



Pergamon

Technology In Society 20 (1998) 377–383

Technology
In Society

The philosophical technologies

Mario Bunge*

McGill University, Foundations and Philosophy of Science Unit, 3479 Peel Street, Montreal, Quebec, Canada H3A 2K6

Abstract

The thesis of this paper is that ethics and action theory are the two philosophical branches of technology. The reason is that they, just like mechanical engineering and management science, are concerned with human action. But of course there are differences between the philosophical technologies and the others, among them their degree of generality. An example from ethics and another from praxiology are discussed, to show that these disciplines can be just as exact and relevant to real contemporary life as electrical engineering and law. Finally, some consequences for the classification of technologies and for the design of academic curricula are drawn. © 1998 Elsevier Science Ltd. All rights reserved.

Keywords: Action theory; Ethics; Philosophy; Technology; Value theory

1. Introduction

It has been known for more than a century that technology raises philosophical problems of all kinds: not only ethical but also epistemological, ontological, and others. No wonder then that the philosophy of technology has been thriving in recent years [1–3]. However, this paper does not deal with that branch of philosophy. Instead, it makes a novel claim: that philosophy contains two technologies of its own, namely ethics and action theory. If this is correct, those are technologies on the same footing as engineering and management science. And if this is correct, ethics and action theory must be evaluated in the same manner as the other technologies, namely by their compatibility with the relevant sciences and their performance

* Tel.: + 1-514-933-6191; Fax: + 1-514-933-8741.

in practice. To explore this proposal let us start off by defining the key terms involved in it. This is unavoidable given that these terms are all polysemic.

2. Definitions

Let us agree to call *morals*, or *morality*, any system of social values and rules of conduct prevailing in a given social group—or at least the body of such norms that the group members pay lip service to. Examples: the loyalty and reciprocity values, and the ethical codes of electrical engineers and of Mafiosi.

Since moral codes contribute to shaping social behavior, their study behooves several biosocial and social sciences, from social psychology and anthropology to politology and history. The motley collection of disciplines about morals may be called *scientific ethics*. It is a strictly descriptive and explanatory discipline: its findings are testable and thus more or less true. Examples: the empirical study of the development of moral conscience in the child, of the moral code of basic scientists, and of the emergence of moral norms in human development and evolution.

On the other hand, *philosophical ethics* is the branch of philosophy concerned with examining, proposing, interrelating, systematizing and evaluating moral rules, whether actually enforced in some social group or desirable. Examples: the deontological, utilitarian and agathonist moral philosophies. The union of scientific and philosophical ethics may be called *ethics*.

There are two major differences between scientific and philosophical ethics. One is that the former is predominantly empirical whereas the latter is predominantly theoretical. The other is that scientific ethics is concerned with local morals—e.g., those of a given tribe or a given occupational group—whereas philosophical ethics reaches for a single morality for everyone.

Metaethics, or analytical ethics, is the branch of philosophy devoted to (a) analyzing such key moral and ethical concepts as those of goodness, rightness, fairness, and moral code; (b) examining the logical, semantical, epistemological and ontological underpinnings and status of the moral discourse; and (c) unveiling its relations to value theory, science, technology, and ideology. Examples: the problem of the existence of moral facts and the corresponding truths, and the subject of this paper.

As for *praxiology*, or action theory, it is supposed to investigate the general concepts of individual and collective action, as well as the conditions of efficient action regardless of its moral value [4,5]. In this regard praxiology is nothing but the philosophical counterpart of management technology (usually called “management science”). Examples: the investigation, in general terms, of the means–goal (or input–output) relation, and the search for general principles of efficient action, such as that of “satisficing” (instead of maximizing).

Now, an action can be efficient and satisficing to its agent, yet morally flawed for being selfish, just as it can be morally well motivated but inefficient or even counterproductive. This shows that ethics and praxiology should not be conducted in isolation from each another, as they usually are. Only the union of the two fields can tackle the problems around the full legitimacy—both practical and moral—of

action. One such problem is the design of the new behavior norms called for by the introduction of new practices or products bound to alter the everyday lives of many people, such as the downsizing of the workforce, the dismantling of the welfare state, info-addiction, and the globalization of junk culture.

Finally, *technology* will be taken to be the sector of human knowledge concerned with the design and redesign, repair and maintenance, of artificial systems and processes with the help of basic science and mathematics. The systems and processes in question may be physical, chemical, biological, or social. Formal organizations qualify as artifacts along with machines, domesticated animals and high-yield grains. Likewise management and litigating, as well as healing and teaching, qualify as artificial processes along with steel lamination, construction, artificial hybridization, design, planning, and computation.

3. Thesis

We are now ready to examine the thesis of this paper: that philosophical ethics (or moral philosophy) and praxiology are technologies and, indeed, the philosophical technologies. The reason is this. Technology is about designing and planning in order to get things done—or avoided. So are moral philosophy and praxiology. Q.E.D.

