

# Questioning Technology

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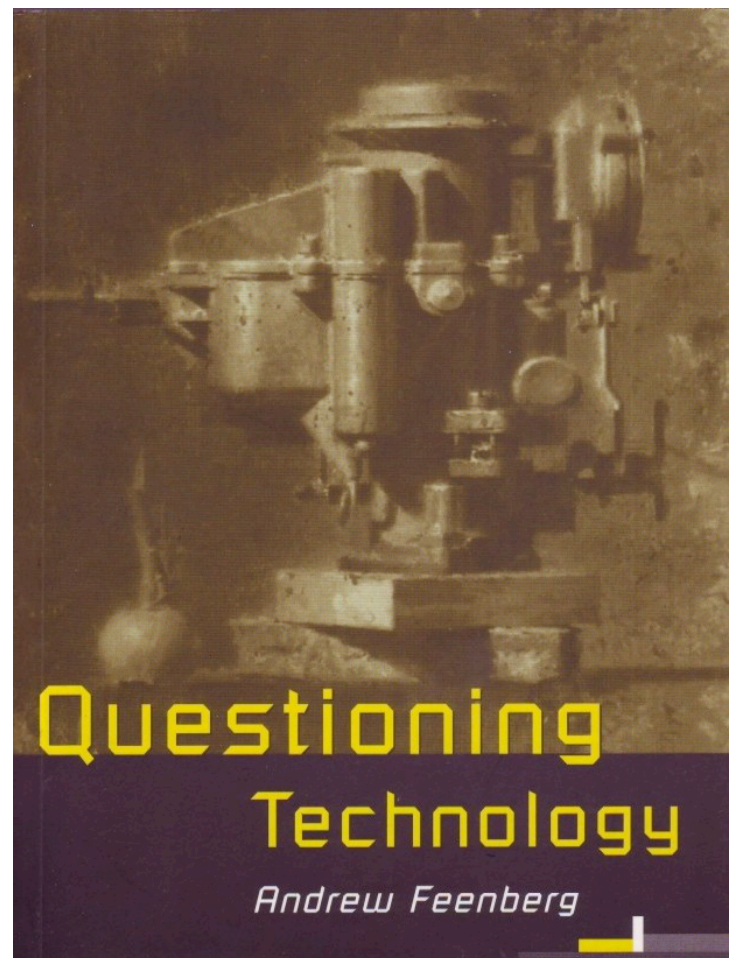
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# Preface

For two centuries now, great democratic movements have swept the globe, equalizing classes, races, genders, peoples. As these movements expand the definition of humanity, they also extend the boundaries of the political to embrace more and more of social life. At first law was taken from God and king and brought under human control. Then Marx and the labor movement placed the economy on the political agenda. In this century, political management of the economy has become routine, and education and medicine have been added to the list of contestable issues. As a new century begins, democracy appears poised for a further advance. With the environmental movement in the lead, technology is now about to enter the expanding democratic circle.

This marks a fateful change in our understanding of technology, in its position on the conceptual maps of theory and critique. Formerly, the democratic movement gave its fullest confidence to the natural processes of technological development, and it was only conservative cultural critics who lamented the price of progress. The Ruskins, the

Heideggers deplored the dehumanizing advance of the machine while democrats and socialists cheered on the engineers, heroic conquerors of nature. However, all agreed that technology was an autonomous force separate from society, a kind of second nature impinging on social life from the alien realm of reason in which science too finds its source. For good or ill, technology's essence--rational control, efficiency--ruled modern life.

But this conception of technology is incompatible with the extension of democracy to the technical sphere. Technology is the medium of daily life in modern societies. Every major technical change reverberates at many levels, economic, political, religious, cultural. Insofar as we continue to see the technical and the social as separate domains, important aspects of these dimension of our existence will remain beyond our reach as a democratic society. The fate of democracy is therefore bound up with our understanding of technology. The purpose of this book is to think that vital connection.

The same kind of ignorance that bound men to the gold standard for centuries maintains the illusion that technology is an alien force intruding on our social life from a coldly rational beyond. The forces of the market were believed to transcend the will of peoples and nations. The economy was treated as a quasi-natural system with laws as rigid as the movements of the planets. The social nature of exchange had to be discovered against tremendous ideological resistance. Today it seems absurd that modern societies renounced control of their own economic life to a second nature they had themselves created. Yet where technology is concerned we remain in willful submission to a second nature just as contingent on human action as the economy. Liberation from technological fetishism will follow the course of liberation from economic fetishism. The same story will someday be told about machines that we tell today about markets.

