Moralizing Technology

Understanding and Designing the Morality of Things

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The University of Chicago Press
Chicago and London

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Mediated Morality

Introduction

Our daily lives have become intricately interwoven with technologies. Cars enable us to travel long distances, mobile phones help us to communicate, medical devices make it possible to detect and cure diseases.[1] Life has become unthinkable without sophisticated technology. Contrary to what many people intuitively think, these technologies are not simply neutral instruments that facilitate our existence. While fulfilling their function, technologies do much more: they give shape to what we do and how we experience the world. And in doing so they contribute actively to the ways we live our lives (cf. Verbeek 2005b).

Cars, for instance, do not only take us from A to B. They also lengthen the radius enclosing our most frequent social contacts. They help to determine how far we live from where we work. And they organize how we design cities and neighborhoods. Mobile phones make it easy to contact each other but also introduce new norms of contact and new styles of communication. By making it possible to detect specific diseases, medical diagnostic devices do not simply produce images of the body but also generate complicated responsibilities, especially in the case of antenatal diagnostics and in situations of unbearable and endless suffering.

This active contribution of technologies to our daily lives has an important moral dimension. First of all, the quality of their contributions to our existence can be assessed in moral terms. Some roles played by technology can be called "good" and other roles "bad"—even if it is not possible to blame technologies for the "bad." And second, by helping to shape human actions and experiences, technologies also participate in our ways of doing ethics. Speed bumps, to use a favorite example of Bruno Latour, help us make the

moral decision not to drive too fast near a school. Ultrasound scans help us to ask and answer moral questions about the lives of unborn children. Energy-saving lightbulbs take over part of our environmental conscience. Coin locks on supermarket pushcarts remind us to return each cart neatly to its place (Akkerman 2002). Turnstiles tell us to buy a ticket before boarding a train (Achterhuis 1995). Current developments in information technology show this moral significance more explicitly. With the development of ambient intelligence and persuasive technology, technologies start to interfere openly with our behavior, interacting with people in sophisticated ways and subtly persuading them to change their behavior, as I will discuss extensively in the final chapter of this book.

Even though the fact usually remains unnoticed, technologies appear to have moral significance. Latour even states that those who complain about the alleged moral decay of our culture are simply looking in the wrong direction. Rather than looking only to humans, we should start to recognize that nonhuman entities are bursting with morality. This is a challenging observation. Mainstream ethical theory, after all, does not leave much room for such a moral dimension of material objects. Ethics is commonly considered to be an exclusively human affair. The claim that technological artifacts can have morality immediately raises the suspicion that one adheres to a backward form of animism, which equips things with spirit. Material objects do not have minds or consciousness, they lack free will and intentionality and cannot be held responsible for their actions; therefore they cannot be fully fledged parts of the moral community, the argument goes. At the same time, though, technologies *do* help to shape our existence and the moral decisions we take, which undeniably gives them a moral dimension. The time has come, therefore, to develop an ethical framework to conceptualize this moral relevance of technology. How can we do justice to the moral dimensions of material objects?

Further, addressing the moral significance of technology is not only a challenge for ethical theory. It also has important implications for *doing* ethics. Both the use and the design of technology involve ethical questions that are closely related to the moral character of technological artifacts. How can users deal with the ways in which technologies mediate moral decisions and help to attribute responsibilities and instill norms? How can designers anticipate the future moral roles of their designs, or even "build in" specific forms of morality? Is it desirable at all that designers get to play such a role? How can designers and users of technology bear moral responsibility for technologically mediated actions? What forms of moral discourse could accompany the use and design of moral technologies?

Ethics and Technology

Technologies and ethics have always had a complicated relationship. While many technologies have obviously relieved humanity from misery and toil—like penicillin, agricultural equipment, surgical instruments, heating systems for buildings—many others have received negative evaluations. Nuclear weapons, for instance, have caused destruction and suffering to such a degree that it is hardly possible to see any beneficial aspects to them. Even the birth control pill, which is widely used and has played a tremendous role in the emancipation process—not only for women but also for gays and lesbians, because of its disconnection of sex and reproduction (cf. Mol 1997)—is still contested in some conservative religious circles because it interferes with the allegedly "natural" course of things.

