
New Ethics of Technology: a Discourse in Germany in the 1990s

Revised version of a paper presented at the PSSA conference: Pretoria 2008

Stefan Gruner 3.9.2008
Dept of Computer Science
Universiteit van Pretoria
Email: stefan@cs.up.ac.za

Abstract. The mid-1990s in Germany had seen a climax in a long lasting discourse about the so-called “New” Ethics especially with regard to the domain of Technology. This paper provides an interpretation of some of the German sources to the South-African reader of today, such that he may be enabled to compare South-Africa’s discourse of nowadays with the German discourse about a decade ago. Such a comparison (itself, however, not the topic of this paper) should be interesting because South-Africa is still an under-developed society with widespread techno-optimism, whereas Germany is a highly developed society with widespread techno-skepticism. The contribution of this paper is thus *knowledge-transfer for the sake of discourse*, whereby I do not claim any originality as far as my interpretations are concerned.

Keywords: New Ethics, Applied Ethics, Responsibility Ethics, Future Ethics, Social Ethics, Environmental Ethics, Procedural Ethics, Values, Technics, Technology, Engineers’ Codices.

1. Motivation

For the sake of knowledge-transfer and comparison, this paper sketches –from a rather historical, not so much systematic perspective– several interesting positions in ethics of technology in Germany in the 1990s, during which this topic was much discussed in many academic and industrial circles – in contrast to certain allegations raised by the Anglo-Saxon philosopher Peter Singer who had regarded applied ethics as a taboo topic in modern Germany.¹ The flood of publications on this topic in those years is widely seen as an expression of social insecurity about technology and the craving for orientation of a post-religious society.

By understanding the key issues of those debates in Germany of the 1990s, the reader should be enabled to compare and judge the situation and state of the discourse in South Africa of nowadays. This comparison should be especially interesting if we take into account that Germany is widely regarded a highly developed society –a society, however, in which the advance of technology (with all its various side-effects, including two devastating total wars) has also lead to considerable phenomena of civilization-tiredness and anti-technological skepticism or even anti-technological resentments– whereas South Africa can arguably (still) be counted to the nations of the 3rd world – a nation, however, in which there (still) seems to be much hope and optimism (perhaps even naïve euphoria) as far as the prospect of overcoming poverty and misery by technological means is concerned.

¹ P. Singer: *On being silenced in Germany*. The New York Review, August 15, 1991.

This overview paper is largely based on lecture notes released in German language by academic philosophers of the University at Hagen,² which I am trying to make summarily accessible here in an interpretative reflection in the English language, *without* any claims as far as the level of originality of my interpretations is concerned – in other words: I am much more *reporting about* philosophy in this paper than actually *doing* philosophy by myself.

Whilst (German) *philosophy* of technics or technology is not so new (and also not in the scope of this paper),³ *ethics* of technology (which is the topic of this paper) is a newer phenomenon. However, before we can understand some of the issues raised by this so-called “new ethics” of technology in the German discourse, it should be helpful

- to have a brief historic overview of ethics of technology, and
- to point out and explain the terminological respectively semantic subtleties, which distinguishes the German words *Philosophie*, *Ethik*, and *Technologie* from their English counterparts *philosophy*, *ethics*, and *technology*, in order to avoid any misunderstanding provoked by their apparent similarity.

These issues will be addressed in the following two sections of this paper; thereafter we shall look at some topics raised in the 1990s discourse on new ethics of technology in the German discourse – in summary we shall see how *innovation in technology* is closely linked to *innovation in ethics* which usually follows only one step behind technology in the trail of general social evolution.

2. Terminology

The English words *philosophy*, *ethics*, *technology* and *engineer* generally have a much broader (thus less precise) meaning than their corresponding German words *Philosophie*, *Ethik*, *Technologie* and *Ingenieur*. This section explains these semantic differences. From then onwards, in the subsequent sections, these keywords will be used in their narrower German meaning, even if they appear in their English spelling.⁴

- PHILOSOPHY. In English, *philosophy* can be almost anything that is somehow *opinion*-based, including the “philosophy” of a commercial corporation about how to do business, etc. More precisely, however, we want to understand philosophy as a rational enquiry in which human reason is reasoning not only about particular problems and objects (like the particular sciences) but also and especially about reason itself, its possibilities as well as its implications and limitations – all of this, of course, strongly related to the general *conditio humana*.
- TECHNOLOGY. In English, the word *technology* is exaggeratedly used in almost all those cases where either the word *technics* (which is hardly used any more,⁵ in German however widely used: *Technik*) or the word *technique* would suffice.

