

Chapter 1

A Premature Attempt at Discourse Synthesis: Carl Mitcham in Thinking through Technology

I begin with a sketch of Carl Mitcham. He was educated at the University of Colorado (B.A., M.A.) and Fordham University (Ph.D.). Currently Professor of Liberal Arts and International Studies at the Colorado School of Mines, he has taught previously at Berea College (Kentucky), St. Catharine College (Kentucky), Brooklyn's Polytechnic University, and Pennsylvania State University. Throughout his career—according to one of his self reports—Mitcham has reflected on the nature and meaning of living in a “high-science, high-technology society,” in both general and particular terms. Although critical assessment of particular technoscientific practices and achievements is crucial, and where reflection must begin, particular assessments do not (he says) exhaust the challenge of technoscience.

Mitcham's publications are almost all relevant to this book. To set a pattern for my book, I will not list them here. They are included in the bibliography at the end, where citations are arranged by chapter.

Mitcham deserves more credit than anyone for enlisting an organized group of philosophers in the serious study of technology, previously relegated to sporadic discussions here and there. Mitcham and Robert Mackey produced a heroic initial effort aimed at achieving this in 1973, with the publication of the first version of their bibliography of the philosophy of technology in the history of technology journal, *Technology and Culture*. Mitcham also worked closely with me on the invitation list for the 1975 conference on philosophy and technology at the University of Delaware that led, shortly thereafter, to the formation of the Society for Philosophy and Technology. He was also the first elected president of SPT.

Mitcham is clearer than most early philosophers of technology in having spelled out his agreements and disagreement with others in one major book, *Thinking through Technology: The Path between Engineering and Philosophy* (1994).

I was asked to review that book for *Philosophy in Review* (June 1997). What follows is repeated here, almost verbatim, from that review.

I said there that because of my long association with Mitcham as collaborator and editor, but also as friend—I had refereed the original bibliography for *Technology and Culture* and championed its publication—I may not have been the most objective reviewer of one of his books. But I take that risk now as I did then. I do have, as longtime editor of the publications of the Society for Philosophy and Technology, a unique perspective on the philosophy and technology field, so I hope I can be sufficiently objective. (For that matter, I have become a friend as well as a colleague of many of the philosophers discussed here in this book.)

I decided to take the review task upon myself for two reasons. First, it had been alleged many times that the philosophy of technology had neither an adequate basic textbook nor an adequate history of the field. Mitcham's book—and I am not the only one to note this—could serve as either or both of these. Second, Mitcham's book seems to me to be important in its own right, in addition to reacting to the kinds of criticisms it was likely to experience. In fact, the book did receive criticisms immediately and undoubtedly will continue to do so.

So I begin this survey of concepts and controversies in the philosophy *of/and* technology in the last quarter of the twentieth century, not only with Mitcham but with this book.

Before turning to Mitcham's own philosophy, together with his controversial stances and the critics' replies, I take up the issue of Mitcham's book as a history or a textbook. How does *Thinking through Technology* fare by contrast with other histories of or primers in this new field? I should say right off that I think an academic discipline—and only some philosophers believe that the philosophy of technology is or ought to become such—does need some sort of basic textbook. I think, furthermore, that historically grounded textbooks are the best kind.

There were five principal English language competitors when Mitcham's book appeared on the scene: Friedrich Rapp's anthology, *Contributions to a Philosophy of Technology* (1974); Rapp's monograph, *Analytical Philosophy of Technology* (1981); Don Ihde's early effort, *Technics and Praxis: A Philosophy of Technology* (1979), along with his later, *Philosophy of Technology: An Introduction* (1993); and Frederick Ferre's *Philosophy of Technology* (1988). Two other books might be mentioned, Larry Hickman's anthology, *Technology as a Human Affair* (1990), and Mitcham's own anthology (co-edited with Robert

Mackey), *Philosophy and Technology: Readings in the Philosophical Problems of Technology* (1972; reprinted with enlarged bibliography in 1983). For comparative purposes here, as with my review in the *Canadian Journal*, I limit myself to the non-anthologies, by Rapp, Ihde (two books), and Ferré.