In philosophy, various approaches to the ethics of technology have developed, which differ radically from each other. In its early days, ethical approaches to technology took the form of *critique* (cf. Swierstra 1997). Rather than addressing specific ethical problems related to actual technological developments, ethical reflection on technology consisted in criticizing the phenomenon of "Technology" itself. Classical approaches in the philosophy and ethics of technology were rooted in fear regarding the ongoing fusion of technology and culture and aimed to protect humanity from technology's alienating powers. They saw the technologization of society as a threat to human authenticity and to the meaningfulness of reality. People would come to exist only as cogs in the machine of a technologized society, reduced to the function they have in the apparatus of mass production (cf. Jaspers 1951), while reality would have meaning only as a heap of raw materials available to the human will to power (cf. Heidegger 1977b). Technology was approached not in terms of specific artifacts that help to shape our everyday lives but as a monolithic phenomenon that is hostile to the human world.

Gradually, however, philosophers developed the field of "ethics of technology," seeking increased understanding of and contact with actual technological practices and developments. Rather than placing itself outside or even against the realm of technology, ethics now came to address actual ethical problems related to technology. Applied subfields emerged, like biomedical ethics, ethics of information technology, and ethics of nanotechnology. Those who work in these subfields investigate specific moral problems that are connected to the design, use, and social impact of technologies. Moreover, ethics became more interested in the *process* of technology development. Subfields like engineering ethics and ethics of design came into being, explicitly directed at the practice of technology development. Over the past

decades, applied ethics has seen an explosion of journals directed at specific domains of technology, ranging from ethics of information technology to "nano-ethics" and from bioethics to engineering ethics.

There are good arguments, though, that the current connection between ethics and technology does not yet go far enough. Paradoxical as it may seem, many ethical approaches to technology still have too little contact with technology itself and its social and cultural roles. Quite often the ethics of technology takes a position toward technology that is just as externalist as that of the early critique of technology. At the basis of both approaches is a radical separation between the realms of technology and society. Engineering ethics, for example, focuses strongly on issues of safety and risk: the realm of society needs to be protected against the risks generated in the realm of technology, and engineers have to blow the whistle when they discover immoral practices or negative consequences of specific innovations. Often-cited case studies concern the roles of engineers in the development of the exploding space shuttle *Challenger* and the Ford Pinto with a gas tank that ruptured in collisions at 25 mph (Birsch and Fielder 1994). Much of computer ethics, to give another example, focuses on issues of privacy, also approaching technology as a potential intruder in the realm of human beings. Technologies are approached here in a merely instrumentalist way: they fulfill a function, and if they fail to do this in a morally acceptable way, the whistle should be blown. The central focus of ethics is to make sure that technology does not have detrimental effects in the human realm and that human beings control the technological realm in morally justifiable ways.

What remains out of sight in this externalist approach is the fundamental intertwining of these two domains. The two simply cannot be separated. Humans are technological beings, just as technologies are social entities. Technologies, after all, play a constitutive role in our daily lives. They help to shape our actions and experiences, they inform our moral decisions, and they affect the quality of our lives. When technologies are used, they inevitably help to shape the context in which they function. They help specific relations between human beings and reality to come about and coshape new practices and ways of living. To use the example of the cell phone again: this is not just a functional instrument that helps us to talk to other people wherever we are and wherever they are. Once they fulfill this function, cell phones directly help to generate new ways of communicating and interacting. They create new ways of dealing with appointments; long-term planning becomes less necessary if everybody can be reached everywhere anytime. They generate new styles of communication, especially through texting functionality, which even gave rise to a new "language" (Crystal 2008). And they help to redefine

the boundary between public and private by inviting people to have private conversations in public, because the presence of the person with whom one is communicating appears to be nearer than the presence of the persons in one's immediate environment.

The moral relevance of technology is closely related to this active contribution of technologies to human practices and experiences. On the one hand, a concrete instance of technological mediation can be assessed in moral terms: it can be morally good or bad. Langdon Winner's analysis of some low-hanging overpasses on parkways in Long Island (New York) giving access to the beach is a good example here. Architect Robert Moses deliberately built these overpasses so low that buses cannot use the parkways, implicitly limiting access to the beach for African Americans who could not afford cars of their own. On the other hand, the phenomenon of technological mediation lays bare how technologies also contribute to the moral actions and decisions of human beings. Technologies contribute actively to how humans do ethics. A good example here is genetic diagnostic tests for hereditary forms of breast cancer. Such tests focus on mutations in the breast cancer genes BRCA1 and BRCA2, which can predict the probability that somebody will develop this form of cancer. Carriers of such mutations (mostly women, but men can also develop breast cancer) are presented with the choice to do nothing and run a high risk of developing breast cancer; to undergo regular testing so that cancer can be detected at an early stage; or to have a preventive double mastectomy (cf. Boenink 2007).