² A. Gethmann-Siefert (Ed.): *Wissenschaft und Technik als Gegenstand philosophischer Reflexion*. Lecture Notes 3393-9-01-S1, Institute of Philosophy, University at Hagen (Germany), 1996.

³ See extended bibliography in the appendix to this paper.

⁴ It should be noted, however, that the more sloppy English meaning of those keywords has already started to creep into the German usage of language, possibly due to the global dominance of “Business English” in the commercial world.

⁵ In 1934 we still find an English book titled “*Technics and Civilization*” (by Lewis Mumford).

According to the School of Frankfurt (or Critical Theory), however, *Technologie* is much more than just *Technik*, namely: *systematic* technics propelled by the interests of strong social respectively political forces and underpinned by their particular ideology – in other words: *technology* = *technics* + *ideology*. In this paper we speak of *technology* mostly in this strong notion. Where this is not needed we shall revert to the old-fashioned word *technics* in the sense of the more neutral (less ideologically charged) German word *Technik*. In a more neutral and less critical notion, the word *technology* can also be understood as the science *about* technics, in analogy to *methodology* which is, speaking in the German sense again,⁶ a science about the methods and their classification.

- ENGINEER. Later in this paper we shall speak about engineers, who are the professionals related to technics or technology. Whereas in the English language the word *Engineer* is often used in an exaggerated way even for subordinate mechanics or technicians who come to fix a paper-jammed copy-machine in an administrative office block, we shall use this word only in the sense of *Ingenieur*: a thoroughly trained and/or academically educated “super technician” often found in charge of development projects, or in charge of larger ensembles of machinery, with higher responsibilities than the subordinate mechanics or technicians.⁷ Also note that the English word *engineer* only relates to the word *engine* (machine), whereas the French/German word *Ingenieur* relates to the word *genius*, thus emphasizing mental abilities and creativity – in spite of the phonetic similarity of the spoken words *engineer* and *Ingenieur*.
- ETHICS. In the English language the word *ethics* has a wide spectrum of meanings and is more often than not naively used for nothing more than any arbitrary positive codex of rules to be obeyed for reasons of morality or decency in a particular social context. Thus, the usual English notion confuses the concepts of *ethics* and *morals*. In contrast, we shall understand ethics (German: *Ethik*) as a rational enquiry *about* the possibilities, limitations and justifications of any such moral systems from a *philosophical perspective*,⁸ such that, according to N. Hartmann, the “multiplicity of morals” is faced by the “unity of ethics” as one philosophical discipline.⁹ The general purpose of this discipline is thus *not* to develop any particular moral and to recommend obedience to it, but to gain insights into the nature of the binding forces of morals in general – though this is often done also with the aim of eventually proving, via theoretical considerations, the general (super-individual, super-cultural or super-historic) validity of certain moral norms.¹⁰

⁶ Similar with the two word-pairs *method/methodology* (English), respectively *Methode/Methodologie/Methodik* (German): The English *methodology* is often inappropriately used for what German speakers would simply call *Methode*, not *Methodologie* (which is a science *about* methods and their classification).

⁷ In the domain of Computer Science respectively Informatics there are ongoing discussions about whether or not the so-called “Software Engineers” may be justly regarded as engineers. Though this debate is also of philosophical interest (philosophy of science) it is out of the scope of this paper on ethics of technology.

⁸ This German meaning of *Ethik* is sometimes called “meta ethics” by English writers.

⁹ N. Hartmann: *Ethik*, 3rd ed., 1949, quoted from H. Delius: *Ethik*, p.73 in A. Diemer and I. Frenzel (eds.), *Philosophie*, Fischer Lexikon 11, Fischer-Verlag, Frankfurt 1958.