Among the five books, Mitcham's is far and away the most comprehensive, as well as the best grounded in the history of the field. Mitcham includes a long part one on historical traditions in philosophy of technology, where he summarizes both pro-technology ("engineering") and mostly anti-technology ("humanities") philosophies of technology, along with attempts to reconcile the two—especially efforts in Germany and the United States.

In this historical introduction to his book, Mitcham summarizes contributions by a long list of authors, from Karl Marx and Ernst Kapp in the nineteenth century, to Peter Engelmeier in the early twentieth century, Lewis Mumford, José Ortega y Gasset, Martin Heidegger, and Jacques Ellul in mid-century, and on to Rapp, Hickman, and Ihde, among others. In addition, he discusses the relations of the developing field to philosophy of science, history of technology, and such other disparate fields as theology and political philosophy.

Mitcham has been criticized for not including recent work—recent at that time—in what is generally called the social construction of technology. He would later correct this oversight with a volume he edited in *Research in Philosophy and Technology*, volume 15: *Social and Philosophical Constructions of Technology* (1995).

Though Ihde's *Philosophy of Technology* includes a long discussion of the history of human technological engagements with nature—and something of a history of the philosophy of technology—none of the comparator books comes close to matching the breadth and depth of Mitcham's historical introduction.

Nor can any of the other would-be textbooks match Mitcham's evenhanded discussions of competing viewpoints. Rapp's text is avowedly "analytical" (see Chapter 13 below, on international connections of SPT). Both of Ihde's books are rooted in phenomenology (though the later text does provide a somewhat broader focus). Ferré's—which is the only one that reads like an introductory textbook—ends with a defense of a Whitehead-inspired metaphysics, a holistic critique of narrow technological thinking, not totally at odds with Mitcham's. (For Ihde see Chapter 10; Ferré, Chapter 16.)

Each of these viewpoints can be seen as a source of criticisms of Mitcham's work. To the extent that Rapp's approach is different from engineering philosophy of technology—Mitcham's primary target—Rapp's complaint would be that Mitcham is not analytical enough or not analytical in the right way. But Mitcham views Rapp as falling within the engineering philosophy camp, where we would expect to find more objections to Mitcham. His reply to Rapp is that he is analytical, and includes analyses of technology in terms of ethics, epistemology, and, most important for him, metaphysics. The metaphysics, Mitcham says, is "part Aristotelian, part Heideggerian."

So Rapp might retort, as would most of those Mitcham lumps under the engineering philosophy heading, that metaphysics of almost any kind is the problem with his humanities philosophy of technology. This basic controversy for Mitcham needs to be explored in more detail, but I postpone that for now.

Phenomenology of Ihde's kind—phenomenological analyses of perception as colored by technological means—is, admittedly, something that Mitcham does not do.

Mitcham's reply is that he does do careful phenomenological analyses, in particular of everything that engineers do and think, under his four headings of technology as object, process, knowledge, and volition; it's just that he doesn't do it in Ihde's fashion. Mitcham actually gives Ihde a great deal of credit, though he puts his phenomenology down as pragmatist in effect, and says it (therefore?) doesn't completely escape the engineering philosophy camp.

Ferre's objection, though I don't know of anywhere that he actually says this, would be to Mitcham's kind of metaphysics. Ferre does critique Heidegger, so to some extent that would carry over to Mitcham; but he discusses Aristotelian substantialism only in the most general historical terms. Ferre's metaphysics, in his neo-Whiteheadian process metaphysics (see Chapter 16 below), is opposed to substantialism, so possibly to Mitcham's use of Aristotelian categories, but Ferre's strong religious overtones are something that, on principle, Mitcham ought not object to.

These were some ideas I came up with based on my original review. Mitcham's own version of his controversies with others—at least his side of those controversies—follows.

First, his main controversy throughout the book involves humanities philosophy of technology versus engineering philosophy of technology, including his repeated defense of the humanities approach as better (though itself subject to further controversies).