The discovery of such mutations, therefore, transforms healthy people into potential patients. Moreover, this form of genetic testing translates a congenital defect into a preventable form of suffering: by choosing to have your breasts amputated, you can prevent any development of breast cancer. When this technology is used, therefore, it organizes a situation of choice. This choice is complicated, because it involves a new category that is introduced by this new technology: between health and illness, genetic testing introduces the area of being "not-yet-ill." The very fact that this technology makes it possible to *know* that it is very likely that a person will become ill, added to the possibility of preventively removing organs, makes this person responsible for his or her own disease. Thus the technology of genetic testing creates a moral dilemma and also suggests ways to deal with this dilemma.

This example shows that medical technologies can mediate the moral decisions that both medical doctors and patients make, by organizing situations of choice and suggesting the choice that should be made. Such technological mediations have at least as much ethical relevance as preventing disasters or finding responsible ways to deal with risks. By mediating our actions and

experiences, technologies help to shape the quality of our lives and of our moral actions and decisions. To deal adequately with the moral relevance of technology, therefore, the ethics of technology should incorporate the phenomenon of technological mediation.

This requires that ethical theory broaden its scope. Rather than approaching ethics and technology as belonging to two radically separate domains, one human and the other nonhuman, we should keep the interwoven character of the two spheres at the center (cf. Latour 1993). It is a mistake to locate ethics exclusively in the "social" realm of the human and technology exclusively in the "material" realm of the nonhuman. Technologies are social too, if only because they contribute to moral decisions—and human beings belong to the material realm too, since our lives are shaped in close interactions with the technologies we are using. Only by crossing the divide between these spheres can the ethical dimensions and relevance of technology be understood.

Crossing this divide is not an easy task, though. Taking seriously the moral relevance of technological artifacts requires that ethical theory move beyond its classical assumption that morality necessarily is a solely human affair, because technologies lack consciousness, rationality, freedom, and intentionality. How can we morally assess the impact of technologies on the quality of our lives? And how can we do justice to the manifold ways in which technological artifacts actively mediate moral practices and decisions?

Technological Mediation

In order to understand and analyze the moral significance of technologies, we need to first get a clearer picture of the mediating roles that technologies play in our daily lives. During recent decades, philosophy of technology has increasingly paid attention to the impact of technological artifacts on the life-world of human beings (Borgmann 1984; Winner 1986; Ihde 1990; Ihde 1993; Ihde 1998; Latour 1992b; Latour 1999). As opposed to classical approaches, which were mainly focused on understanding the conditions of "Technology" taken as a monolithic phenomenon, the philosophy of technology has started to approach technology in terms of the actual material objects that help to shape human actions and experiences.

Various authors have analyzed specific aspects of the social and cultural roles of technologies. The work of the North American philosopher Don Ihde, for example, focuses on the perceptual and hermeneutic implications of technology by analyzing how specific perceptual technologies help to shape how reality can be experienced and interpreted. To mention a few other contemporary philosophers of technology: the German American phi-

losopher Albert Borgmann analyzes how use of technological devices affects the quality of human engagement with reality; the French philosopher and anthropologist Bruno Latour has studied the hybrid character of human-technology associations and their implications for understanding society; and the US political philosopher Langdon Winner has investigated the political relevance of technological artifacts.

As I have explained elsewhere (Verbeek 2005b), the positions that have developed can be augmented and integrated into a philosophy of "technological mediation." The philosophical analysis of technological mediation—particularly the "postphenomenological" approach in this field—will prove to be an important key to understanding the moral significance of technology. For that reason, it merits a separate introduction here.[2]

HUMAN-TECHNOLOGY RELATIONS

Phenomenology—in my elementary definition—is the philosophical analysis of the structure of the relations between human beings and their lifeworld. From such a perspective, the central idea in the philosophy of mediation is that technologies play an actively mediating role in the relationship between human beings and reality. Technological mediation can be studied without reverting to the classical fear that technology will determine society, but also without marginalizing the role of technology to mere instrumentality. Rather, it focuses on the mutual shaping of technology and society.

