

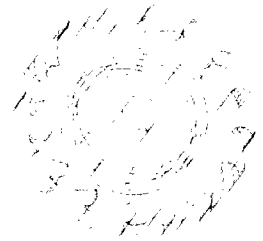
"Culture + Technology:
A Primer"

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CHAPTER EIGHT

Defining Technology



WHEN YOU PAY ATTENTION to what people talk about—in casual conversations, in class, on radio and television, in books, and in films—you note that they are often talking about, writing about, thinking about, reacting to, or responding to technology. Many of these conversations involve life-giving, life-changing, and life-threatening matters; controversial topics include stem-cell research, genetic engineering, media surveillance, execution by the electric chair, the impact of television on violent behavior, Jack Kevorkian's suicide machine, global warming, and weapons of mass destruction. Technology clearly matters, and it matters enormously. In less dramatic ways, the topic of technology also pervades talk about what matters in everyday life: in discussions of the breakup of Microsoft, new film animation techniques, the development of hybrid cars, Mexican trucks on US highways, or even in discussions about purchasing a digital camera, computer, printer, cell phone, DVD player, PDA, and so on. Sometimes the matters seem relatively trivial: such as expressions of frustration over malfunctioning answering machines, ATMs that are out of service, and gas-guzzling SUVs. Sometimes we know that these matters are deadly serious: such as recent debates over which countries can legitimately develop "weapons of mass destruction."

What is amazing about these conversations involving technology is how little agreement there is about what is at stake, that is, about what really matters. This is often dramatically the case when the topic is controversial. Consider, for example, the controversy involving US physician Jack Kevorkian's machines that hasten death. These simple machines are of two types. One is a set of intravenous bottles mounted on a metal frame with a mechanism that allows the patient to turn on and trigger the flow of a series of drugs that will bring on death painlessly. The other is a tank of deadly gas and a mask with a mechanism that allows the patient to turn on and trigger the flow of gas that will similarly bring on death painlessly. Kevorkian and his machines have been the cause of considerable public and legal controversy. Is Kevorkian a passionate physician or a cold-hearted murderer?

Some people argue that the machine honors a person's right to take control of his or her life and death. They believe that when people have experienced prolonged suffering, they ought to have the right to cease that suffering. From this perspective, Kevorkian is a virtual saint bucking an uncompassionate legal establishment, and his machines are "assisted-suicide machines," a compassionate way to help people gain control that would otherwise be denied them.

Other people argue that no human has the right to determine the moment of a human death, even one's own. Some fear the possibility that, once allowed to kill legally, the machine will surely be used to justify killing those who are deemed undesirable—in the manner that fascist Germany used liberal euthanasia laws to justify killing Jews, Gypsies, homosexuals, and the handicapped. To legalize Kevorkian's machines would be to invite fallible humans—and eventually the state—to kill at will. From this perspective, Kevorkian is an agent of encroaching totalitarianism, and his machines are "killing machines," an evil that will usher in legalized, political murder.

You may have heard or even participated in conversations where these (or variations of these) arguments about Kevorkian's assisted-suicide or killing machines have been made. What all these conversations have in common is attentiveness to the fact that this technology clearly matters, and it matters enormously (either in a positive or negative way). What these conversations often do not have in common is agreement about what is at stake, or what matters: Does the individual have a right to choose the time of his or her death? Do states have a right to murder those deemed undesirable? These discussions often end frustratingly, at an impasse, without a way to reconcile what are seen as mutually exclusive stakes. There is seldom a shared framework for deciding, among the many decisions that might need to be made, if the machines should be legal or illegal.

This problem is enacted daily, at every level of conversation concerning technology, even at the most mundane level. For example, in discussing the desirability or undesirability of SUVs, what exactly matters: that there are too many polluting automobiles on the road? That people have the right to drive whatever they want? The excessive stress put on the environment due to overpopulation? The restrictions on domestic drilling that limit the availability of gas? The rollover rate of SUVs? The tendency of SUV drivers to fare better than the drivers of smaller vehicles in crashes between them?