Next, he does deal, however briefly, with four attempts to mediate between those two major adversaries:

1. He treats German attempts associated with the Verein Deutscher Ingenieure as little more than engineering philosophy in disguise.
2. He treats pragmatism (referring to myself and Hickman as based on Dewey) as a second attempt—and argues that it fails to extricate itself from the engineering pole. That, for me, sets up a controversy, best represented in later chapters (14 and 18) in this book, between Hickman and Borgmann over whether or not non-instrumental values are needed for an adequate critique of technological culture as a whole.
3. Mitcham next treats Ihde's phenomenological philosophy of technology as so closely related to pragmatism that it falls under the same doesn't-escape-engineering stricture as pragmatism more generally. Chapter 10 will deal with this, supplying Ihde's reply.
4. Mitcham also treats Marxism, to the extent he does at any length, in this same context:
 - a. Mitcham says Marx himself ended up leaving a double legacy (see Chapter 4 below). His two candidates follow.
 - b. Political Marxism (especially of the Soviet variety) Mitcham treats especially in terms of the *Man, Science, Technology* (1973) collective book, where Mitcham accuses Soviet thinkers of lapsing into a pure technocracy, clearly subject to the engineering philosophy stricture.
 - c. Neo-Marxism, from Adorno and Horkheimer to Marcuse, to his competitor Habermas, then back to Marcuse-inspired Feenberg (see Chapter 12 below), which Mitcham seems to think is the

best mediation offered so far. Even Feenberg's mediation, however, Mitcham says is “unrealistic,” leaving the charge unelaborated. (I treat that charge in the Feenberg chapter.)

Mitcham also deals with a series of controversies under his detailed accounts of “objects, knowledge, activity, and volition.” Whether technological objects are to be viewed better under the light of an engineering or a humanistic approach I treat under the main controversy. Discussions of the applied science model (p. 199) I take up in Chapter 5. Mitcham's entire chapter on engineering activities (it is a gem) is filled with controversies over likenesses and differences of engineering in relation to crafts and related activities; over the interpretation of invention; or of design, all the way to issues over the use by consumers of engineering products. I would probably single out one in particular as exemplary—Mitcham's treatment of so-called engineering design—but again I save that for a later chapter (Chapter 15).

Mitcham's final detailed discussion, of “volition” in engineering (or a culture that depends crucially on the products of engineering), returns us to the main controversy, Heideggerian culture critique versus an engineering-based technological culture, though the chapter also includes discussions of issues such as technological determinism.

Mitcham's book ends with a defense of a particular viewpoint, in a way that introductions to other fields typically do not. But there is much evenhandedness about dozens, perhaps even hundreds, of different attempts to define a new field.

All of this detail ends up working against the book as a textbook, at least as an introductory text. Too many approaches and too many topics are touched on too concisely for the beginning student to be able to grasp them. At most, in my opinion, the book might serve as a sourcebook for an advanced seminar in philosophy of technology, where advanced undergraduates or graduate students could follow up on particular issues or look for thesis topics.

But I am more interested in the second of the issues I raised above and in my original review in the Canadian journal—the point of view of *Thinking through Technology*, its significance, and the controversial issues that it raises, either directly or indirectly. And the first thing to note is the subtitle, *The Path between Engineering and Philosophy*. Mitcham is at least implicitly suggesting that previous philosophers of technology had seemed to be ignorant of engineering

and related technical fields, an objection that Langdon Winner raised in a *Science* magazine review of the first volume of *Research in Philosophy and Technology*. Winner was giving voice to what would become a longstanding complaint (echoed more than once by Joseph Pitt, as we will see in Chapter 9) that too much of philosophy of technology amounts to critiques of Technology with a capital T. There were, the critics said, too few detailed examinations of actual efforts to control particular technologies at the concrete policy level. Early philosophers of technology had not seemed to take into account to any satisfactory degree what technical professionals actually do, the things they produce, and the values they hold, often claiming, for example, to be working “for the betterment of the human condition.”