A good starting point for understanding technological mediation is Martin Heidegger's classical analysis of the role of tools in the everyday relation between humans and their world. According to Heidegger (1927), tools should be understood as "connections" or "linkages" between humans and reality. Heidegger indicates the way in which tools are present to human beings when they are used as "readiness-to-hand." Tools that are used for doing something typically withdraw from people's attention; for example, the attention of a person who hammers a nail into a wall is not directed at the hammer but at the nail. People's involvement with reality takes place *through* the ready-to-hand artifact. Only when it breaks down does it require attention for itself again. The artifact is then, in Heidegger's words, "present-at-hand" and is no longer able to facilitate a relationship between a user and his or her world.

Even though ready-to-hand artifacts recede from people's attention, they do play a constitutive role in the human-world relations that arise around them. When a technological artifact is used, it facilitates people's involvement with reality, and in doing so it coshapes how humans can be present in their world and their world for them. In this sense, things-in-use can be

understood as *mediators* of human-world relationships. Technological artifacts are not neutral intermediaries but actively coshape people's being in the world: their perceptions and actions, experience and existence.

Don Ihde and Bruno Latour offer concepts for gaining a closer understanding of this mediating role of technologies. In order to develop this understanding, I have distinguished between two perspectives of mediation: one that focuses on perception and another one on praxis. Each of these perspectives approaches the human-world relationship from a different side. The hermeneutic or "experience-oriented" perspective starts from the side of the world and directs itself at the ways reality can be interpreted and be present for people. The main category here is *perception*. The pragmatic or "praxis-oriented" perspective approaches human-world relations from the human side. Its central question is how human beings act in their world and shape their existence. The main category here is *action*.

MEDIATION OF EXPERIENCE

The central hermeneutic question for a "philosophy of mediation" is how artifacts mediate human experiences and interpretations of reality. Ihde's philosophy of technology is a good starting point for answering this question, because of its focus on the technological mediation of perception. Ihde elaborates Heidegger's tool analysis into analysis of the relationships between humans and technological artifacts (Ihde 1990). He discerns several relationships human beings can have with technologies; two of these can be considered relations of mediation.[3]

First, Ihde discerns the "embodiment relation," which is his equivalent to Heidegger's "readiness-to-hand." In the embodiment relation, technologies are "incorporated" by their users, establishing a relationship between humans and their world *through* the technological artifact. This embodiment relation occurs, for instance, when one is looking through a pair of glasses; the artifact is not perceived itself, but it helps to perceive the environment. Technological artifacts become extensions of the human body here, as it were. Second, Ihde discerns the "hermeneutic relation." In this relation, technologies provide access to reality not because they are "incorporated," but because they provide a representation of reality, which requires interpretation (hence the name "*hermeneutic* relation"—hermeneutics being the study of interpretation). A thermometer, for instance, establishes a relationship between humans and reality in terms of temperature. Reading a thermometer does not result in a direct sensation of heat or cold but gives a value that requires interpretation in order to tell something about reality.

Ihde shows that technologies, when mediating our sensory relationship with reality, transform what we perceive. According to Ihde, the transformation of perception always has a structure of amplification and reduction. Mediating technologies amplify specific aspects of reality while reducing other aspects. When one is looking at a tree through an infrared camera, for instance, most aspects of the tree that are visible to the naked eye get lost, but at the same time a new aspect of the tree becomes visible: one can now see whether it is healthy or not. Ihde calls this transforming capacity of technology "technological intentionality": technologies have "intentions," and thus they are not neutral instruments but play an active role in the relationship between humans and their world.

These intentionalities are not fixed properties of artifacts, however: they obtain their shape within the relationship humans have with these artifacts. Within different relationships technologies can have different "identities." The telephone and the typewriter, for instance, were developed not as communication and writing technologies but as equipment to help the blind and the hard of hearing hear and write. In their use context they were interpreted quite differently, however. Ihde calls this phenomenon *multistability*: a technology can have several "stabilities," depending on the way it is embedded in a use context. Technological intentionalities, therefore, are always dependent on the specific stabilities that come about.