In conversations about these topics, the reason we fail to reach more constructive outcomes can be understood partly in terms of a very significant lack: the lack of a sophisticated and shared understanding of how to approach questions of technology. Even if all participants agree (explicitly or implicitly) to consider that the matter in question is technological, it is striking how little agreement there is about precisely what that means. What exactly are people talking about when they support or criticize the existence of Kevorkian's machines or SUVs? What, after all, *is* technology, and how is it connected to our assessments of all the other aspects of daily life that matter? Without that key, that sense of common theoretical ground, we remain destined to discuss, argue, and live at cross-purposes in a

communicative space where we cannot begin to sort out the basic terms of disagreement. Without that key, our mechanisms for achieving resolutions to technological matters of enormous importance remain hopelessly flawed.

So, Then, What Is Technology?

Part of the difficulty with reaching common ground in discussions concerning technology is that the term is used in so many different ways. One could turn to the dictionary, but dictionary definitions do not adequately capture the meanings of technology that people operate with in everyday life. If you take a group of people and ask each person to write down a definition of technology, you will get as many definitions as there are people in the group! This is often the case even when they are allowed time to consult sources (such as dictionaries) or experts. There do tend to be, however, some thematic similarities in the definitions people turn up. Here are some typical definitions. Drawing on *Webster's*, technology is:

- 1 a : the practical application of knowledge especially in a particular area: ENGINEERING 2 <medical technology> b : a capability given by the practical application of knowledge <a car's fuel-saving technology>
- 2 : a manner of accomplishing a task especially using technical processes, methods, or knowledge <new technologies for information storage>
- 3 : the specialized aspects of a particular field of endeavor <educational technology>¹

Rhetoricians typically define technology by pointing to the Greek root, *tekhne*, which means art or craft. The suffix *ology* means "the study of." When you put these two together, technology means the study of an art or craft. Cultural theorist Raymond Williams, in *Keywords: A Vocabulary of Culture and Society*, writes that technology is used to "describe a systematic study of the arts...or the terminology of a particular art" and has had this meaning since the seventeenth century.²

Interestingly, few people still make everyday use of the term technology in any of the above ways (if they ever did!). What is curious about these definitions is that they treat technology as application, capability, manner of doing, and specialized aspect, but not as a thing. When technology is referred to in popular discourse, however, it is almost always as things (tractors, pacemakers, computers, and so on). Even more interesting then is the fact that the examples in the dictionary definitions suggest things: medical technologies (e.g., respirator), fuel-saving technologies (e.g., catalytic converter), information storage technologies (e.g., computer), and educational technologies (e.g., computer set up for language instruction). In our estimation, the most common meaning of technology in popular usage conceives technologies as things that are useful; that is, as things that have, as the dictionary puts it, some "practical application." So technology is, at least in terms of its most popular usage, a constructed and useful thing.

What does it mean to treat technology as a "thing"? Or, as we prefer to think of it, in terms of its "thingness"? It means to understand and treat technology in

terms of objects that have discrete boundaries precisely delimiting the objects and differentiating them from others. So, for example, a digital camera is a different technology than a film camera. Although they are related in some ways, it is possible to specify what makes each unique. Likewise, it is possible to differentiate technologies from other kinds of things. In this way of thinking, technologies (the camera for example) and culture are separate things, each occupying its own separate space. Although they may have a relationship, they are each separately bounded and definable. A technology may exist in culture, but like an egg in a nest, it is an isolatable, discrete object. A technology may touch, but not interpenetrate the other object: culture. Where one begins and the other ends is always decidable, a mere matter of calculation, measurement, and discernment.

Most often, technological objects are understood to be constructed, solid, and nonliving (although biotechnology is changing this somewhat). They are understood to be stable masses, that is, particular arrangements of matter that can be described in terms of their mass (large, small, heavy, light, soft, hard, dense, and so on). Technologies are artifacts, instruments, tools, machines, structures, and constructions; they are detached and different from living bodies and from other things. In this sense, they are discrete, isolatable objects, correlates of natural objects, but not natural. Examples of such things include cameras, paperclips, scissors, generators, automobiles, bridges, buildings, computers, televisions, overhead projectors, microscopes, CD players, CDs, and assisted-suicide/killing machines.

Thingness, however, also points to the fact that people often treat arrangements without solid mass as technologies—as things. An excellent example of this idea of technology is the Internet. While commonly thought of as a technology, the Internet does not occupy space in the same way that a computer monitor does. It is still commonly treated, however, as though it had a discrete, isolatable nature. Although the work of discernment is more difficult, it is possible to map its boundaries, to delimit what is the Internet and what is not. It is a network that consists of certain components of hardware, software, and certain more ethereal components such as electrical connections, microwaves, and satellite links. It is not the computer monitor, the user, the software or hardware designers, or the companies that post Web pages. It is, rather, the network of connections among these (and other) sites. Note: not the sites themselves, but the network of connections among them. Thus, even though the Internet has no “weight” (or other such definitive measure of mass), it is a constructed, nonliving, arrangement that is contained by boundaries that define what it is and what it is not. It has an inside and an outside. While it is a complex network, it does not interpenetrate the other “things” that make up the rest of culture.

