PHILOSOPHY OF TECHONOLOGY

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Abstract- In this paper I attempt to answer the question posed in the title from two standpoints, first historically and then in terms of contemporary options in the field, the various different theories that are currently under discussion. But before I begin, I would like to clear up a common misunderstanding: philosophy of technology is not closely related to philosophy of science. Science and technology share a similar type of rationality based on empirical observation and knowledge of natural causality, but technology is concerned with usefulness rather than truth. Where science seeks to know, technology seeks to control. However, this is by no means the whole story. Our image of premodernity is shaped by the struggles between science and religion in the early modern period. From those struggles we derive the notion that traditional societies restrict questioning of their basic customs and myths. In the premodern West, the principle of authority was the basis not just for church doctrine, but for knowledge of the world as well. Modern societies emerge from the release of the power of questioning against such traditional forms of thought.

INTRODUCTION

The eighteenth-century Enlightenment demanded that all customs and institutions justify themselves as useful for humanity. Under the impact of this demand, science and technology become the new basis for belief. Eventually, technology becomes omnipresent in everyday life and scientific-technical modes of thought predominate over all others. In a mature, modern society, technology is taken for granted much as were the customs and myths of traditional society. Scientific-technical rationality has become a new culture. J. R. Dakers (ed.), Defining Technological Literacy © John R. Dakers 2006 This culture is clearly "useful" in all its details in the sense the Enlightenment demanded, but it is now so all-encompassing that larger questions can be asked about its value. We judge our technological civilization as more or less worthy, more or less ethically justified, more or less fulfilling. Modernity itself authorizes, even demands such judgment.

Philosophy of technology.

We need to understand ourselves today in the midst of technology and neither scientific nor technical knowledge can help us. Insofar as our society is technological at its base, philosophy of technology is its theoretical self-awareness. Philosophy of technology teaches us to reflect on what we take for granted most of all, that is, the rationality of modernity. The importance of this perspective cannot be over-estimated. Greek Origins The question of technology is raised at the very origins of Western philosophy, not as we pose it today of course, but at a metaphysical level. Philosophy begins in ancient Greece with the interpretation of the world in terms of the fundamental fact that humanity is a laboring animal constantly at work transforming nature. This fundamental fact shapes the basic distinctions that prevail throughout the tradition of Western philosophy. The first of these is the distinction between what the Greeks called physis and poiesis. Physis is usually translated as nature. For the Greeks, nature creates itself, emerges from out of itself. But there are other things in the world, things that depend on humans to come into being. Poiesis is the practical activity of human production. We call the beings so created artifacts and include among them the products of art, craft, and social convention. The word techne (plural technai) in ancient Greek signifies the knowledge or the discipline associated with a form of poiesis. For example, sculpture is a techne that creates out of stone; carpentry is a techne that builds from wood. Each techne includes a purpose and a meaning for its artifacts. For the Greeks, technai show the "right way" to do things in a very strong, even an objective, sense. Although artifacts depend on human activity, the knowledge contained in the technai is no matter of opinion or subjective intention. Even the purposes of artifacts share in this objectivity insofar as they are defined by the technai. The second fundamental distinction is that between existence and essence. Existence answers the question of whether something is or is not. Essence answers the question of what the thing is. That it is and what it is appear to be two independent dimensions of being. In the Much of the philosophy of technology in the nineteenth and twentieth centuries was done without consideration of or involvement with the philosophy of science. There were theoretical reasons for this, tacitly assumed by most writers. If science is simply a direct, uninterrupted description of things as they are, untainted by cultural and social biases and

constraints, then science is simply a mirror of reality. Furthermore, if technology is simply applied science, and technology is, fundamentally, a good thing, then there are no special philosophical problems concerning technology itself. That is, the frameworks for the development of technology and its reception are not of interest. There are only after-the-fact ethical problems about technology's misapplication. However, recent approaches to the philosophy of science have shown that science is laden with philosophical presuppositions, and many feminists, ecologists, and other social critics of science have claimed that science also is laden with social presuppositions. Many recent approaches to philosophy of technology claim that technology is not primarily, or even is not at all, applied science. It was not until the twentieth century that the development of the ethics of technology as a systematic and more or less independent sub discipline of philosophy started. This late development may seem surprising given the large impact that technology has had on society, especially since the industrial revolution. A plausible reason for this late development of ethics of technology is the instrumental perspective on technology. This perspective implies, basically, a positive ethical assessment of technology: technology increases the possibilities and capabilities of humans, which seems in general desirable. Of course, since antiquity, it has been recognized that the new capabilities may be put to bad use or lead to human *hubris*. Often, however, these undesirable consequences are attributed to the users of technology, rather than the technology itself, or its developers. This vision is known as the instrumental vision of technology resulting in the so-called neutrality thesis. The neutrality thesis holds that technology is a neutral instrument that can be put to good or bad use by its users. During the twentieth century, this neutrality thesis met with severe critique, most prominently by Heidegger and Ellul, who have been mentioned in this context . but also by philosophers from the Frankfurt School, such as Horkheimer and Adorno (1947 [2002]),Marcuse (1964), and Habermas (1968 [1970]).The scope and the agenda for ethics of technology to a large extent depend on how technology is conceptualized. The second half of the twentieth century has witnessed a richer variety of conceptualizations of technology that move beyond the conceptualization of technology as a neutral tool, as a world view or as a historical necessity. This includes conceptualizations of technology as a political phenomenon (Winner, Feenberg, Sclove), as asocial activity (Latour, Callon, Bijker and others in the area of science andtechnology studies), as a cultural phenomenon (Ihde, Borgmann), as a professional activity (engineering ethics, e.g., Davis), and as a cognitive activity (Bunge, Vincenti). Despite this diversity, the development in the second half of the twentieth century is characterized by two general trends. One is a move away from technological determinism and the assumption that technology is a given self-contained phenomenon which develops autonomously to an emphasis on technological development being the result of choices (although not necessarily the intended result). The other is a move away from ethical reflection on technology as such to ethical reflection of specific technologies and to specific phases in the development of technology. Both trends together have resulted in an enormous increase in the number and scope of ethical questions that are asked about technology. The developments also imply that ethics of technology is to be adequately empirically informed, not only about the exact consequences of specific technologies but also about the actions of engineers and the process of technological development. This has also opened the way to the involvement of other disciplines in ethical reflections on technology, such as Science and Technology Studies (STS)and Technology Assessment (TA).