The idea that ethics is a technology is less novel than it may seem at first sight, given that it has traditionally been regarded as the practical branch of philosophy. As for the inclusion of praxiology among the technologies, the only surprise is that it does not seem to have been performed much earlier.

In fact, facing a moral or praxiological problem, taking responsibility for it, and reflecting on the best means to solve it under the known constraints and in the light of the available knowledge and resources, may be regarded as a technological problem.

Likewise, facing a technological problem in any depth necessitates invoking general praxiological concepts and principles. And tackling any large-scale technological project with social responsibility requires some value-theoretical concepts and ethical principles.

These commonalities between technology, ethics and praxiology coexist along with salient differences. The most obvious divergence between the philosophical and the strictly technical approaches to a practical issue is that the non-philosophical technologist is more interested in the particular than in the universal, and in efficiency than in morality. However, in recent times public opinion has started to exert some pressure on the technological community, exhorting it not to skirt the moral aspect of human action. Indeed, this is the point of the non-antiscience branch of the Green movement. The classing of moral philosophy and praxiology as technologies can only help drive this tendency forward.

Still, there are two additional differences between the philosophical technologies and the rest. The first is of an ontological kind: the philosophical technologies have a universal scope, whereas the others are regional or special. In other words, whereas ethics and praxiology cover the entire spectrum of human action, every particular technology is concerned with a particular kind of human/artifact interface.

The second difference is of an epistemological type: the philosophical technologies do not rest on known laws, whereas the others do. Let me explain. Every technological rule, unlike the rules of thumb characteristic of the arts and crafts, is based on some scientific law. More precisely, any scientific law with possible practical application is the basis for two technological rules: one that tells us what to do to attain a given goal, and the other that tells us what not to do in order to avoid a certain effect [6]. This is the root of the moral ambivalence of technology, by contrast with the moral univalence of basic science.

Take, for example, the sociological law that the crime rate is a linear function of the unemployment rate. This scientific law is the basis of two rules of social policy. One of the rules states: to decrease criminality, create jobs. The dual rule states: to increase criminality, disregard unemployment. (It might be thought that nobody uses this law, but this impression is wrong. In fact, the legal crime industry, in particular the booming industries of the construction and management of jails, rely on the second rule, for it entails that politically profitable Wars on Crime should always take precedence over effective job creation programs.)

The peculiarity of technological rules is then that, far from being either conventional or sanctioned by practice alone, they are based on scientific laws. By contrast, the ethical and praxiological norms are, at least so far, not justified in the same manner. It is arguable that they are only justifiable by their consequences and by such high-level principles as the Golden Rule, the utilitarian norm of the greatest happiness of the greatest number, or the agathonist maxim “Enjoy life and help live” [7].

However, no realistic moral philosophy can afford to ignore the known biological and sociological laws and quasi laws, since moral norms are fashioned to cope with biological and social needs. Thus although the moral norms are not based on known scientific laws, they are not incompatible with them either. Something similar holds for the praxiological principles: to be realistic, these must match the rules that work successfully in real life as studied by the various technologies.

4. Overhauling philosophical technology

To qualify as a modern technology, a discipline must be able to tackle contemporary problems with the help of up-to-date scientific and technological knowledge. I claim that none of the classical moral philosophies satisfy these conditions, if only because none of them was built to cope with the moral side of such mega-issues as overpopulation, nuclear armament, mass unemployment, north–south inequities, or the manipulation of public opinion with the help of psychology.

Something similar applies to the extant embryos of praxiology: they were not devised to tackle the complex problems of policy design, decision and planning faced by corporate managers or cabinet ministers. Even the theories of decision and games are inadequate, despite their scientific appearance, for being simplistic and for involving undefined concepts such as those of utility and subjective probability [8,9]. Hence a fresh start is required: ethics and praxiology must be reconstructed to become

relevant to contemporary life and match, at the very least, the exactness of science and technology. The following examples are intended to sketch such a new start.

Let us begin with ethics. The classical moral philosophies are either of the duties-only or of the rights-only type. Not surprisingly, they fail to match real life situations, where fairness is attained only through balancing duties with rights. A realistic ethical theory will then include the maxim that rights imply duties. This maxim can be derived from more basic premises (see Bunge [7]).

Let me now sketch a fragment of a systemic and science-oriented praxiology, namely the elucidation of the concepts of instrumental and moral rationality, that are expected to be involved in the design and implementation of any large-scale action. The following is taken from Bunge [9]. An action may be said *to be instrumentally rational* if and only if its means are necessary and sufficient to attain its goal, and if the latter is more valuable than its side effects. For example, having an appendix removed meets both conditions. By contrast, since smoking satisfies the first condition but not the second, it is not instrumentally rational. But of course one can practice instrumental rationality without concern for the welfare of others.

