“Questioning Technology is a superb piece of work...I see it as quite simply one of the best books in the field of philosophy of technology, as well as one which I think will be of most interest to students.” Andrew Light, SUNY Binghampton

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In this extraordinary introduction to the study of the philosophy of technology, Andrew Feenberg argues that technological design is central to the social and political structure of modern societies. Environmentalism, information technology, and medical advances testify to technology’s crucial importance.

In his lucid and engaging style, Feenberg shows that technology is the medium of daily life. Every major technical change reverberates at countless levels: economic, political, religious, and cultural. If we continue to see the social and technical domains as being separate, then we are essentially denying an integral part of our existence, and our place in a democratic society.

Questioning Technology convinces us that it is vital that we learn more about technology the better to live with it and to manage it.

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Questioning Technology

ANDREW FEENBERG
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1. Technology, Philosophy, Politics

DETERMINISM AND SUBSTANTIVISM

In this introductory chapter, I will sketch the main themes of this book in the context of a brief account of the growth of interest in technology in the humanistic disciplines. This process has not been an easy one and its full implications are still unclear.¹

If the human significance of technology is largely unmapped territory, this is mainly due to the idealism of Western higher culture. Only recently have scholars outside the technical fields become interested in their problems and achievements. In earlier times the humanities rejected discourse on technology as unworthy. That tradition goes back to the ancient Greeks who lived in aristocratic societies in which the highest forms of activity were social, political, and theoretical rather than technical.

Humanist scholars first took technology seriously in the modern period, especially with the publication of Diderot’s *Encyclopédie*. However, as Langdon Winner explains, modern political theory subsumed technical activity under the economy and did not raise the same kinds of issues about rights and responsibilities in relation to it that are considered relevant to the state. Common sense instrumentalism treated technology as a neutral means, requiring no particular philosophical explanation or justification. So once again it was pushed aside; as an aspect of private life, it was considered irrelevant to the basic normative questions that concerned the thinkers of the great tradition in political theory such as Hobbes, Rousseau, and Locke (Winner, 1995).

There is, however, another fateful path by which technology enters the larger conversation of modernity: the historicizing trend in the emerging biological and social sciences of the late 18th and 19th centuries. This trend was firmly rooted in the idea of progress, which found its surest guarantee in the promise of technology. By the end of the 19th century, under the influence of Marx and Darwin, progressivism had become technological determinism.

¹ For another more detailed account of these problems, see Mitcham (1994).
Following the then common interpretation of these materialist masters, technical progress was believed to ground humanity’s advance toward freedom and happiness.

Note the link between humanism and determinism. Of course progressive thinkers were well aware of the social divisions that prevented humanity as such from acting as the concrete subject of its own history. However, they regarded competing social groups and nations as proxies for the human race and so ignored this detail. Their universalistic treatment of cultural differences was similarly expeditious. They assumed that the ends which technology serves are permanent features of our biological constitution. Technology was thought to be neutral since it did not alter these natural ends but merely shortened the path to them. This neutralization of technology removed it still further from political controversy. If technology merely fulfills nature’s mandate, then the value it realizes must be generic in scope. In fact this is the story that is so often told: technology’s advance is the advance of the human species. The editorial “we” intervenes often in this story: “we” as human beings went to the moon.

The great success of modern technology in the early years of this century seemed to confirm this view. But that success also meant that technological decisions affected more and more of social life and had obvious political impacts. From this one can draw diametrically opposed conclusions: either politics becomes another branch of technology, or technology is recognized as political. The first alternative leads straight to technocracy: public debate will be replaced by technical expertise; research rather than the uninformed opinion of the voters will identify the most efficient course of action. The idea of replacing traditional normative paradigms of politics with technical ones dates back to Saint-Simon, but it achieved its greatest popularity in the 1950s and 1960s. The “end of ideology” was much discussed then as it is today for different reasons.

In opposition to this technocratic trend, there is a grand tradition of romantic protest against mechanization going back a century and more. These “substantive” theories of technology attribute a more than instrumental, a substantive, content to technical mediation. They argue that technology is not neutral but embodies specific values. Its spread is therefore not innocent. The tools we use shape our way of life in modern societies where technique has become all pervasive. In this situation, means and ends cannot be separated. How we do things determines who and what we are. Technological development transforms what it is to be human.