Just insofar as democracy challenges the autonomy of technology, the essentialist philosophy of technology around which there used to be such general consensus, is

challenged as well. The time has therefore come for an anti-essentialist philosophy of technology. We have had enough of generalizations about technological imperatives, instrumental rationality, efficiency, enframing, and similar abstract categories. I offer here a concrete alternative to the approach of such influential representatives of essentialism as Ellul, Borgmann, Heidegger, and, for reasons I will explain in chapter one, Habermas as well.

Essentialism holds that technology reduces everything to functions and raw materials. Goal oriented technological practices replace practices which embody a human meaning. Efficiency sweeps away all other norms and determines an autonomous process of technological development. From this standpoint any attempt to infuse the technical with meaning appears as external interference in a rational field with its own logic and laws. Yet rational though it may be, technology engulfs its creators, threatening both spiritual and material survival.

The methodological dualism of technique and meaning has political implications. On the one side, technology undermines traditional meanings or communicative action, while on the other side we are called to protect the integrity of a meaningful world. Because the essence of technology is unaffected by changes in particular technologies, technological reform is irrelevant to the philosophical issues, desirable though it may be on practical grounds. Universal technologization must be resisted by drawing boundaries around the technical sphere. But do these oppositions make sense at the end of the 20th century?

This approach leaves me skeptical, not because it affirms the existence of social pathologies linked to technology, but because it forecloses in principle any serious action to address them. But huge changes are occurring in fields such as medicine and computers under the influence of political protest and public involvement in design. The environmental movement has been deeply and quite concretely involved in the question of technology for the last twenty years. The technological world we will inhabit in the years to come will be a product of public activity to a great extent. How can one know in advance that all this debate and contestation will have no effect, positive or negative, on the fundamental problems identified by the critics of technology today?

I would argue that their approach is a function of our professional culture as humanist scholars and our relationship to the cultures of the technical disciplines, and has nothing to do with the realities of our time. This cultural relationship is peculiarly ambiguous. Technical disciplines are constituted around devices conceived as *essentially* functional, and therefore as *essentially* oriented toward efficiency. In the pursuit of efficiency, technical disciplines systematically abstract from social aspects of their own activities. Presumably, those aspects are the concern of humanistic disciplines. Essentialism accepts this division of labor. Like the technical disciplines, it views technologies as devices oriented toward efficiency. The only difference is that essentialism deplores the social consequences of technology the technical disciplines ignore.

This, I think, points to the basic weakness of essentialism. It has produced a powerful critique of the obsession with efficiency that is indeed prevalent in our society and reflected in the design of many devices and systems, but it has not shown that that attitude reveals the essence of real technology as it has existed historically, as it exists today, and as it may exist in the future. If essentialism is unaware of its own limitations, this is because it confounds attitude with object, the modern obsession with efficiency with technology as such.

No doubt real dangers do lurk in modern technology. And I can agree that it must have some general features that allow us to distinguish it and on the basis of which we can sometimes decide on its appropriate and inappropriate range of application. Although I see the logic of drawing boundaries narrowly in such cases, I cannot agree that this is the whole story. The "essence" of actual technology, as we encounter it in all its complexity, is not simply an orientation toward efficiency. Its many roles in our lives cannot be captured so simply. This is the burden of constructivist sociology of technology, which affirms the social and historical specificity of technological systems, the relativity of technical design and use to the culture and strategies of a variety of technical actors. Constructivism, in short, has introduced difference into the question of technology.

Yet constructivism so disaggregates the question of technology that it is sometimes difficult to see its relevance to the legitimate concerns of essentialism. I believe there is a single fundamental distinction among technical actors that enables us to link social to philosophical issues. This is the distinction between the dominant and the subordinate subject positions with respect to technological systems. There are, as essentialists argue, technological masters who relate through rational planning to a world reduced to raw materials. But ordinary people do not resemble the efficiency oriented system planners who pepper the pages of technology critique. Rather, they encounter technology as a dimension of their lifeworld. For the most part they merely carry out the plans of others or inhabit technologically constructed spaces and environments. As subordinate actors, they strive to appropriate the technologies with which they are involved and adapt them to the meanings that illuminate their lives. Their relation to technology is thus far more complex than that of dominant actors (which they too may be on occasion.)

Empirically inclined students of technology often complain that philosophy of technology defends its positions with very abstract generalities illustrated at best with simple examples such as Heidegger's famous hammer. This may be why so many philosophers have overlooked the significance of the distinction between these two types of actors. To illustrate my thesis, I therefore propose to consider a more complex but also more typical example of a technical object, the house.