Ihde's analysis of the transformation of perception has important hermeneutic implications. In fact, it shows that mediating artifacts help to determine how reality can be present for and interpreted by people. Technologies help to shape what counts as "real." This hermeneutic role of things has important ethical consequences, since it implies that technologies can actively contribute to the moral decisions human beings make. Medical imaging technologies like MRI (magnetic resonance imaging) and ultrasound are good examples of this. Such technologies make visible aspects or parts of the human body, or of a living fetus in the womb, which cannot be seen without them. But the specific way in which these technologies represent what they "see" helps to shape how the body or a fetus is perceived and interpreted, and what decisions are made. In this way, technologies fundamentally shape people's experience of disease, pregnancy, or their unborn child.

MEDIATION OF PRAXIS

Within the praxis perspective, the central question is how artifacts mediate people's actions and the way they live their lives. While perception, from a phenomenological point of view, consists in the way the world is present for

humans, praxis can be seen as the way humans are present in their world. The work of Latour offers many interesting concepts for analyzing how artifacts mediate action (e.g., Latour 1992b; 1994). Latour points out that what humans do is in many cases coshaped by the things they use. Actions are the results not only of individual intentions and the social structures in which human beings find themselves (the classical agency-structure dichotomy) but also of people's material environment. The concept introduced by Latour and Akrich to describe the influence of artifacts on human actions is "script." Like the script of a movie or a theater play, artifacts prescribe how their users are to act when they use them. A speed bump, for instance, has the script "Slow down when you approach me," a plastic coffee cup "Throw me away after use."

This influence of artifacts on human actions has a specific character. When scripts are at work, things mediate action as material things, not as immaterial signs. A traffic sign makes people slow down because of what it signifies, not because of its material presence in the relation between humans and world. And we discard a plastic coffee cup not because its user's manual tells us to do so but because it simply is physically not able to withstand being cleaned several times. The influence of technological artifacts on human actions can be of a nonlingual kind. Artifacts are able to exert influence *as material things*, not only as *signs* or *carriers of meaning*.

As is the case with perception, in the mediation of action *transformations* occur. Following Latour, within the domain of action these transformations can be indicated as "translations" of "programs of action." Latour attributes programs of actions to all entities—human and nonhuman. When an entity enters a relationship with another entity, the original programs of action of both are translated into a new one. When somebody's action program is to "prepare meals quickly," and this program is added to that of a microwave oven ("quickly heat small portions of food"), the action program of the resulting, "composite" actor might be "regularly eat instant meals individually."

In the translation of action, a similar structure can be discerned as in the transformation of perception. Just as in the mediation of perception some aspects of reality are amplified and others are reduced, in the mediation of action one could say that specific actions are "invited" while others are "inhibited." The scripts of artifacts suggest specific actions and discourage others. This invitation-inhibition structure is context dependent, just like the amplification-reduction structure of perception; Ihde's concept of multistability also applies within the context of the mediation of action. The telephone, for instance, has had a major influence on the separation of our geographical and social contexts by making it possible to maintain social re-

TABLE 1. Experience and praxis

Experience	*Praxis*
Mediation of perception	Mediation of action
Technological intentionality	Script
Transformation of perception	Translation of action
Amplification and reduction	Invitation and inhibition
Delegation: *deliberate inscription*	
Multistability: *context-dependence*	

lationships outside our immediate living environment. But it could have this influence only because it is used as a communication technology, not as the hearing aid it was originally supposed to be.

An important difference with respect to the mediation of perception, however, is the nature of the human-technology relations from which mediations of actions arise. Artifacts mediate action not only from a ready-to-hand position but also from being present-at-hand. A gun, to mention an unpleasant example, mediates action from a ready-to-hand position, translating "express my anger" or "take revenge" into "kill that person" (cf. Latour 1999). A speed bump, however, cannot be "embodied." It will never be ready-to-hand; it exerts influence on people's actions from a present-at-hand position.

Together, the concepts used to understand the role of technologies in the relation between humans and reality form a "vocabulary for technological mediation," which helps to make visible the active role of technologies in their use contexts. Technological artifacts mediate perception by means of technological intentionalities: their "directedness" in organizing perception. They mediate action by means of scripts, which prescribe how to act when using the artifact. Technological mediation is context-dependent, and always entails a translation of action and a transformation of perception. The translation of action has a structure of invitation and inhibition; the transformation of perception a structure of amplification and reduction. Table 1 summarizes this vocabulary.