¹⁰ Of course this unity of ethics as a philosophical discipline does not forbid a large number of approaches within this discipline; like the unity of philosophy itself does not prevent many different internal opinions.

Some further terminological distinctions and explanations of related concepts in the context of ethics are necessary to avoid misunderstanding before we can eventually turn to the central part of this paper.

- **PRACTICAL/APPLIED.** Unlike subjects such as ontology, which belong to the field of *theoretical philosophy*, ethics belongs to the field of *practical philosophy* because the key concern of ethics is the human practice or praxis, in other words: our actions and deeds. However we can still distinguish further between “pure” or, better, *theoretical* ethics and “practical” or, more precisely, *applied* ethics within this field of practical philosophy. By theoretical ethics we mean undertakings such as reasoning about the concept of “value” or the idea of “good” *in general*, whereas applied ethics is stronger related to a *particular domain* of practice, for example: ethics of *medicine*, ethics of *science*, or ethics of *economy*, or ethics of *technics/technology*. Actually, due to their proximity to such a particular domain of application, those practical or applied ethics tend to approach “ethics” as a system of positive morals in the typically English sense of the word. This also means that philosophical reflections in applied ethics are more likely to lead to the postulation of concrete moral (and sometimes even: legal) *frameworks* wherein particular sets of domain-specific maxims or general guidelines (however on quite a high level of abstraction, devoid of case-specific details) are (or can be) defined.
- **MAXIM.** By *maxim* we mean a *practical principle*. Once again, *practical* means: related to our actions and deeds. A maxim is thus a *normative* principle about “what *shall* be” – in contrast to the general meaning of principle as a *factual* law about “what *is*”.¹¹ Also note that (according to I. Kant) a maxim –however fundamental and rationally sound– has still the flavor of an individual decision or self-recommendation, in contrast to the positive law of a legal system with its quasi-factual binding power for every member of its underlying society. Note that while the maxims (or general guidelines) developed by ethicists and philosophers in the field of applied ethics are still subject to further criticism on the theoretical side, they must at the same time already be suitable for implementation (in detail, on a lower level of abstraction) by the practitioners of our *Lebenswelt*. This can happen, for example, in the form of state legislation for the society as a whole, or in the form of corporate codices for professional bodies (e.g., the association of electrical engineers, the association of chemical engineers, etc.) in particular.
- **MATERIAL/FORMAL.** Applied ethics in a particular domain (e.g. ethics of technology) is also called *material* ethics (material = “having contents”), whereas theoretical ethics is also called *formal* ethics (leading to general results without any reference to a particular material domain); this terminological distinction can be traced back historically to (at least) the early 20th century.¹²
- **PARADIGM.** Last but not least it should be mentioned that different *paradigms of ethics* emphasize different categories or *aspects* of ethic reasoning, for example the aspect of duty (I. Kant), the aspect of usefulness (utilitarian thinkers, American pragmatists), or the aspect of a pursuit towards a presumed highest

¹¹ Here we could distinguish even further between *formal* principles, such as the *Tertium-Non-Datur* law in classical logics, and *material* principles such as the *Preservation-of-Energy* law in physics.

¹² See particularly Max Scheler: *Der Formalismus in der Ethik und die materiale Wertethik* I/II, 1913/1916.

value or absolute metaphysical goal (Hellenistic and medieval thinkers). We shall address more of such paradigms in the subsequent sections of this paper.

After these preliminary explanations and definitions, we are now well prepared to take a closer look at the new ethics of technics or technology: first from a more historic, then from a more systematic perspective.

3. History

The various, divergent, sometimes even conflicting paradigms and positions in the German discourse on ethics of technics in the 1990s have a common point of departure, in contrast to which they are sometimes called *new* ethics – in contrast to older traditional forms of ethics which those attempt to leave behind. A deeper understanding of these “new” ethics cannot be achieved without some basic understandings of those traditional forms of which the one by I. Kant is a prominent and often cited example. Those classical ethics –in spite of all their varieties– are found to have two common characteristics:

- they are by-and-large *individual* ethics, and
- they are mainly focused on their *present* time (regarding themselves as timeless).