Heidegger is the most prominent advocate of this position, which he
formulated in ontological terms. In Heidegger’s view, we encounter our world in action as a concrete whole, revealed and ordered in a definite manner that belongs to our epoch. Technology is such a mode of “revealing,” a way in which what is appears. As the mode of revealing of our time, technology is no mere instrumentality. It forms a culture of universal control. Nothing escapes it, not even its human makers. They, like the things they appropriate technically, are reduced to raw materials through the technological revealing. Everything loses its integrity as a part of a coherent world and is leveled down to an object of pure will (Heidegger, 1977a).

According to substantivism, modernity is also an epistemological event that discloses the hidden secret of the essence of technology. And what was hidden? Rationality itself, the pure drive for efficiency, for increasing control and calculability. This process unfolds autonomously once technology is released from the restraints that surround it in premodern societies.

Something like this view was implied in Max Weber’s dystopian conception of an “iron cage” of rationalization. In his account modernity is characterized by a unique form of technical thought and action which threatens non-technical values as it extends ever deeper into social life. However, Weber did not specifically connect this process to technology. Jacques Ellul, another major substantive theorist, makes that link explicit, arguing that the “technical phenomenon” has become the defining characteristic of all modern societies regardless of political ideology. “Technique,” he asserts, “has become autonomous” (Ellul, 1964: 6). In Marshall McLuhan’s melodramatic phrase: technology has reduced us to the “sex organs of the machine world” (McLuhan, 1964: 46). Ellul is as pessimistic as Heidegger and calls for an improbable spiritual transformation in response to the domination of technology.

Substantive critique has affinities with determinism. For both, technological advance has an automatic and unilinear character. What makes substantivism so very gloomy, where determinism started out as a cheerful doctrine of progress, is the additional assumption that technology is inherently biased toward domination. Far from correcting its flaws, further advance can only make things worse. I call this view essentialist. Essentialism holds that there is one and only one “essence” of technology and it is responsible for the chief problems of modern civilization. I will offer both a critique of essentialism, which continues to set the terms of most philosophy of technology, and an alternative to it, in the concluding chapters of this book.
LEFT DYSTOPIANISM

Surprisingly, substantivism became a new popular culture of technology in the 1960s and 1970s, showing up not only in political discourse but in films and other media. In the United States, the dystopian viewpoint replaced traditional liberalism and conservatism to such an extent that current politics is still largely determined by vulgarized versions of the substantivist categories and sensibility (Feenberg, 1995: chap. 3).²

It is not easy to explain the dramatic shift in attitudes toward technology that occurred in the 1960s. By the end of the decade early enthusiasm for nuclear energy and the space program gave way to technophobic reaction. But it was not so much technology itself as the rising technocracy that provoked public hostility.

By “technocracy” I mean a wide-ranging administrative system that is legitimated by reference to scientific expertise rather than tradition, law, or the will of the people. To what extent technocratic administration is actually scientific is another matter. In some cases new knowledge and technology really does support a higher level of rationalization, but often a hocus-pocus of pseudo-scientific jargon and dubious quantifications is all that links the technocratic style to rational inquiry. In terms of social impact, the distinction is not so important: reliance on technocratic arguments evokes similar reactions from the administered whether the computer is really “down” or the employee behind the counter too lazy to consult it. The up-to-date excuse for inaction tells a tale all its own. What makes a society more or less “technocratic” is largely its rhetoric rather than its practice. But the fact that the term is ideological does not mean it is without consequences. On the contrary.