Approaches in the Ethics of Technology

Not only is the ethics of technology characterized by a diversity of approaches, it might even be doubted whether something like a sub discipline of ethics of technology, in the sense of a community of scholars working on a common set of problems, exists. The scholars studying ethical issues in technology have diverse backgrounds (e.g.,philosophy, STS, TA, law, political science) and they do not always consider themselves (primarily) ethicists of technology. To give the reader an overview of the field, three basic approaches or strands that might be distinguished in the ethics of technology will be discussed.

Cultural and political approaches

Both cultural and political approaches build on the traditional philosophy and ethics of technology of the first half of the twentieth century. Whereas cultural approaches conceive of technology as a cultural phenomenon that influences our perception of the world, political approaches conceive of technology as a political phenomenon, i.e., as a phenomenon that is ruled by and embodies institutional power relations between people. Cultural approaches are often phenomenological in nature or at least position themselves in relation to phenomenology as post-phenomenology. Examples of philosophers in this tradition are Don Ihde, Albert Borgmann, Peter-Paul Verbeek and Evan Selinger (e.g., Borgmann 1984; Ihde 1990;Verbeek 2000 [2005], 2011). The approaches are usually influenced by developments in STS, especially the idea that technologies contain a script that influences not only people's perception of the world but also human behavior, and the idea of the absence of a fundamental distinction between humans and non-humans,

including technological artifacts (Akrich 1992;Latour 1992, 1993; Ihde & Selinger 2003). The combination of both ideas has led some to claim that technology has (moral) agency, a claim that is discussed below in Section 3.3.1.Political approaches to technology mostly go back to Marx, who assumed that the material structure of production in society, in which technology is obviously a major factor, determined the economic and social structure of that society. Similarly, Langdon Winner has argued that technologies can embody specific forms of power and authority (Winner 1980). According to him, some technologies are inherently normative in the sense that they require or are strongly compatible with certain social and political relations. Railroads, for example, seem to require a certain authoritative management structure. In other cases, technologies may be political due tothe particular way they have been designed. Some political approaches to technology are inspired by (American) pragmatism and, to a lesser extent, discourse ethics. A number of philosophers, for example, have pleaded for a democratization of technological development and the inclusion of ordinary people in the shaping of technology (Winner 1983; Sclove 1995; Feenberg 1999).Although political approaches have obviously ethical ramifications, many philosophers who have adopted such approaches do not engage in explicit ethical reflection on technology. An interesting recent exception, and an attempt to consolidate a number of recent developments and to articulate them into a more general account of what an ethics of technology should look like, is the volume *Pragmatist Ethics for a Technological Culture* (Keulartz et al. 2002). In this volume, the authors plead for a revival of the pragmatist tradition in moral philosophy because it is better fit to deal with a number of moral issues in technology. Instead of focusing on how to reach and justify normative judgments about technology, a pragmatist ethics focuses on how to recognize and trace moral problems in the first place. Moreover, the process of dealing with these problems is considered more important than the outcome.

Engineering ethics

Engineering ethics is a relatively new field of education and research. It started off in the 1980s in the United States, merely as an educational effort. Engineering ethics is concerned with "the actions and decisions made by persons, individually or collectively, who belong to the profession of engineering" (Baum 1980: 1). According to this approach, engineering is a profession, in the same way as medicine is a profession. Although there is no agreement on how a profession exactly should be defined, the following characteristics are often mentioned: A profession relies on specialized knowledge and skills that require a long period of study; The occupational group has a monopoly on the carrying out of the occupation; The assessment of whether the professional work is carried out in a competent way is done by, and it is accepted that this can only be done by, professional peers;

CONCLUSION

A profession provides society with products, services or values that are useful or worthwhile for society, and is characterized by an ideal of serving society; The daily practice of professional work is regulated by ethical standards, which are derived from or relate to the society-serving ideal of the profession. Typical ethical issues that are discussed in engineering ethics are professional obligations of engineers as exemplified in, for example, codes of ethics of engineers, the role of engineers versus managers, competence, honesty, whistle-blowing, concern for safety and conflicts of interest(Davis 1998, 2005; Martin & Schinzinger 2005; Harris, Pritchard, &Rabins 2008).Recently, a number of authors have pleaded for broadening the traditional scope of engineering ethics (e.g., Herkert 2001;, van de Poel & Royakkers2011). This call for a broader approach derives from two concerns. One concern is that the traditional micro-ethical approach in engineering ethicst ends to take the contexts in which engineers have to work for given, while major ethical issues pertain to how this context is 'organized'. Another concern is that the traditional micro-ethical focus tends to neglect issues relating to the impact of technology on society or issues relating to decisions about technology. Broadening the scope of engineering ethics would then, among others, imply more attention for such issues as sustainability and social justice.

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