Mitcham sets out deliberately to undercut this criticism, almost swamping the reader (at least the reader of his notes and references) in details of what engineers and technical professionals say about the objects they work on, their procedures and methodologies, the knowledge claims they make and defend, and even their values and motives.

This last heading—motives—is the least developed, and Mitcham says that is because neither engineers nor philosophers have written much about it. Mitcham’s chapter, “Types of Technology as Volition,” includes a long and detailed discussion of Heidegger’s eccentric though popular philosophy of technology, and Heidegger is one of the main philosophers whom defenders of technology have in mind when they claim that philosophical critics are ignorant of the real world of technology.

Unfortunately, despite the minute detail on engineering in Mitcham’s notes and references, his critics still accuse him of evaluating technology from an outsider’s perspective. This is partly because he does not do, or even depend upon, any of the detailed studies—historical or sociological—of the development of particular technologies or technological institutions that were available at the time he wrote the book. Mitcham basically concedes this point; that’s why, as I mentioned earlier, he would edit a volume on constructionism and technology. (See Chapter 25 below for my discussion of social constructionism within SPT.)

The crux of the issue here is that “the path between engineering and philosophy” is really a path from engineering to philosophy—in fact, to a humanistic philosophy whose avowed aim is to “take the measure of” not only technology in the abstract but of our modern technological culture as a whole. This is most

explicit in a section headed, “A Brief for the Primacy of Humanities Philosophy of Technology,” but the attitude is pervasive throughout the book.

Mitcham’s reply to this critique is that, “Although critical assessment of particular technoscientific practices and achievements is crucial, and where reflection must begin, particular assessments do not exhaust the challenge of technoscience” (as we have seen him say, above, in his web autobiography). He spells his arguments out in what he calls a “brief” for the primacy of humanities philosophy of technology over engineering philosophy of technology (pp. 88–93). Mitcham proposes three arguments, with the second one subdivided into three:

1. An argument from “historical subservience”: when engineers and their collaborators first proposed an engineering philosophy of technology (for example, in connection with the professional association of engineers in Germany in the 1970s), what they did was turn to traditional humanities disciplines, especially ethics.
2. A complex argument from “inclusiveness”:
 - a. “Conceptually,” the humanities include historical perspectives that are broader than a Whiggish belief in technological progress, even when technological progress is equated with scientific progress and ultimately to social progress.
 - b. “Functionally,” speculative knowledge and wisdom, since Aristotle (and Plato, though Mitcham doesn’t say that), have been ranked higher than political virtue and honor, and clearly higher than the pursuit of pleasure (read the utilitarian “hedonistic calculus”).
 - c. “Anthropologically,” the humanities come closer to being coextensive with human activities broadly speaking—they reflect “more of human life.” You can only engineer so much, and even that much requires broader human social goals.
3. An argument from “spiritual continuity”: *questioning* has been the preeminent philosophical tool from Socrates to St. Augustine to Miguel Cervantes to Herman Melville; each “rejects or struggles against a

technical delimitation of perspective.”

Mitcham elaborates on this last point in his brief (p. 93): “Often this insistent, sometimes conservative return to questions of justice, virtue, and piety will be perceived as romanticism if not mere churlishness. On occasion the return will degenerate into ritual . . . But were the philosophy of technology to become identified solely with a philosophical extension of technological attitudes, it not only would close itself off to the rich otherness of reality, it would also abandon its claim to be philosophy.”

Clearly C.P. Snow in *The Two Cultures* (1959) and other advocates of applying scientific and technological knowledge to the solution of world problems—especially to the solution of problems of hunger and poverty in the developing world—would react to this indictment with alarm. Do the humanities have anything to offer toward the solution of such *human* problems? Isn't it *inhumane* to go on as we did in the past?