That those consequences were political was due to the intellectual arrogance of the Kennedy and Johnson administrations. The Vietnam War was conceived by the US government and sold to the public as a technical problem American ingenuity could quickly solve. Today one is astonished to read behaviorist discussions of strategy from the 1960s: villages were bombed to “condition” their inhabitants to reject the communists—some advisers wondered whether cutting off ears might not be more effective. Support for the counter-cultural critique of technocracy grew tremendously during the War and gradually spread to encompass the whole liberal agenda. In a benign vein, the “War on Poverty” proposed to achieve a smoothly functioning social system through enhanced

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² By “dystopia” is meant the sort of negative utopia described in Huxley’s *Brave New World* and Orwell’s *1984*. See Aldridge (1984, 1978).
administrative control. Similarly, the creation of the “multiversity” involved integrating a hitherto somewhat marginal and tradition-bound institution to the industrial system. These rationalizing ambitions too appeared as a dystopian threat to many young people and became part of the inspiration for the new left. (Today the same dystopian fears are mobilized in a far more confused form by the right.)

These popular movements transformed the dystopian themes they shared with the critics of modernity. The cultural elitism of discouraged humanists gave way to populist demands incompatible with substantivism. This shift redefined the question of technology as political, and showed that it could be addressed from the left. The left in this period called for democratic control over the direction and definition of progress, and reformulated socialist ideology on these terms. These socialist positions were more or less tied to traditional Marxism, and so may appear outdated today. But, as we will see, they also anticipated a new micropolitics of technology which engages the issue of progress in concrete struggles of a new type in domains such as computers, medicine, and the environment.

Part I of this book therefore includes two chapters on particularly revealing events and debates of the late 1960s and early 1970s. I have chosen subjects which seemed important to me at the time and which shape the philosophy of technology presented in this book. I do not claim that these examples are typical, but I do believe that close attention to them opens a window on the revolution in thinking about technology that continues to this day.

The French May Events was the culminating new left movement. In the spring of 1968, a national student protest began in Paris. It was soon seconded by a general strike which led in turn to the collapse of most of the institutions of the French state. Some 10 million strikers in every sector of the economy brought France to a crashing halt for over a month, threatening the capitalist system. Despite its working-class ideology, the May Events articulated its demands in a distinctively anti-technocratic language. Soviet-style socialism was denounced in the same breath as advanced capitalism: two peas in the technocratic pod. The students and their working-class allies demanded self-management as an alternative. This demand was a response to dystopian anxieties linked to the growth of the technocratic state under de Gaulle. Chapter 2 explores this movement through examples drawn from documents of the period.
In chapter 3, I address a second domain in which technology emerged early as a political issue: the environment. I analyze in some detail the debate between Paul Ehrlich and Barry Commoner that divided environmentalists in the early 1970s. This was one of the first serious attempts to introduce the question of technology into the environmental movement. Commoner rejected antigrowth environmentalism in favor of democratic control of industrial development. The lasting significance of this debate lies in the sharp focus it brought to bear on the conservative political implications of determinism in the environmental arena and the need for a new philosophy of technology emphasizing contingency and social shaping.

The movements of the 1960s created a context and an audience for the break with technocratic determinism that had already begun in the theoretical domain in the works of Mumford and a few other skeptical observers of the postwar scene. Soon they were joined by a host of critics responding to the changed political climate. It was in this context that an American school of philosophy of technology emerged which incorporated elements of substantivism in a democratic framework. Several members of this school, Langdon Winner, Albert Borgmann, Don Ihde, will be referred to frequently in this book, which itself belongs within this tradition (Achterhuis, et al., 1997).

Marcuse and Foucault stand out in this period as the most powerful critics of the role of scientistic ideologies and technological determinism in the formation of modern hegemonies (Marcuse, 1964; Foucault, 1977). They rejected the idea that there is a single path of progress based on technical rationality, and opened a space for philosophical reflection on social control of technological development. At the same time, they argued, apparently inconsistently, that modern forms of domination are essentially technical. I describe their position as a “left dystopian” critique of technology.

These thinkers were strongly influenced by substantivism. Marcuse was a student of Heidegger and clearly learned a good deal from him. His discussion of technology in *One-Dimensional Man* is explicitly phenomenological (Marcuse, 1964: 153–154). Foucault too claimed to be a sort of Heideggerian. Although the connection is less direct than for Marcuse, the case can be made for significant

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3 In addition to Commoner, another influential source of new thinking was Schumacher’s notion of “appropriate technology.”
similarities between Heidegger’s critique of technology and Foucault’s writings on power, especially in the period of *Discipline and Punish* (Dreyfus, 1992).