MEDIATION AND MORALITY

The philosophy of mediation usually takes a *descriptive* point of view. Until now, its main ambition has been to *analyze* the role of technology in the lifeworld. The time is ripe, however, to augment this descriptivist orientation—which is characteristic of many contemporary approaches within the

philosophy of technology (cf. Light and Roberts 2000)—with a *normative* approach. The mediating role of technologies, after all, can have a distinctly moral dimension. By helping to shape our practices and the interpretations on the basis of which we make decisions, technologies can play an explicit and active role in our moral actions.

As I will elaborate in chapter 3, the question of the moral significance of technological artifacts is not entirely new. Actually, it has been playing a role on the backbenches of the philosophy of technology for quite some time now. Langdon Winner's example of the bridges in New York dates from 1980. Six years later, Bruno Latour argued that artifacts are bearers of morality, as they help people to make all kinds of moral decisions. In 1988 he delivered a lecture in the Netherlands, "Safety Belt: The Missing Masses of Morality," in which he said it is about time that we stop complaining about the alleged moral decline of our society. Such lamentations show a lack of understanding of our daily world. Morality should not be looked for only among humans but also among things, Latour claims. Once we are able to see the moral charge of matter, we see a society that is swarming with morality.

Many cars, for instance, will not start or will produce an irritating sound until the driver is wearing his or her seatbelt. And the moral decision of how fast one drives is often delegated to speed bumps in the road with the script "Slow down before reaching me." According to Latour, such cars and bumps embody morality. Designers delegated to them the responsibility of seeing to it that drivers wear their safety belts and do not drive too fast. Moral decisions are often not made exclusively by human beings but are shaped in interaction with the technologies they use (Latour 1988; 1992b).

Analogously to Winner's claim that artifacts have politics, therefore, it is worth investigating to what extent artifacts have morality, given their active role in moral action and decision making. If ethics is about the question of "how to act" and technologies help to answer this question, technologies appear to have moral significance; at least they help us to do ethics. This is quite a radical step, though. A few centuries ago the Enlightenment, with Kant as its major representative, brought about a turnover hitherto unequaled in ethics by moving the source of morality from God to humans. Do contemporary analyses of the social and cultural role of technology now urge us to move the source of morality one place further along—considering morality not a solely human affair but also a matter of *things*?

Such a question challenges ethical theory. After all, how should we understand such a material form of morality? Is the conclusion that things mediate human actions reason sufficient to lead us to actually consider technologies to be moral agents, and if so, to what extent? In ethical theory, to qualify as a

moral agent requires at least the possession of intentionality and some degree of freedom. In order to be held morally accountable for an action, an agent needs to have the intention to act in a specific way and the freedom to realize this intention. Both requirements seem problematic with respect to artifacts, which, lacking a mind, do not have intentionality, let alone any form of autonomy.

Moreover, within the predominant ethical frameworks it is difficult not only to assign moral agency to inanimate objects but also to consider behavior resulting from technological mediation "moral actions." After all, to what extent can these actions be considered *moral actions* when humans make certain moral decisions because technology influences them to do so? Steered behavior is different from moral action. Further, to what extent does it make sense to attribute moral responsibility to artifacts when a morally wrong situation occurs as a result of technological mediation?

The ethics of technology, therefore, seems to find itself in a paradoxical situation. If it holds on to a strictly humanist interpretation of intentionality, it fails to take into account the moral relevance of technological artifacts. And if it adheres to predominant conceptions in which moral agency requires a high degree of autonomy, there can be no such a thing as an "ethics of technology." Such an ethics could then exist only if technologies were neutral instruments, not mediating human actions and interpretations—which would throw out the baby with the bathwater, because it would imply a denial of the phenomenon of technological mediation and its moral implications altogether. At the same time, an ethical theory that aims to take seriously the notion of technological mediation and the active moral role of things cannot entirely reject the notions of intentionality and autonomy either, since some degree of human intentionality and autonomy is needed to maintain the idea of responsibility.

In order to find a way out of this deadlock, I will defend the thesis that ethics should be approached as a matter of human-technological associations. When taking the notion of technological mediation seriously, claiming that technologies are human agents would be as inadequate as claiming that ethics is a solely human affair. The isolation of human subjects from material objects, which keeps us from approaching ethics as a hybrid rather than a human affair, is deeply entrenched in our metaphysical schemes (cf. Latour 1993). According to this metaphysical scheme, human beings are active and intentional while material objects are passive and instrumental. Human behavior can be assessed in moral terms—good or bad—but a technological artifact can be assessed only in terms of its functionality (functioning well or poorly).