The dilemma of those traditional ethics in our modern age is that it is well possible to be a “good person” or a “decent citizen” in terms of traditional morals, whilst at the same time our natural environment is degrading to an uninhabitable pitch of filth, due to the devastating effects of *industrial* technology,¹³ for which no individual person can be identified as particularly “guilty” or responsible. For this reason, various thinkers of the new ethics attempt to reach beyond the limits of classical ethics

- by emphasizing the importance of our environment (or nature) as *trans*-individual ethical category, and
- by emphasizing the importance of the *future* as a previously neglected parameter of ethical considerations.

Historically speaking we can say that *technical innovation has triggered innovation in ethics*, because the “old” ethics was no longer regarded sufficient to cope with the moral problems of our “new” world shaped by the advent of new technics or technology. Also notice the *reactive* nature of the new ethics under technological dominance: *first* came the *factual* technical innovations, *then* the ethic *reflections* (a posteriori) – but not, as many ethicists might have tacitly preferred, a pre-announcement of new technical possibilities by the engineers followed by philosophical discourses about the desirability of the actual introduction of these new technical possibilities. In the face of the machine the new ethicist of technics is forced to eat humble-pie and cannot afford any categorical Kantian rigor any more: all he can hope for is a possibility of preventing misuse of the machine: preventing its very existence is *de facto* not in the scope of his possibilities. It is a truism of life that the engineer, the *homo faber*, will simply not ask for the ethicist’s permission.

¹³ Also the German word *Industrie* has a narrower meaning than the English word *industry*. Whereas in English, *industry* describes all sorts of economic activities, e.g. the tourism “industry” or the banking “industry”, the German word *Industrie* is typically only used in the context of *engineered production* in factories. In this paper, the reader should also understand the English word *industry* in its German meaning.

Moreover, from a theoretical perspective, the engineer even *cannot* ask for the ethicist's permission: because in doing, the philosophical ethicist would be forced into the role of a socio-political moralist – who would be, as such, no ethicist (in the sense of above) any longer.

Through the second half of the 20th century, the new ethics –or at least predecessors thereof– came to public recognition in three distinguishable waves.

- I. The first wave came in the 1940s and 1950s under the impression of nuclear warfare. Here it is interesting to note that conscientious scientists, especially physicists, had initiated the discourse *before* it was picked up by their colleagues in the faculties of philosophy.¹⁴ Though these physicists did not yet possess an elaborate notion of new ethics in the above-mentioned sense of the word, their conscientiousness and personal moral integrity planted the seed of doubt into the field of traditional ethics, which was well able to theoretically deal with problems of honesty and lie, fraud or theft (etc.) but did not have any category for reasoning about weapons of mass destruction.
- II. A second wave of new ethics could be observed in the 1970s and 1980s under the impression of the notorious *oil-crisis* in combination with the experience of large-scale deforestation and extinction of species in vast areas of ecological habitat throughout the world.¹⁵ The strategic defence initiative project *SDI* under US-president Ronald Reagan was an equally prominent matter of debate in that decade. This second wave of new ethics was no longer a more or less exclusive issue of a small number of conscientious scientists: politically, this wave of new ethics resulted in the foundation of the Green parties (first in Western-Germany, then, though at different levels of popularity and political influence, also in almost all other Western-European democracies), and this time also the professional philosophers (and professional ethicists) started to raise their voices of concern.¹⁶
- III. The third (and so far latest) wave of new ethics came in the 1990s under the impression of progress in bio-technology (with genetic engineering, cloning, etc.) and informatics (with the internet, data-mining, artificial intelligence, the new media, digital warfare, etc.), which triggered all kinds of anxiety and concern about the potential advent of a new Orwellian “big-brother”-state. Also the progress of the modern apparatus-medicine led to new ethical discourses especially about the definition of “death” and the right of the medical expert to switch off the heart-lung-apparatus attached to a terminally unconscious patient in vegetable state. New legislation was the result of an intense and wide-spread ethical discourse especially in this domain. Also note that, in contrast to the previous two waves, a professionalized (and often tactically publicized) *attitude* of what could be called “ethicism” (rather than ethics) is now a firmly established ingredient to various kinds of politically correct institutions as well as commercial and even military

¹⁴ See for example Joseph Rotblatt who resigned from the Manhattan Project at Los Alamos when it became clear that Germany did not have the capacity of nuclear armament and that the American A-bomb was continued to be developed –and then “demonstrated”– against Japan for geo political (respectively geo strategic) reasons only, though the materially depleted and morally exhausted Japanese were already at the very brink of defeat and surrender.