In any case, both Marcuse and Foucault agree that technologies are not just means subservient to independently chosen ends but that they form a way of life, an environment. Whether it be an assembly line or a panoptic prison, technologies are forms of power. But Marcuse and Foucault differ with substantivism in introducing a more socially specific notion of domination. Although it sometimes seems so, they do not really claim that technology is autonomous. Rather, they relate technical domination to social organization and argue that technology has no singular essence but is socially contingent and could therefore be reconstructed to play different roles in different social systems.

The left dystopians reject essentialism and argue for the possibility of radical change in the nature of modernity. This position has a certain similarity to the common-sense view that technology is a neutral means available to serve any end. The difference is that here the choices are not at the level of particular means but at the level of whole means-ends systems. I call the availability of technology for alternative developments with different social consequences, its “ambivalence.” At stake in the ambivalence of technology is not merely the limited range of uses supported by any given technical design, but the full range of effects of whole technological systems. Not all of these effects belong to any given technology through all the stages of its development, and not all are “uses” in the usual sense. Some are contextual requirements of the employment of a technology. Others are side-effects. All are relevant to technical choices. Given the range and consequence of the effects for which technologies are responsible, it is not surprising that these choices are often political.

The Frankfurt School expressed a similar view in claiming that technology is materialized ideology. The ideological bias of technology can be understood in different ways, several of which are discussed in later chapters. Habermas, for example, treats technology as a general form of action that responds to the generic human interest in control. As such, it transcends particular political interests and is politically neutral in itself. Value controversy, and hence politics, belongs to the communicative sphere on which social life depends. Technology only acquires a political bias when it invades the communicative sphere. This is the “technization of the lifeworld.” It is reversible through reasserting the role of communication.
For Marcuse, technology is ideological where it imposes a system of domination, and forces extrinsic ends on human and natural materials in contradiction with their own intrinsic growth potential. What human beings and nature are and might become is subordinated to the interests of the system. This view has some similarity to substantivist critique, although Marcuse holds out the possibility of a radically transformed technology in the future that would be more respectful of its objects, that indeed would recognize nature as another subject (Marcuse, 1972: 65). The debate between Habermas and Marcuse is the subject of chapter 7.

Foucault’s critique of the social construction of rationality does duty for the Frankfurt School’s concept of technology as ideology. He explores the “subjugated knowledges” that arise in opposition to a dominating rationality. The view from below reveals aspects of reality hidden from the hegemonic standpoint of science and technique (Foucault, 1980: 81–82). As in Marcuse, so in Foucault technocratic rationalization meets its limit in the resistance of its human objects. But there is also a significant difference between them: while Marcuse demanded an “Absolute Refusal” of one-dimensional society as a whole, Foucault called for new forms of local struggle without any overall strategy. Something like this view is reflected in the action theory of Michel de Certeau, discussed in chapter 5 in connection with Bruno Latour’s theory of actor networks.

Regardless of these differences within the critical tradition, the notion of technology as ideology has definite political implications. If one can loosen up the public vision of technology, introduce contingency into it, technical elites will have to be more responsive to a democratically informed public will. These theories thus have a demystificatory aspect which is sometimes viewed as anti-technological. But they also reject the traditional humanistic contempt for technology one still finds in Heidegger and Ellul. In left dystopianism, politics and technology finally meet in the demand for democratic intervention into technical affairs. This is a significant turning point that promises to enlarge the range of the democratic public sphere to encompass issues formerly conceived as “purely” technical. In Part II I attempt to develop and apply this new democratic conception of technology in the light of what social constructivism has taught us in the intervening years.