If the ethics of technology is to take seriously the mediating roles of technology in society and in people's everyday lives, it must move beyond the modernist subject-object dichotomy that forms its metaphysical roots. Rather than separating or purifying "humans and nonhumans"—concepts I gratefully borrow from Latour—the ethics of technology needs to hybridize them. In this book I will elaborate a "postphenomenological" way to do this, building upon Don Ihde's philosophy of technology, Bruno Latour's Actor-Network Theory, and Michel Foucault's work on power and ethics.

Postphenomenology

In recent decades the philosophy of technological mediation, which I sketched above, has been an important construction site for a new branch of phenomenology. Primarily inspired by the work of Ihde, phenomenological philosophy of technology broke away from its one-dimensional opposition to science and technology as second-order and alienating ways to relate to reality (Ihde 1990). By developing analyses of the structure of the relations between humans and technologies, and by investigating the actual roles of technologies in human experience and existence, phenomenology came to analyze technology as a constitutive part of the lifeworld rather than a threat to it. The new phenomenological approach that came into being often calls itself "postphenomenological," because of its opposition to some aspects of "classical" phenomenology, as I will elaborate below.

Postphenomenology aims to revive the phenomenological tradition in a way that overcomes the problems of classical phenomenology. These problems mainly concern what Ihde calls its "foundational" character (Ihde 1998, 113–26). Classical phenomenology explicitly defined itself as an alternative to science. As opposed to the scientific goal to *analyze* reality, phenomenology aimed to *describe* it (Merleau-Ponty 1962, viii–x). This claim to provide a "more authentic" way of accessing reality has become highly problematic in light of developments in twentieth-century philosophy—extensive analyses of the mediated character and contextuality of such claims.

The fact that classical phenomenology failed to take the locality and context dependence of human knowledge into account is understandable when the context in which it developed is taken into account (cf. Verbeek 2005b, 106–8). Phenomenology presented itself as a philosophical method that sought to describe "reality itself," since it opposed itself to the positivist worldview arising from modern natural science, which claims to describe reality as it actually is. But beside developing an alternative route to "authentic reality"—claiming to describe, not analyze, reality—classical phenomenol-

ogy actually started to develop highly interesting accounts of the relations between humans and reality. Maurice Merleau-Ponty analyzed this relation primarily in terms of perception, Edmund Husserl in terms of consciousness, and Martin Heidegger in terms of being-in-the-world. It is therefore more in accordance with the actual history of phenomenology to see phenomenology as a philosophical movement that seeks to analyze *the relations between human beings and their world* rather than as a *method* for describing reality.

Redefining phenomenology along these lines, Ihde developed a "nonfoundational" phenomenological approach which he calls "postphenomenological." Ihde maintains the central phenomenological idea that human-world relations need to be understood in terms of "intentionality," the directedness of human beings toward their world. As we saw above, however, Ihde shows that in our technological culture this intentionality relation is most often technologically mediated. Virtually all human perceptions and actions are mediated by technological devices, ranging from eyeglasses and television sets to cell phones and automobiles. And these technological mediations do not so much take us to "the things themselves" that classical phenomenology was longing for as help to construct what is real to us. Many mediated perceptions, after all, do not have counterparts in everyday reality. Radio telescopes, for instance, detect forms of radiation that are invisible to the human eye and need to be "translated" by the device before astronomers can perceive and interpret it. There is no "original" perception here that is mediated by a device; the mediated perception itself is the "original." Phenomenological investigations of this type of mediation cannot possibly aim to return to "the things themselves" but rather aim to clarify the structure of technological mediation and its hermeneutic implications.

The postphenomenological approach makes it possible to move beyond the modernist subject-object dichotomy in two distinct ways. First of all, Ihde shows the necessity of thinking in terms of *human-technology associations* rather than approaching human subjects and technological objects as separate entities. If the fundamental intertwinement of humans and technologies is not taken into account, the relations between human beings and reality cannot be understood. Second, human-world relationships should not be seen as relations between preexisting subjects who perceive and act upon a preexisting world of objects, but rather as sites where both the objectivity of the world and the subjectivity of those who are experiencing it and existing in it are *constituted* (Verbeek 2005b, 111–13). What the world "is" and what subjects "are" arise from the interplay between humans and reality; the world that humans experience is "interpreted reality," and human existence is "situated subjectivity." Postphenomenology closes the gap between subject

and object not by linking subject and object via the bridge of intentionality but by claiming that they actually constitute each other. In the mutual relation between humans and reality a specific "objectivity" of the world arises, as well as a specific "subjectivity" of human beings.