¹⁵ See for example D. Meadows et al., *Report of the Club of Rome*, 1973.

¹⁶ See for example H. Jonas, *Das Prinzip Verantwortung* (The Principle of Responsibility), 1979.

undertakings: the NATO wars of the 1990s –Yugoslavia, Kuwait, etc.– were all surrounded by an unprecedented halo of ethical discussions about topics such as the so-called “surgical” (war as medicine!) precision-bombings, etc., which would have been unthinkable only a century ago for people like Clausewitz who simply regarded war as “continuation of politics by other means”. More like in any other decade before, the 1990s witnessed a flood of publications on applied ethics as well as philosophy and ethics of technology in Germany – a phenomenon often regarded as the expression of anxiety and heightened problem sensitivity of an over-saturated postmodern and post-religious society.

After those rather historical introductory remarks we are now well prepared to take a look at some approaches and positions of the new ethics from a more systematic perspective.

4. Elisabeth Ströker : Ethics of Responsibility

E. Ströker starts her considerations with the observation that the notion of *responsibility* has become more and more visible in the public discourse, thereby gradually replacing the older ethical notion of moral *duty*.¹⁷ Originally the notion of responsibility had been a *legal* one, necessary to distinguish between *innocent* and *guilty* in criminal cases. From there, the notion of responsibility has gradually crept out of the legal into the political and philosophical sphere: The term *Verantwortungsethik* (responsibility ethics), as Ströker points out, had already been coined by *Max Weber* in an essay on *politics as profession* shortly after the first world-war.¹⁸ Ströker continues her reflections by hinting at a general and wide-spread *moralization* of science and technology which started in the 1970s –the sociologist decade– during which certain schools of the social sciences started a general assault against all engineering and natural sciences, demanding that those sciences should eventually stand up to their social “responsibility”. The publication of *Das Prinzip Verantwortung* (the principle of responsibility) by *Hans Jonas* in 1979 marked a climax of that heated debate – about 400 years after *Georg Bauer* (latinized: *Georgius Agricola*, 1494-1555) had delivered the first document of environmental awareness in his *De Re Metallica Libri XII* (twelve books about the metals) in the middle of the 16th century, in which he had criticized the vast deforestation and water-pollution caused by mining and iron production. However, as Ströker points out in the subsequent (and more systematic) parts of her essay, the notion of *responsibility itself is only vaguely defined* and much in need of further clarification. The novelty of responsibility ethics, in contrast to classical ethics, is identified by Ströker in these four particular points:

- I. It is acknowledged that the most difficult moral problems of our time are the result of the complex structures of *collective* behaviour rather than the result of individual activities: Therefore, responsibility ethics must be *social ethics* rather than ethics of the individual.

¹⁷ E. Ströker, *Verantwortungsethik: Was meint sie, was fordert sie, und was könnte sie leisten in unserer technisierten Welt?*, pp.17-34 in A. Gethmann-Siefert (Ed.): *Wissenschaft und Technik als Gegenstand philosophischer Reflexion*. Lecture Notes 3393-9-01-S1, Institute of Philosophy, University at Hagen (Germany), 1996.

¹⁸ Max Weber, *Politik als Beruf*, Lecture, 1919. In this lecture, Weber distinguished between *Gesinnungsethik* (ethics of intention and habit) in contrast to the above-mentioned *Verantwortungsethik*.