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4 For a critique of this assumption, see Pippin (1995).
Simplifying tremendously, the theoretical variety that has unfolded over the long history reviewed above can be represented in a table with two axes. The theories differ with respect to the role of human action in the technical sphere, and the neutrality of technical means. Common sense assumes both the possibility of human control and the neutrality of technology. Deterministic theories, such as traditional Marxism, minimize our power to control technical development, but consider technical means to be neutral insofar as they merely fulfill natural needs. Substantivism shares determinist skepticism regarding human agency but denies the neutrality thesis. Ellul, for example, considers ends to be so implicated in the technical means employed to realize them that it makes no sense to distinguish means from ends. Critical theories, such as Marcuse and Foucault’s left dystopianism, affirm human agency while rejecting the neutrality of technology. Means and ends are linked in systems subject to our ultimate control. This is the position defended here, although I work it out rather differently from Marcuse and Foucault.

<table>
<thead>
<tr>
<th>Technology is:</th>
<th>Autonomous</th>
<th>Humanly Controlled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>Determinism (e.g. traditional Marxism)</td>
<td>Instrumentalism (liberal faith in progress)</td>
</tr>
<tr>
<td>(complete separation of means and ends)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value-laden</td>
<td>Substantivism (means and ends linked in systems)</td>
<td>Critical Theory (choice of alternative means-ends systems)</td>
</tr>
<tr>
<td>(means form a way of life that includes ends)</td>
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Chart 1: The Varieties of Theory
SOCIAL CONSTRUCTIVISM
The new left and the left dystopian theories of the 1960s and 1970s changed the boundaries of plausibility in thinking about science and technology. Where formerly challenges to the dominant positivism and determinism were easily dismissed as romantic irrationalism, they now gained a certain credibility.

With the decline of the left interest in dystopian critique declined as well, but the mainstream of technology studies retained its skepticism regarding the hegemonic claims of science and technology. The influence of Kuhn and Feyerabend grew among social scientists in the 1980s and it became intellectually respectable to study the history and sociology of science and technology on terms similar to other cultural domains. Early heroic expressions of a critical politics of technology were left behind and technology was approached as a normal social phenomenon without political afterthoughts. The stage was set for the current view of technology as a dimension of society rather than as an external force acting on it from an epistemological or metaphysical beyond. This shift in attitude eventually led to the rise of constructivism. This new approach reaffirmed two central notions of the dystopian critique, the link between means and ends and contingent development.

I will return to constructivism in more detail in chapter 4. For now, let me offer a rough sketch of this complex approach. Constructivism breaks with the standard view according to which society conditions the pace of progress but not the nature of technology itself. Constructivists argue that many paths lead out from the first forms of a new technology. Some are well-trodden while others are quickly deserted. The “principle of symmetry” holds that there are always viable technical alternatives that might have been developed in place of the successful one. The difference lies not so much in the superior efficiency of the successful designs, as in a variety of local circumstances that differentiate otherwise comparable artifacts. Like other institutions, artifacts succeed where they find support in the social environment (Pinch and Bijker, 1987).

Constructivism focuses on the social alliances that lie behind technical choices. Each configuration of components corresponds not only to a technical logic, but also to the social logic of its selection. A wide variety of social groups count as actors in technical development. Businessmen, technicians, customers,

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5 I use the term “constructivism” loosely here to refer to the range of theories and authors to be found in two influential collections published by MIT Press, Bijker, Hughes, and Pinch (1987), and Bijker and Law (1992).
politicians, bureaucrats are all involved to one degree or another. They meet in the design process where they wield their influence by proffering or withholding resources, assigning purposes to new devices, fitting them into prevailing technical arrangements to their own benefit, imposing new uses on existing technical means, and so on. The interests and worldview of the actors are expressed in the technologies they participate in designing.

The process of “closure” ultimately adapts a product to a socially recognized demand and thereby fixes its definition. Closure produces a “black box,” an artifact that is no longer called into question but is taken for granted. Before closure is achieved, it is obvious that social interests are at stake in the design process. But once the black box is closed, its social origins are quickly forgotten. Looking back from that later standpoint, the artifact appears purely technical, even inevitable. This is the source of the deterministic illusion.

Constructivists believe that technology is social in much the same way as are institutions. It is neither neutral nor autonomous as many technologists and humanistic critics of technology have maintained. But if this is so, then technology must surely have political implications. In particular, specific technical choices rather than progress as such would be involved in the deskilling of work, the debasement of mass culture, and the bureaucratization of society. Constructivism could contribute to the study of the replacement of traditional forms of power, based on myths, rituals, and coercion, with technologies of control and communication. It could lend support to Foucault and Marcuse’s political critique of technology.