This focus on the mediating role of technology in the constitution of subjectivity and objectivity makes postphenomenology directly relevant to an ethical approach of technological artifacts. By investigating how technological mediations help to constitute specific realities and specific subjectivities, postphenomenology is the approach par excellence by which to analyze the moral relevance of technology. A good example here, which I will elaborate more extensively further on in this book, is obstetric ultrasound. This technology is not simply a functional means to make visible an unborn child in the womb. It actively helps to shape the way the unborn child is humanly experienced, and in doing so it informs the choices his or her expecting parents make. Because of its ability to make visible the fetus in terms of medical norms, for instance, it constitutes the fetus as a possible patient and, in some cases, its parents as makers of decisions about the life of their unborn child.

In this way postphenomenology moves beyond the predominating modernist understanding of the relations between subjects and objects in ethics, in which subjects are active and intentional and objects are passive and mute. It shows not only that human intentionalities can be operative "through" technologies but also that in many cases "intentionality" needs to be located in human-technology associations—and therefore partly in artifacts as well—and the resulting intentionality cannot always be reduced to what was explicitly delegated to the technology by its designers or users. Moreover, the postphenomenological approach shows that we cannot hold on to the autonomy of the human subject as a prerequisite for moral agency; rather, we need to replace the "prime mover" status of the human subject with technologically mediated intentions. In our technological culture, humans and technologies do not have separate existences anymore but help to shape each other in myriad ways.

This hybrid character of humans and technologies does not easily fit our conceptual frameworks. As Aaron Smith states, the lack of a human prime mover makes it difficult to attribute responsibility for actions that occur (Smith 2003). But rather than accepting his conclusion that "when we look to very complicated situations the human prime mover is concealed and difficult to find, but it is always there" (Smith 2003, 193), I contend that hanging on to the prime-mover status of human beings fails to take seriously the moral importance of technology. As the ultrasound case will show, moral intentions come about on the basis of technological mediations of the relations

between humans and reality, and are always properties of human-technology *associations* rather than of "prime movers." Adequate moral reflection about technology, therefore, requires us to broaden the perspective of ethical theory and the ethics of technology. We need to investigate how to rethink the status of both objects and subjects in moral theory in order to do justice to the hybrid character of human-technology associations.

For rethinking the status of the object in moral theory, the work of Latour will be an important starting point. His work, like phenomenology and postphenomenology, explicitly aims to think in a amodern way, moving beyond the subject-object distinction. Latour wanted to make visible nonhuman forms of agency and to clarify the moral roles of technological artifacts. The work of Michel Foucault will subsequently play a crucial role in helping us rethink the status of the subject in moral theory. Foucault developed an ethical approach in which the concept of *subject constitution* is central: ethics, for him, is ultimately about the question what kind of subject we want to be. Moreover, Foucault does not approach the subject as an autonomous being but as a product of power relations and of influences exerted upon it, with which it explicitly develops a free relation. From the postphenomenological approach, technological mediation can be seen as an important source of subject constitution, and this makes it possible to apply Foucault's ethical approach directly to technology—focusing on the central question of what kind of mediated moral subjects we aspire to be.

Outline of the Book

This book investigates the moral dimensions of technologies along several lines. Chapter 2 will set out the contours of the approach I will follow in order to "moralize technology." By analyzing the example of obstetric ultrasound and its moral implications, I will argue that a nonhumanist approach is needed in ethics in order to do justice to the moral dimensions of objects. The humanist focus of mainstream ethics makes it virtually impossible to attribute a more-than-instrumental role to technologies, while the example of obstetric ultrasound makes clear that technologies do play an active role in moral decision making. In critical discussion with the positions of Peter Sloterdijk, Martin Heidegger, and Bruno Latour, I will articulate a amodern perspective on ethics in which moral agency becomes a matter of human-technology hybrids rather than an exclusively human affair.

Chapter 3 will deal with the status of the object in ethical theory. First, I will discuss existing accounts of the moral relevance of technological artifacts, ranging from authors like Langdon Winner and Luciano Floridi to