- II. As already noticed by Max Weber, it is acknowledged that modern technics (in contrast to pre-modern craftsmanship) has temporally far-reaching consequences not only for today but also for the future generations of mankind: Therefore, ethics of responsibility must be *future-oriented ethics* rather than presence ethics.
- III. The power of modern technics does not only affect humans but also –and in much larger scale– the natural resources on which human living and survival depends: therefore, responsibility ethics must also be *ethics of nature*, rather than ethics that is only human-centered.
- IV. Because of the various uncertainties as far as political power and scientific expertise behind our far-reaching technological decisions are concerned, ethics of responsibility must also be an *ethics of democracy*.

However, as Ströker does not fail to point out, the word *responsibility* has become such a ready-for-use buzzword in the phraseology of political correctness of our time that little ethical progress can be expected in this regard if the notion of responsibility itself is not clarified in a deeper philosophical discourse. In every situation in which responsibility is justifiably demanded, it must also be clarified as precisely as possible:

- *who* is responsible,
- *what for*, and
- *to whom*.

If any of these three *relata* in this responsibility relation remains unspecified, then all the politically correct talking about *responsibility* remains as ineffective as the usual Sunday sermon.¹⁹ The question of *power* (juridical or political) re-arises in the question what means of *sanctions* are actually available against those who are found to have broken their responsibility: this is a very difficult issue, especially if an unspecified *future* is regarded as an ethical *institution* against which the considerations of responsibility are calculated. The weakest link in Ströker’s chain of arguments about responsibility ethics is thus the abstract notion of *future* which, as a pseudo-entity of questionable ontological status, has no power of imposing effective sanctions against the irresponsible decision makers of yesterday or today. On the other hand, thinking in terms of the future and caring about the next generations seems to belong to our hard-wired *conditio humana*, such that the notion of *future ethics* is not so easy to be discarded from a bio-naturalist perspective.

5. Carl F. Gethmann : Distribution-Justice in Situations of Risk

Carl F. Gethmann, too, is concerned about the far-reaching consequences of modern technics, in contrast to the rather limited consequences of pre-modern craftsmanship.²⁰

¹⁹ Take for example a typical scenario in which after –let’s say– a major accident in a nuclear power station would cause a great deal of damage in the inflicted area. Typically, the minister of energy in that country would symbolically confess his “responsibility” and resign from the post – a gesture which does however not contribute anything to the reparation of the damage and would typically also not harm the future career of that ex-minister as a private citizen in his society.

²⁰ C.F. Gethmann, *Ethische Probleme der Verteilungsgerechtigkeit beim Handeln unter Risiko*, pp.35-49 in A. Gethmann-Siefert (Ed.): *Wissenschaft und Technik als Gegenstand philosophischer Reflexion*. Lecture Notes 3393-9-01-S1, Institute of Philosophy, University at Hagen (Germany), 1996.

Because far-reaching consequences are, by definitions, those ones that can hardly be predicted or foreseen, Gethmann addresses the problem how our potentially risky, far-reaching technical decisions and activities can be *rationally justified*. In this problematic context, the purpose of new ethics must be clarified. Gethmann also points out that in contrast to morals, which simply tell people what to do, it is the purpose of ethics to reason about the suitability and justifiability of such morals – in other words: ethics is the discipline that finds suitable rules and *criteria* according to which the moral quality of our decisions and activities can be reasonably judged (see section 2). In the new historical perspective of far-reaching consequences of technical decisions, new ethics has thus the purpose of finding rules and criteria for judging our acting and decision-making under the perspective of risk and uncertainty.

This, however, requires further philosophical reflections about the notion of *action*, including the related concepts of *purpose*, *goal*, *means*, *goods*, etc., which either provide our actions with direction or with the tools to achieve the goals. It is often observed that even if people easily agree on some purpose or goals,²¹ the means and tools to achieve such goals are often the cause of disharmony, or *conflict*. Consequently, it must be another purpose of the new ethics to elaborate the general rules by means of which such conflicts can be solved. The notion of *risk* itself requires further considerations, too: Gethmann points out that unless we are sufficiently clear about what to regard as *risk* we cannot agree on how a particular risk can be justly *distributed* across a society which has to shoulder that risk *collectively*.²² Once a risk is sufficiently understood, the question of which part of the society shall bear which part of the risk is a question of *distribution-justice*. Immediately the question arises: what means *justice*, and *how* shall it be implemented? Does it mean *equal* distribution; does it mean *appropriate* distribution? Gethmann points out that this question is actually already a question of particular morals, not of ethics any more in its genuine sense. However, ethics must provide a rational background on which such morals can be formulated. One of the related ethical maxims, which the philosopher suggests in this context, reads: *Always act in such a way, that the bearers of the potential risk also participate in its potential benefits*.²³