The house, you may ask? The house is not a device but an extremely rich and meaningful life environment. Yet it has gradually become an elaborate concatenation of devices. Forget the old manse. A house today is the center of electrical, communications, heating, plumbing, and of course mechanized building technologies. To its builder, it is *essentially* these things. The fact that we who occupy the house romanticize it, hide many of its devices or shroud them in traditional facades, and dwell inside it rather than

handling it like a tool obscures its basically technical character. It has in fact become the "machine for living" foreseen by Le Corbusier in the 1920s already.

But the house also undeniably belongs to our lifeworld and is not merely an efficient device for achieving goals. Of course it does achieve goals, for example sheltering us from the weather, but it obviously does far more than this and belongs to the realm of meaning as much as anything we can name. We have "domesticated" the technicized house and made it ours in all sorts of ways that have little or nothing to do with efficiency. The essence of technology, whatever that is, ought to encompass this complexity in principle. It ought to have categories under which we can recognize aspects of the house that are not reducible to a means-ends relationship.

Essentialists reply that this example falls apart analytically into the two halves of their dualistic view. The house considered as a concatenation of devices is at least conceptually different from the house as a human environment. The one belongs to the realm of technology, the other to the lifeworld of meaning. Thus there is an analytic distinction between the operation of the electric circuit as a technology and the experienced warmth and light of the space we inhabit, made possible by electricity no doubt but taking on a meaning in terms of traditional archetypes such as the hearth.

This distinction has a certain validity. Without it there would be no technical disciplines. But what starts out as an analytic distinction ends up as an ontological difference, as though technology could really be separated from society as two types of things--or in more sophisticated formulations, two "practices"--interacting on their boundaries. Essentialist dualism cuts across the lifeworld of technology, in which both these dimensions are immediately present, and disconnects the technical as such from the experience of it. But from an experiential standpoint these two dimensions--device and meaning, technical and lifeworld practice--are inextricably intertwined: the user is perfectly aware of the electrical source of the warmth that signifies security and welcome as he or she returns home in the evening. Both aspects of the experience qualify each other.

Of course users' "subjective associations" with technology seem irrelevant to home builders pursuing a profit or the technical disciplines on which they rely, which work exclusively with relations of cause and effect. Thus if one bases philosophy of technology on the self-understanding of the dominant technological actors, one might conclude that meaning is extrinsic to the technical as such. Yet this would be a mistake. Even if meaning plays no role in technical disciplines at any given point in time, *it is relevant to the history of technology*. Lifeworld meanings experienced by subordinate actors are eventually embodied in technological designs; at any given stage in its development, a device will express a range of these meanings gathered not from "technical rationality" but from past practices of its users. Technology as a total phenomenon thus must include an experiential dimension since experience with devices influences the evolution of their design. This is a conclusion generously documented in constructivist sociology and social history of technology.

This non-essentialist approach has political implications. Awareness of the meanings embedded in technology is more immediately available to ordinary users than to managers and technical personnel. The manager may see the new machine as more efficient, but the worker condemned to using it notices that it also removes skill and initiative from the shop floor. The polluter is less likely to see the relevance of environmental ethics to technology than the victim of pollution. And so on. Thus what essentialism conceives as an ontological split between technology and meaning, I conceive as a terrain of struggle between different types of actors differently engaged with technology and meaning.(1)

Concern for workers' skills and the environment could of course be dismissed as merely contextual, as not belonging to technology per se. But to understand its full complexity, we need to take seriously Don Ihde's remark that "technology is only what it is in some use-context" (Ihde, 1990: 128). The contexts of technology include such things as its relation to vocations, to responsibility, initiative, and authority, to ethics and aesthetics, in sum, to the realm of meaning. In the concluding chapter of this book I develop a socio-historical theory of technology to account for the role of context. I argue that the invariant elements of the constitution of the technical subject and object are modified by socially specific contextualizing variables in the course of the realization of concrete technical actors, devices, and systems. Thus technologies are not merely efficient devices or efficiency oriented practices, but include their contexts as these are embodied in design and social insertion.

I believe my approach can incorporate much of essentialism's critical contribution while also opening up reflection on the reform of technology. I do not see how one can come up with a similarly positive program from the essentialist standpoint. Rather, the best one can do is to suggest that boundaries be drawn more tightly around the sphere given over to technological power. But that approach offers no criteria for improving life within that sphere.

This is not a fruitful stance, as activists in technical fields have discovered. Here is the paradox of essentialism: critical though it is, it ends up agreeing implicitly with technocrats that the actual struggles in which people attempt to influence technology can accomplish nothing of fundamental importance. But since technology embraces more and more of social life, these struggles promise to become more frequent and more significant. Can we rest content with a philosophy of technology that is unable to comprehend them? Real change will come not when we turn away from technology toward meaning, but when we recognize the nature of our subordinate position in the technical systems that enroll us, and begin to intervene in the design process in the defense of the conditions of a meaningful life and a livable environment. This book is dedicated to that project.