And there is more. In his book, Mitcham also has what seems to me a somewhat strange attitude toward the ethics and politics of technology. He says (p. 12) that he wants to emphasize “the vitality of theory” but what theory means in his view is primarily metaphysical and to a lesser extent epistemological theorizing about the objects, processes, and knowledge claims of technologists. There is little ethical theorizing. Mitcham has written or edited several books on engineering ethics, but he has written virtually nothing about the politics of technology. When Mitcham discusses Marxism and neo-Marxism, his main complaints are that Soviet-era philosophers of technology reduced politics to a kind of fetishism of technology, a kind of technocracy out of step with Marx's initial insights about a broader cultural context of technology and economics; he says most neo-Marxists have been politically “unrealistic.”

This rather cavalier attitude may have been Winner's real complaint about Mitcham and other early philosophers of technology (see Chapter 11, below), but in any case a serious *political objection* to Mitcham deserves discussion here. One does not have to subscribe to Marx's claim about religion as the “opiate of the masses” to claim that Mitcham's easy linking of his metaphysics with religion stands in need of political discussion, if not critical rejection.

Similarly, when it comes to American pragmatism (and Ihde's phenomenology which Mitcham says is closely akin to pragmatism), Mitcham seems to think that

he can deal with them effectively by simply stating that they do not manage to mediate between engineering and humanities philosophy of technology, that in fact they do not successfully escape from an engineering attitude toward our culture. His critiques of that attitude, he thinks, are also effective against the pragmatists, including Ihde as Mitcham interprets him. (Reactions from Ihde and from pragmatists can be found in Chapters 10 and 14 below.)

When it comes to the values and motivations of engineers and other technical workers (as well as modern consumers, the users of their products), Mitcham seems to be most comfortable with a Heidegger-like claim that they are “forgetful of being,” unwilling to grapple with goals or ends as opposed to instrumental means. And he concludes his book with an appeal to Heidegger, even though he says it is an appeal “not wholly consistent with Heidegger’s own analysis or intentions” (p. 297), where this may be a cryptic reference to his reliance, instead, on neo-Heideggerian Albert Borgmann (see Chapter 18).

At that point, Mitcham appeals to “the romantic way of being-with technology.” And he concludes with a lament: “The paradox of the romantic way of 'being-with' technology is that, despite an intellectual cogency and expressive power, it has yet to take hold as a truly viable way of life” (p. 299). And his very last word on the matter in the last sentence of the book is a question, about whether, perhaps, the “internal ambivalences” of a romantic critique of technological society “vitiates its power.” This does not seem to be an effective reply to objections about Mitcham’s neglect of politics (see above and Chapters 14 and 17).

To sum up, Carl Mitcham’s *Thinking through Technology* is an ambitious and detailed summary of some of the major contributions to the growing field of the philosophy of technology, as well as a refreshingly complete summary of what engineers and technical experts say about their work and its products. But it is also a brief for an attitude toward modern technology, and the culture within which it holds a central place, that wants to be “romantic/critical,” while also recognizing that objections may be forthcoming from his engineering opponents on that point.

Thinking through Technology, thus, though it did not lead to the development of a new field of philosophy of technology in academia, is a good place to begin my study here in this book of controversies among philosophers of technology.

Summary of full quadrant range of controversies

It seems to me that Mitcham, more than anything else, champions an *idealism* of the religious sort. He does try to meet academic philosophy standards, thus following, in some sense, *scientific/analytical* standards, which would, he thinks, put him in opposition to some philosophers of technology who do not. One's position in the grand scheme, however, is determined more by one's opponents than by anything else, and in those terms, "engineering philosophers of technology" are Mitcham's main antagonists. In this book, see Chapter 4, on Bunge. And this could be generalized to cover a whole range of his opponents in the *science* quadrant, e.g., Shrader-Frechette (Chapter 3) or Pitt (Chapter 9). Mitcham would also oppose and be opposed by Marxists (Chapters 4 and 12). In *Thinking through Technology*, while he acknowledges the roles of *pragmatism* and Don Ihde's *phenomenology* as significant contributions to the early history of the would-be field, he also criticizes these approaches as too limited, as not challenging the cultural dominance of a short-sighted engineering mentality—and, of course, pragmatists (e.g., Hickman, Chapter 14) and phenomenologists, pre-eminently Ihde (Chapter 10) among philosophers of technology challenge him on this point.