But so far most constructivist research has confined itself to the study of the strategic problems of building and winning acceptance for particular devices and systems. Studies tend to be narrowly focused on the specific local groups involved in particular cases and lack any sense of the political context. Social resistance is rarely discussed, with the result that research is often skewed toward a few official actors whose interventions are easy to document. The frequent rejection of macro-sociological concepts such as class and culture further armors the research against politics by making it almost impossible to introduce the broad society-wide factors that shape technology behind the backs of the actors.

Thus, although constructivist sociology has placed particular technologies on the agenda in new ways, the basic questions of modernity posed by an earlier generation of theorists are rarely addressed today in terms of the general
problematic of technology.\(^6\) Where the old determinism overestimated the independent impact of the artifactual on the social world, the new approach has so disaggregated the question of technology as to deprive it of philosophical significance. It has become matter for specialized research. And for this very reason, most scholars in the humanities and in philosophy in particular now feel safe in ignoring technology altogether, except of course when they turn the key in the ignition.

Constructivism’s narrow empiricism goes along with a purely academic conception of the history of technology studies. Kuhn’s break with positivism is often cited as a founding act. But Donna Haraway argues that the emergence of new approaches owes as much to the environmental and feminist movements, and, I would add, the contributions of thinkers such as Marcuse and Foucault (Darnovsky, 1991: 75-76). It is ironic that the currently dominant social theory of technology seems to have no grasp of the political conditions of its own credibility.

To be sure, there is some justification for rejecting traditional concepts of politics. Contemporary technology studies would not be much advanced by rehashing outdated models in which engineers offer options while goals are neatly set by parliaments and sovereign consumers. Technological development actually involves another kind of politics, or rather, several other kinds of politics in which the actors cross all these boundaries between roles. And just because the rise of constructivism is so closely, if unconsciously, linked to increased resistance to the dominant technical institutions of our society, it can contribute to a necessary reconceptualization of the politics of technology. In chapter 5, I will show how actor networks can be interpreted as the basis for a revised political constructivism that incorporates micropolitical resistances in its understanding of technology. And in chapter 6, I apply this approach to debates within political theory over the nature of democracy in an age of technology.

THE POSTMODERN DILEMMA
As the memory of the 1960s faded, social philosophy took an entirely different path from social science and simply abstracted from technology’s broader social and cultural impact. Technology as such canceled out as its normative implications were identified with the social and political institutions to which

\(^6\) Wiebe Bijker has recently taken up the challenge of drawing out the implications of constructivism for democracy. See Bijker (1998).
it was supposed to be merely instrumental. Thus Rawls and Nozick acquired tremendous influence in the 1970s and 1980s despite the absence of any reference to technology in their work. After an early interest in technology, Habermas and most of his followers abandoned discussion of it to focus on other problems. Most of the work on Heidegger that deigns to notice the central importance of technology for his critique of metaphysics is exegetical. As a result, there have been few original contributions to philosophy of technology in recent years.

In abstaining from the philosophical debate over technology, philosophy left it to other disciplines, such as “postmodern” literary theory and cultural studies. These approaches are associated with multiculturalism, which defends the very differences the substantivist tradition believes to be threatened by progress. According to that tradition, as technology affects more and more of social life, less and less will remain free of its influence to constitute a cultural difference. Yet to the extent that technology is discussed philosophically today, the currently fashionable position claims exactly the contrary, namely, that difference is not only desirable, but ineffaceable.

But multiculturalism cannot be taken for granted so long as theories of convergence in a singular model of modernity are not persuasively refuted. The demonstration, in the course of endlessly repeated case histories, that modern scientific-technical rationality is not the transcultural universal it was thought to be may advance the argument, but does not settle the question. Nor is the persistence of cultural particularity in this or that domain especially significant. Perhaps the Japanese and the Americans will disagree on the relative merits of sushi and hamburgers for generations to come, but if that is all that remains of cultural difference it has ceased to matter. The problem is to show how differences might be fundamental and not merely minor accidents certain to be effaced or marginalized in the future.