6. Christoph Hubig : Value Conflicts in the Assessment of Technology

C. Hubig starts his considerations with the observation that philosophy is currently in demand for providing orientation in a disoriented age, whereby this disorientation is largely due to the rapid (often technologically induced) changes to the fabric of a modern society.²⁴ Indeed we could say that modernity is a status of mind rather than a status of

²¹ Take, for example: “the oceans and the air shall not be so much polluted any more”: Most people could easily agree with this moral statement, but conflicts would almost certainly arise about how it should actually be implemented, and by whom.

²² Take, for example, the question where to build a new nuclear power plant: near a crowded slum, near an upper-class mansion estate, or into a so-far un-touched nature reserve?

²³ Continuing the example of above: if a potentially dangerous nuclear power plant is built near a slum, then the poor slum inhabitants must also enjoy the main benefits of the new electricity being produced.

²⁴ C. Hubig, *Wertkonflikte in der Technikbewertung*, pp.71-99 in A. Gethmann-Siefert (Ed.): *Wissenschaft und Technik als Gegenstand philosophischer Reflexion*. Lecture Notes 3393-9-01-S1, Institute of Philosophy, University at Hagen (Germany), 1996.

technical development – a state of mind in which previously un-reflected, unproblematic, quasi “natural” relationships of the individual being with its own cultural traditions has become brittle and problematic, with deep impacts on the individual’s concept of self-identity – a state of mind in which uncertainty and doubt has crept into every crevice of human existence, undermining everything that used to be self-understanding in a pre-modern context.²⁵

Consequently, a general “loss of values” is often sensed (and bemoaned) when a society is in a transition process to modernity or post-modernity. In this problematic situation Hubig conjectures that ethics faces the following dilemma:

- *Formal Ethics*, with its high level of abstraction and generality, usually fails to provide the demanded orientation for a disoriented society in transition, whereas
- *Material Ethics*, with its greater proximity to concrete and applicable morals, is always under the suspicion of particularity (if not even dogmatism).

Like the word *philosophy* in the everyday English use of the word (see section 1) also the word *value* is currently in high-frequency use in “politically correct” talking. Almost all larger companies or institutions of nowadays are publicly priding themselves of “having values” or “being value-driven”, though it is rarely said *what* these “values” really are: it almost seems as if the sheer utterance of “being value-driven” has already become an ersatz-value in itself; businesses and supermarkets in the commercial world promise “value for money” in their advertisements, etc.²⁶ Thus, not only are values themselves needed in disoriented times (of which the inflationary “value”-talk is only a symptom), but also a deeper philosophical analysis of what values really are, and in which different categories they come along. This is especially true since modern times have by and large forgotten the classical ethical distinction of *virtues*, *duties*, *norms* and *goods* which are now all somehow subsumed under a fuzzy “value” idea.

Such a theory of values is the concern of Hubig. In his framework he distinguishes *object values* which are regarded as more or less self-understanding “values by themselves” (especially in traditional pre-modern interpretations) from *value objects* which are entities that can possibly be of value in case that any value gets attached to them somehow. This notion of value is related to another category of values, which are actually *criteria*, or *units of measure*, according to which some good under consideration can be assessed. As far as the *Wertewandel* (change of values) in a technological society is concerned, Hubig distinguishes an *ethical* from a *technocratic value model*. In a technocratic value model, “values” are in fact either *purposes*, or the *means* with which such purposes could be achieved.²⁷ Hubig further points out that those technocratic values are usually defined *dogmatically* – regardless of whether that dogma is declared by a small management

²⁵ For example, medieval man *had* technics: windmills, ships, catapults, etc., but he had no doubts about his role and place in a universe which was believed to be well-ordered by god himself.