The cultural tendency to conceive of technology in terms of thingness has interesting and serious consequences. Significantly, as we have argued, it directs vision toward the “stuff” of technology, the solid, measurable things that are produced. In so doing, it deflects vision away from the interdependent relations among the living and nonliving within which these things are given form. To focus on bounded artifacts—on thingness—is to deflect understanding from the

ongoing energies, activities, relations, interpenetrations, and investments within which these things appear, take flight, and have effects. Further, the formulation of technology as things that are useful deflects vision toward the tool-like use of these things, and away from the work or role of these things beyond matters of their usefulness.

In the remaining chapters of this book, we develop a way of understanding technology that foregrounds the interconnectedness within which things appear, are developed, and have effects. While the approach we develop relies on the theoretical concepts of articulation and assemblage, it owes a great debt to many scholars who have proposed alternative approaches to conceiving the interconnectedness of technological culture. For example, in his book *Technology as Symptom and Dream*, Robert D. Romanyshyn defines technology as “an enactment of the human imagination in the world.”³ Andrew Feenberg, in *Critical Theory of Technology*, defines it as a “process of development suspended between different possibilities.”⁴ Langdon Winner, in *The Whale and the Reactor*, defines technologies as “forms of life.”⁵ Elizabeth Grosz has recently put it particularly elegantly. She writes in her article titled “The Thing”: “Technology is that which ensures and continually refines the ongoing negotiations between bodies and things, the deepening investment of the one, the body, in the other, the thing.”⁶

While these formulations may not yet make sense, they do point to flows, connections, and interpenetrations among the living, the nonliving, producers, users, processes, possibilities, and energies—and not just to things. If we can learn to think with definitions such as these, we may be able to find productive common ground from which to speak about technological culture.

Why Struggle with Meaning?

There are several forms of resistance that you might be feeling to this call to learn a new—and decidedly more complicated—sense of technology. First, you might ask, with all the definitions of technology available, why propose another? Wouldn't it make sense to simply advance the one that is “correct” or “best” and move on? Second, you may have a rather well-worked-out definition of technology with which you are satisfied. Perhaps you feel it has served you well up to now and see no need to abandon the comfort it offers. Third, you may challenge the idea that anyone has the “right” to simply develop (or “make up”) a new definition as they see fit. You may believe that language and meaning are more fixed and absolute than to permit such tinkering. As we argue below, grappling with the problems of what technology means, and the power that different definitions have, actually provides crucial insight into the character of technological culture.

First, in response to the hope that we could simply choose the most comprehensive and useful definition of technology and move on, we maintain, as we have argued above, that there is no definition of technology that (as yet) seems to work consistently in everyday life. Dictionary definitions don't match up very well to actual use, and popular usage is inconsistent. Working to develop a widely

shared, sophisticated understanding of technological culture might help us solve significant problems involving technology. But, in the interest of achieving that understanding, we can't simply jettison all the meanings and definitions of technology that have come before and that are a part of our culture. However inadequate or problematic they may be, they influence current understandings and actions—usually in inconsistent and contradictory ways. In a very real sense, all those definitions contribute to the shape of technological culture.

Second, in response to those who are comfortable with a particular definition of technology, we encourage you to put your definition to the test, in light of what you've read thus far in this book. Has it always served you well, or have you had to change your concept of what technology is from time to time in order to grapple with the issues that have been raised here? We suspect that the latter is the case. Why? Technology is—and will likely continue to be—polysemic. *Polysemy* is a term that points to the fact that words can have many different meanings. The more potential meanings that can be attributed to a word, the more polysemic that word is. Some words, at particular historical moments, are highly polysemic. Terms such as *love*, *democracy*, *freedom*, and *technology* are currently highly polysemic terms in North American culture. An understanding of the work performed by the term “technology” should be broad enough to accommodate the fact that technology is likely to remain polysemic, for it is a site of significant cultural struggle and change.