Epistemological relativism seems to be the predominant way of showing this in the postmodern framework. The new picture emerging from social studies of science and technology does give us excellent reasons for believing that what we call rationality is more similar to than different from other cultural phenomena, and like them relative to social conditions. The anti-technocratic significance of such arguments is obvious but of little practical value. Practical

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7 See, for example, Penley and Ross (1991).
questions of technology are not decided on epistemological grounds. Whatever the ultimate status of scientific-technical knowledge, it is what we use for truth in making policy. We need far more specific arguments against technocracy that can play at that level.

Furthermore, it is implausible to dismiss rationality as merely a Western myth and to flatten all the distinctions which so obviously differentiate modern from premodern societies. There is something special captured in notions such as modernization, rationalization, and reification. Without such concepts, derived ultimately from Marx and Weber, we can make no sense of the historical process of the last few hundred years. Yet these are “totalizing” concepts that seem to lead back to a deterministic view we are supposed to have transcended from our new culturalist perspective. Is there no way out of this dilemma? Must we choose between universal rationality and culturally or politically particularized values? That is the principal philosophical question of technology I hope to address in the final chapters of this book through a critique of the account of technical action in Habermas, Heidegger, and, as an instance of contemporary philosophy of technology, Albert Borgmann.

ESSENCE AND HISTORY: ON HEIDEGGER AND HABERMAS
Recognition of technical phenomena in Habermas’s early philosophy and in Heidegger’s later thought seemed like the start of a welcome revolution in social theory. At last philosophy would grapple with the real world! However, neither fulfilled the initial promise of their breakthrough. Both developed essentialist theories that fail to discriminate significantly different realizations of technical principles. As a result, technology rigidifies into destiny in their thought and the prospects for reform are narrowed to adjustments on the boundaries of the technical sphere. They hope that something—albeit a rather different something—can be preserved from the homogenizing effects of technical systems, but they give us little reason to share their hope. In the third part of the book, I will attempt to preserve these thinkers’ advance toward the critical integration of technical themes to philosophy without losing the conceptual space for imagining a radical reconstruction of modernity.

It may appear strange to discuss Habermas and Heidegger in the same breath, and especially to compare their views on technology since Habermas has written

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8 It is of course easy to renew the vocabulary in which these things are discussed, but that is a far cry from actually breaking with the tradition.
practically nothing on the subject in the last 25 years. But Habermas’s preoccupation with technocracy provides a link between his present concerns and his earlier views on technology. I believe there is enough similarity between his critique of systems rationality and Heidegger’s theory of the Gestell to justify a comparison.

That comparison reveals several interesting complementarities, but also a common problem. Both Habermas and Heidegger rely on the Weberian hypothesis that premodern and modern societies are distinguished by the degree to which previously unified domains such as technology and art have been differentiated from each other. And both argue, for different reasons, that differentiation has made scientific-technical progress possible while reifying the object of technical action and degrading it to a lower plane of being than the subject which acts on it. Each emphasizes a different aspect of this process, Heidegger the object, Habermas the subject. As I will try to show in chapter 9, these complementary emphases provide the basis for a powerful theory of technology. Yet they each develop their contribution in an essentially unhistorical way which is no longer credible.

In Heidegger and Habermas, modernity is governed by a very abstract concept of technical action. I call this view “essentialist” because it interprets a historically specific phenomenon in terms of a transhistorical conceptual construction. The weakness of this approach shows up most strikingly in problems with historical periodization. The construction of the distinction between the premodern and the modern in terms of essentialized characteristics of technical action is unconvincing. Are we really more “rational” or uniquely oriented toward control by comparison with earlier social formations? And if indeed this is what distinguishes us as modern, what can be done to reform our society short of regression to a more primitive condition? There are thus both theoretical and practical reasons to doubt such blanket distinctions between eras and types of society.

