific beliefs and instrumental conditions, it is often true that ideas embodied in material things are painful or even dangerous to acknowledge. Artifact/ideas can involve astonishing contradictions. In particular, the mapping of the world encountered in the shape of things frequently contradicts the political ideology to which most people in Western societies claim to be committed.

In particular, many of the artifact/ideas prevalent in our time stand in flagrant contradiction to the ideology of modern democracy. That ideology holds that human beings flourish, achieving what is best in their potential, under conditions of freedom, equality, justice, and self-government. In that light, societies ought to create social conditions and political institutions that make it possible for each human being's

potential to develop. Both victories and setbacks in this regard are clearly visible in the laws, constitutions, and political practices that prevail in each historical period.

From this vantage point a technological society is unique only in the sense that it presents new and seemingly unlikely domains—domains of instrumentality—in which the ends of democratic freedom, equality, and justice must somehow be recognized and realized. I take it to be the fundamental failure of modern civilization to have ignored again and again how such questions present themselves in the guise of what appear to be “neutral” technologies. To a considerable extent the ideas I embodied in the realm of material things stand in opposition to the central ideas that we believe describe and guide our political culture.

There is an important way in which freedom and justice depend in, human communities upon the existence of suitable material environments—the creation and maintenance of arrangements in which the goal of becoming free, self determining individuals is nurtured rather than destroyed. As we look at the kinds of sociotechnical innovations being introduced today, it is often beside the point to ask whether or not they are optimally efficient; by someone’s definition they are usually very efficient indeed. Instead the crucial questions concern the kinds of cultural environments such technologies present to us. What one finds are far too many instances of developments of the following kind:

1. communications technologies employed in attempts to control people’s thoughts, desires and behaviors;
2. computer technologies used to whittle away people’s privacy and erode freedom;
3. information technologies that eliminate what were formerly places of community life;
4. energy systems that make people dependent upon, or even hostage to, sources of fuel over which they exercise no control;
5. systems of manufacturing that seek control by eliminating as much human initiative and creativity as possible.

The appropriate moment to examine and debate conditions such as these is the time during which they are designed and first introduced into the fabric of human activity. At present our society persists in designing a great many technical artifacts in ways that make people feel passive, superfluous, stupid, and incapable of initiating action.

Such systems bear the cultural embryos of tomorrow's citizenry. For as we invent new technical systems, we also invent the kinds of people who will use them and be affected by them. The structures and textures of future social and political life can be seen in the blueprints of technologies now on the drawing board.

We often hear these days that the world is engaged in a "technology race" in which nations rise or fall according to their ability to use technologies to competitive advantage. Unfortunately, some of the design strategies that look fabulous from the point of view of efficiency, productivity and global competitiveness involve what amounts to an ingenious synthesis of oriental feudalism and capitalism. Many people in freedom-loving countries like the United States seem eager to embrace repressive models of social integration expressed in automation, electronic surveillance and pseudodemocratic "quality circles." But must we embrace these merging patterns of technofeudalism as "the wave of the future"? Would it not be a wiser approach to resist, choosing to explore ways of extending our ideas about freedom and a just society into the realm of technology itself?

In fact, one obvious path that may still be open to us is to cultivate ways of democratizing the process of technology policymaking and, indeed, the process of technological innovation. If this is to be done, both citizens and experts will need to become aware of the social, moral and political dimensions of choices made in technological policy and technological design. They will need to find ways to act directly and democratically within settings in which the important choices are made.

In that light I would offer three guiding maxims as a way to focus discussion about the relationship between technological choices and the future of political culture. These maxims can be raised at times in which unquestioned assumptions about "productivity," "competitive'ness," "the need to innovate," or "technology transfer" seem to provide the only language for talking about the choices at hand.

1. No innovation without representation. This suggests that all the groups and social interests likely to be affected by a particular kind of technological change ought to be represented at a very early stage in defining what that technology will be. Yes, let us accept the idea that particular technologies are social creations that arise through a complex, multicentered process. But let us see to it that all the relevant parties are included rather than kept in the dark in this process. If we find that we do not have

the kinds of social institutions that make this possible, then let's change our institutions to create such opportunities.

2. No engineering without political deliberation. Proposed technological projects should be closely examined to reveal the covert political conditions and artifact/ideas their making would entail. This ought to become an interpretive skill of people in all modern societies. It is especially important for engineers and technical professionals whose wonderful creativity is often accompanied by an appalling narrow-mindedness. The education of engineers ought to prepare them to evaluate the kinds of political contexts, political ideas, political arguments, and political consequences involved in their work. Skill in the arts of democratic citizenship ought to become part of the "tool kit" that engineers master in their education.
3. No means without ends. Many of the varieties of innovation now pushed on the public these days amount to "tools looking for uses," "means looking for ends." Those who have dealt with the introduction of computers into the schools in recent years can give many colorful examples of this phenomenon. The current promotion of high definition television and renewed efforts to push President Reagan's Star Wars project offer even more stark illustration. For HDTV and SDI bear little relationship to any significant human need. As we study the prospects offered by new technologies, it is always essential to ask: Why? Why are we doing this? What are the ends we have chosen and how well do they fit the pattern of means available? In many cases of high tech planning, suitable background music would be the theme from *The Twilight Zone*.

If you were to look for examples of places in which something similar to these three maxims are actually being put to work, I would begin by pointing to some recent experiments in the Scandinavian democracies where a positive, creative politics of technology has recently become a focus of research and development. In one such project, workers in the Swedish newspaper industry—printers, typographers, lithographers, and the like—joined with representatives from management and with university computer scientists to design a new system of computerized graphics used in newspaper layout and typesetting. The name of the project was UTOPIA, a Swedish acronym that