The moral component is easily introduced by stipulating that a goal *is morally rational* just in case it contributes to meeting either a basic need or a legitimate want—that is, one whose satisfaction does not jeopardize someone else's chance of meeting her basic needs. This allows one to characterize an action as being *rational* if it is both instrumentally and morally rational.

So much for a sample of the philosophical technologies. Though tiny, it may suffice to show that ethics is logically prior to praxiology, because a morally justifiable action is only a special kind of deliberate action.

5. Upshot

We have seen that, although there are clear differences between the philosophical technologies and the others, there are also important commonalities. This could not be otherwise, since all of them are normative disciplines concerned with getting things done in optimal ways. The realization of such commonalities has at least two consequences, one for the classing of technologies, and the other for academic activities, in particular the training of well-rounded technologists and philosophers.

The upshot of the preceding for the classing of technologies is this. We should add explicitly the twin branches of philosophical technology to the others. The new list looks like this:

- Physical*: e.g., mechanical, electrical, and mining engineering.
- Chemical*: industrial chemistry and chemical engineering.
- Biological*: e.g., agronomy and genetic engineering.
- Biosocial*: e.g., normative epidemiology and resource management.
- Social*: e.g., management science and law.
- Epistemic*: computer science and artificial intelligence.
- Philosophical*: moral philosophy and praxiology.

If accepted, our thesis should have some impact on certain academic activities. First, philosophers should bridge ethics and praxiology to the standard technologies. In particular, they should realize that doing ethics or praxiology should not be idle speculation in an epistemic and social vacuum: that doing the good and the right thing takes both knowledge and adequate resources. Second, it should be realized that moral philosophies and action theories should be validated in the same way as any other technologies, namely by their compatibility with the relevant sciences and by their consequences. Third, philosophers should realize that the fashionable technophobic and irrationalist philosophies—in particular existentialism—render students incapable of tackling the conceptual and moral problems posed by technological advancement, and consequently renders them incapable of taking part in rational debates over the right way to adjust those advancements to social needs, and to adjust society to those innovations.

Another practical consequence of our thesis is that those responsible for the design of the curricula of schools of engineering, management, normative economics, law, city planning, social work, and other technologies, should realize that their good students are expected not just to apply recipes, but to find new knowledge and to tackle new issues armed with general principles of action and morals. Hence their courses of study should include some ethics and some praxiology.

Such inclusion would benefit both parties. First, it would sharpen the moral consciences and the social responsibilities of students, and it would stimulate philosophers to climb down from their ivory towers, to become better acquainted with the day-to-day philosophical perplexities of the people who, perhaps more than anyone else, are designing the future. Second, awareness on the part of technologists that philosophers can make a contribution to technology would stimulate them to seek their cooperation instead of shunning them. After all, we know that useful epistemic novelty is often hatched in the interstices between disciplines, and that all technological megaprojects call for interdisciplinarity and generalism.

References

- [1] Bunge M. The five buds of technophilosophy. *Technology in Society* 1979;1:67–74.
- [2] Bunge M. *Treatise on basic philosophy*, vol. 7, part II: Life science, social science and technology. Dordrecht: Kluwer, 1985.
- [3] Mitcham C. *Thinking through technology: the path between engineering and philosophy*. Chicago: University of Chicago Press, 1994.
- [4] von Mises L. *Human action: a treatise on economics*. New Haven, CT: Yale University Press, 1949.
- [5] Kotarbinski T. *Praxiology*. Oxford: Pergamon Press, 1965.
- [6] Bunge M. *From explanation to justification. Philosophy of science*, vol. 2. New Brunswick, NJ: Transaction, 1998.
- [7] Bunge M. *Ethics. Treatise on basic philosophy*, vol. 8. Dordrecht: Kluwer, 1989.
- [8] Bunge M. *Finding philosophy in social science*. New Haven, CT: Yale University Press, 1996.
- [9] Bunge M. *Social science under debate*. Toronto: University of Toronto Press, 1998.

Mario Bunge holds a Ph.D. in physics and has taught physics and philosophy in his native Argentina, the USA, and other countries. He is currently the Frothingham Professor of Logic and Metaphysics at McGill

University, Montreal. He is the author of more than 400 papers and 36 books on physics, philosophy, sociology, and science policy, among them *Causality* (1959), *Foundations of physics* (1967), *Scientific research* (two volumes, 1967), *Treatise on basic philosophy* (eight volumes, 1974–89), *The mind–body problem* (1980), *Philosophy of psychology* (with R. Ardila, 1987), *Finding philosophy in social science* (1996), *Foundations of biophilosophy* (with M. Mahner, 1997), and *Social science under debate* (1998).