The difficulty is inherent in the essentialist project: how to fix the historical flux in a singular essence? Two strategies are available: either deny all continuity and treat modern technology as unique — Heidegger’s solution; or distinguish earlier from later stages in the history of technical action in terms of the degree to which it has purified itself of the admixture of other forms of action—Habermas’s solution.

Heidegger represents modern technology as radically different from the one other model of technical action he recognizes, premodern craft. He emphasizes the reduction of the object of modern technology to a
decontextualized, fungible matter cut off from its own history. This reduction is value charged, or more precisely in Heideggerian terms, it brings “value” into being by canceling the intrinsic potentialities of the object, which craft respected, and delivering it over to alien ends. The modern process of differentiation constitutes a sharp ontological break for Heidegger, a new dispensation, not a continuous social change. Modern technology is no merely contingent historical phenomenon but a stage in the history of being. Perhaps because of this ontologizing approach, Heidegger allows no room for a different technological future. Modern technology remains fixed in its eternal essence whatever happens in history. Not technology itself but “technological thinking” will be transcended in a further stage in the history of being that we can only await passively. This essentializing tendency cancels the historical dimension of his theory.

For Habermas, on the contrary, modernity does not reveal being but human activity in a new and purer light. In premodern societies the various types of action are inextricably mixed together, with no clear distinction between the technical, the aesthetic, and the ethical. In modern societies these action types are differentiated practically and theoretically. At first Habermas identified technical action with technology, but in his later work he focuses on economic and political forms of successoriented action which he treats much as he had earlier treated technology. In either case, because he continues to interpret technical action through the generic concept of instrumentality, he grants it a kind of neutrality in the limited sphere where its application is appropriate. Its political implications appear where it interferes with human communication in essential lifeworld domains such as the family or education. He ends up arguing that in modern societies the “coordination media,” money and power, extend ever more deeply into these domains to their detriment. His goal is the restoration of a healthy process of social communication capable of providing direction to market and administration and especially of limiting their influence.

Habermas’s notion of history is less idiosyncratic than Heidegger’s, but for him the culturally variable nature of technical action systems is not a question of rationality; he treats it as a minor sociological issue of the sort from which he routinely abstracts. His alternative thus offers an avowedly non-historical conception of technical rationality which effaces any fundamental difference between culturally distinct achievements in what he calls the “cognitive-instrumental” sphere. All the important differences now come down to the
degree of development on an apparently absolute scale, and the location of the boundaries between spheres.\footnote{For a provocative attempt to develop a philosophy of technology under the influence of Habermas, see Krogh (1998).}

The basic problem is essentialism. Heidegger and Habermas claim that there is a level at which instrumental action in modern societies can be considered as a pure expression of a certain type of rationality. However, as such, it is merely an abstraction. Real action always has a socially and historically specific context and content. What do they actually mean by the enframing of being or the objectivating, success oriented relation to nature? Can abstract definitions such as these serve the foundational purpose to which they are destined in these theories?

In chapter 7 I confront Habermas’s theory around these questions. I show that while the general framework of his media theory is useful, he fails to work out its relevance to technology, which has social consequences similar to money and power. I argue, as Habermas himself once did, that the design and configuration of technology does more than merely accomplish our ends; it also organizes society and subordinates its members to a technocratic order. Only by including technology in the media theory can we arrive at an adequate account of what Habermas calls the “technization” of the “lifeworld.”

In chapters 8 and 9, I amplify this approach with a theory of the essence of technology as a social phenomenon quite different from Heidegger’s. Where philosophy of technology has long sought to explain its object in terms of asocial categories such as the Frankfurt School’s “instrumental rationality,” or the Heideggerian “enframing,” I propose an account in which social dimensions of technological systems belong to the essence of technology as well. This essence includes such features as the impact of these systems on workers’ skills and the environment, their aesthetic and ethical aspects, and their role in the distribution of power. This “instrumentalization theory” attempts to embrace the wide variety of ways in which technology engages with its objects, its subjects, and its environment. A social account of the essence of technology enlarges democratic concerns to encompass the technical dimension of our lives. It offers an alternative to both the ongoing celebration of technocracy triumphant and the gloomy Heideggerian prediction of techno-cultural disaster.