Third, in response to skepticism you might have about our “right” to develop a definition of technology, we next explore a little bit about the nature of language and meaning, to clarify that change, not stasis, is more the rule than the exception.

Struggles over Meaning

Most people are familiar with the distinction between denotation and connotation. Denotative meaning implies that a word has a precise, unambiguous, or correct meaning. A word, in this case, signifies, or denotes, an explicit and culturally shared meaning. If, for example, you want the denotative meaning of the word *technology*, the best source is the dictionary, which delivers the “real” meaning. It is interesting how often students writing papers on controversial topics will go—naively—to the dictionary for the “real meaning” and hence the “final word” on some topic, as though the dictionary was the final authority on what something “really is.”

The dictionary, as we discussed above, is not the best place to look for the meanings of technology (or many other terms) used in everyday life. For that you need to understand connotative meanings: meanings that are implied by a word, meanings that are, in a sense, lived. Connotative meaning refers to the fact that words imply or evoke associations, memories, commitments, values, beliefs, and affects. These meanings are harder to track down than are denotative meanings, because they tend to be less consensual, less culturally explicit, and less likely to be

“codified” in dictionaries. For many people, technology connotes progress; they encounter the word with enthusiasm, participating in a belief that new technologies make our lives better. For others, technology connotes economic hardship; they encounter the word with dread, believing that technology refers to the expensive things in life they would like to have but cannot afford, or to the objects responsible for the loss of a job. Connotative meanings such as these vary dramatically, because they point to different—and often highly complex—ways of living in and experiencing the world.

Although connotative meanings are more difficult to assess than denotative meanings, they often play the more powerful role in everyday life. This is clearly the case with technology, where, as we stated above, almost nobody actually uses or lives with the denotative dictionary definitions. As a result, it is a rather difficult to track what the powerful connotative definitions are, and what cultural effects those definitions have.

This task is made more difficult by the fact that meanings change—even denotative definitions—and that there is traffic between denotative and connotative definitions. In actuality, the distinctions between denotation and connotation are not absolute. Language, after all, does change, and dictionaries—to some degree—reflect those changes. New meanings develop in a culture and sometimes make it into the dictionary. For example, you'll find “Internet” only in a fairly new dictionary. Further, old meanings sometimes disappear. *The Oxford English Dictionary* is a resource that specializes in tracing the changing meanings of words. The changing meanings are significant because they demonstrate that no denotative meaning is absolutely “true.” Rather, meanings are true—perhaps temporarily—simply because there is wide cultural agreement on a meaning and lexicographers have chosen to put these meanings in their dictionaries.

In a sense, then, all meaning is connotative. All meanings are implied, subject to change, and liable to be legitimated (or not) in a complex process of cultural change. At different historical moments, different meanings will seem more or less contested, because, we remind you, there is often very much at stake in how you define something. It truly does matter, for example, whether you define Kevorkian's machines as “killing machines” or as “assisted-suicide machines.” If you wanted to use one of these machines to terminate your life, it would matter. A killing machine might not be legal or easy to locate, and those who helped you locate it would be criminals working outside the law. An “assisted-suicide machine” is more likely to be legal, and easier to locate; and those administering it would be respected health care professionals earning salaries and paying taxes.

There are two interrelated definitional lessons to take from this example. First, changes in definition emerge within real cultural struggles. Kevorkian's public flaunting of the use of his machines is clearly an attempt to force a legal and cultural change in what the machines mean and what matters. His efforts, and the lawsuits and debates that involve his efforts, may significantly affect the ways that people understand life and death. All meaning changes in struggles like this,

although the struggles are not always as dramatic All meaning changes in struggles to *make something mean* in particular ways.

Second, the definitional move we propose—away from the equation of technology with “thingness” and toward a notion of technology as articulation and assemblage—clearly matters. The two Kevorkian “machines”—the “killing machine” and the “assisted-suicide machine”—are only the same machine if you think solely in terms of their “thingness,” as discrete objects that exist apart from other objects and bodies. They are clearly different machines if you admit that what they “are” interpenetrates the lives, bodies, and objects of which they are a part, and that the forms of this interpenetration can differ. By understanding them as different machines, we are compelled to explore the culture, the cultural arrangement, and the flows within which these machines come to have a variety of meanings. We learn, as a result, more about everyday life, and more about technology as part of everyday life. Therefore, it is important to struggle with the problem of definitions and definitional change. That is, in part, the way the world changes.