The issues raised here are of concern to people of all political persuasions, but I believe they have a special significance for the left. Marxism claimed most fundamentally that the technological mediation of work would create a new kind of lower class with an unprecedented potential for self-determination. Revolution was supposed to follow from this transformation. Marxism has been eclipsed by identity based movements as a result

of the failure this prediction. These new social movements generally signify themselves according to the actors involved, as womens movements, movements for gay rights, of environmentalists, professionals, workers. Unfortunately, no unifying articulation has emerged through which these various movements can join together to offer a politically convincing alternative. The promising notion that radical democracy could serve this purpose has so far had little impact. It is so abstract it determines no substantive policies, and in fact does little more than certify the left credentials of the very divisions it hopes to overcome (Laclau and Mouffe, 1985). But perhaps it can begin to take on content through the question of technology.

Obscured in the identitarian classification of the new social movements is the potentially unifying articulation supplied by technology, which is often the stakes in their struggles. For example, when women demanded changes in childbirth procedures, when AIDS patients demanded access to experimental treatment, they challenged technical medicine to incorporate a wider range of human needs in its structure.

Environmentalists demanding changes in production technology to preserve nature and human health should be able to recognize themselves in such struggles. Similarly, when workers protest the intensification of labor made possible by the computer and demand different ways of realizing its benefits, they are attempting to change technology and the preconceptions realized in its design. The computer users in France and the US who introduced human communication on networks originally designed for the distribution of data accomplished a liberating technical innovation.

In all such democratic interventions, experts end up collaborating with a lay public in transforming technology. The process is intermittent and conflictual today, but it is reasonable to suppose that social control of technology will eventually spread and be institutionalized in more durable and effective forms. What are the implications of this prospect for democracy? That is the political question of technology. Marx's answer was socialism, the administration of production by the assembled producers. And indeed, this question still takes us back to Marx, to the idea that technological mediation opens new possibilities for intervention from below. But the limitation of technology to production in Marx's day has long since been transcended. Only through a generalization of the political question of technology to cover the whole surface of society does it again become relevant to our time. In this form it may someday provide a theme around which the left can articulate a utopian vision of a redeemed modernity.

*Questioning Technology* is the third in a series of books I have written on these problems. *Critical Theory of Technology* (1991) focussed on contradictions in the Marxist approach and made the connection between labor process theory and the Frankfurt School's critique of the domination of nature. The argument of that book is based on the contrast between capitalist and "subversive" forms of rationalization. In the context of a more developed analysis of technical politics, I now call the latter "democratic rationalization" although in certain fields, such as artistic production, "subversion" may still be the more appropriate term. *Alternative Modernity* (1995) introduced a constructivist formulation of the basic argument which it applied to the critique of technocracy and postmodernism. That book analyzed case histories in

medicine and computerization, and extended the approach to a consideration of problems of national culture with special reference to Japan. *Questioning Technology* now completes the cycle with an account of the radical political roots of non-essentialism, and a direct challenge to major thinkers in the philosophy of technology.

This is a propitious moment for such a project. According to Francis Sejersted we are entering a new phase of normative reflection on technology informed by a long development from technological determinism to social constructivism, and then on to a political theory of technology (Sejersted, 1995: 16). The reaction against determinism brought the contingency of technological development into focus, which in turn has opened the way to a reassertion of the political. This exactly situates the argument of this book. I will begin with the problem of determinism and the political reaction against it in the new left and the environmental movement, proceed to draw out the implications of that reaction for social theory, and then turn to basic problems in the renewal of philosophy of technology.

The writing of this book has placed me in debt to a great many people. Francis Sejersted invited me several times to the TMV center for research on technology and culture at the University of Oslo where several chapters were written and first presented. I owe to Augustin Berque an invitation to spend a month at the Ecole des Hautes Etudes en Sciences Sociales in Paris. Versions of several other chapters were written for that occasion. Much of the work on this book was done under a grant from the EVIST program of the National Science Foundation. I want to thank Rachelle Hollander of the NSF staff for encouraging me to apply. Dean Paul Strand of San Diego State University and my Department Chair, Tom Weston, lent sympathetic ears to requests for special equipment.

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1. The background of this argument is to be found in Lukács's theory of the reifying and dereifying forms of consciousness associated with different class positions. He writes, for example, "The quantitative differences in exploitation which appear to the capitalist in the form of quantitative determinants of the objects of his calculation, must appear to the worker as the decisive, qualitative categories of his whole physical, mental and moral existence" (Lukacs, 1971: 166). I have generalized this approach beyond production to technology as a whole.