²⁶ See for example the pseudo-Biblical language which many institutions and corporations of nowadays use to glorify their strategies and tactics: instead of simply pursuing *purposes* and *goals*, they now have “*visions*” (like St. John?) and “*missions*” (like St. Paul?) – however: behind those pseudo-value phrases there seems to appear an unconscious yearning for what our postmodern times allegedly have lost.

²⁷ For example, such technocratic purpose-values could be stipulated as: “to become a space-faring nation by the year 2030”, or “to be the university with the largest Engineering faculty in the country”.

elite, or whether it is democratically endorsed. In *ethical value models*, on the contrary, values are *not* to be found *within* such a hierarchy of means and purposes, but rather *beyond* or “next to” it. Moreover, in contrast to the technological values, an ethical value system cannot be stipulated dogmatically; it can only be developed in critical reflection.

A philosophical theory of value must also not ignore the *intrinsic conflicts* which usually occur in any non-trivial collection of values in which each individual value, beheld on its own, does not seem to be particularly problematic. To develop a more elaborate theory of values and value conflicts for a technological society, Hubig categorizes values into different classes, such as: *basis* values, *technical option* values, *cultural identity* values, and so forth.²⁸ Immediately the question arises *how to decide* in case of “clashes” between various values from such different categories. As we have already seen above, it can *not* be the task of ethics to actually solve a value conflict in a concrete, particular situation of a society in transition. Instead, ethics must a *framework of rational guidelines* and general maxims, under which an actually chosen value preference can be reasonably justified.

7. Kurt Bayertz : Moral Consequences of the Brain-Death Definition

K. Bayertz begins his considerations with the observation that latest medical technology is able to keep hospital patients, who are in an irreversible coma state, in a vegetative state for an almost arbitrary duration of time.²⁹ According to the *traditional heart-definition of death*, those patients would have to be regarded as “alive” such that the termination of the heart-lung-apparatus, to which those patients are attached, would be equivalent to homicide. With respect to the pointlessness of such medical “treatment” for irreversibly unconscious patients, it has been suggested to replace the traditional heart-death definition by a *new brain-death definition*, which is meanwhile globally accepted as a valid definition of the *notion of death*. Bayertz states that this re-definition of death, under the impression of progress in technology, is not only a technical issue from the medical perspective, but also an issue of high philosophical relevance.³⁰ Hinting at reflections by *Stanislaw Lem* in his *Summa Technologiae* (1964) about the dependency of morals on physics, Bayertz analyses four ethical tendencies in our present age, to which the above-mentioned Brain-Death definition is only one example. According to Bayertz, these four tendencies are (I) *denaturalization*, (II) *functionalization*, (III) *homogenization* and (IV) *proceduralization* of modern morals, as explained in the following paragraphs.

- I. In the pre-modern age, death appeared as a *natural event*, like an earth-quake or a volcano eruption. In pre-modern cultures there was no need for a definition of death: observation of the fact was entirely sufficient. Nowadays, however, the discrepancy (non-identity) of fact and definition poses a difficult ethical problem.

²⁸ Compare this to the value hierarchy developed by *Max Scheler* which has, at its lowest level, the values related physical well-being, and at its highest level the values related to transcendence and spirituality.

²⁹ K. Bayertz, *Ethik, Tod und Technik*, pp.173-191 in A. Gethmann-Siefert (Ed.): *Wissenschaft und Technik als Gegenstand philosophischer Reflexion*. Lecture Notes 3393-9-01-S1, Institute of Philosophy, University at Hagen (Germany), 1996.

³⁰ By the way: the definition-of-death problem, related to the expiring of a human life, has its analogue counter part in the definition-of-life problem in the pro/contra abortion debate, related to the beginning of a human life.

- Whereas death, considered as natural fact like an earth-quake, does not impose any particular responsibilities on us (except of the traditional “thou shall not kill”) the new “death by definition” forces us into new *types* of decisions for which responsibility must be explicitly assumed. Thus, the naïve “natural basis” of our morality is getting thinner, and it is in this sense that Bayertz can speak about “denaturalization” of morals in the modern age.
- II. Another technical development is relevant in this context. With the emergence of life-prolonging medical machinery, any not-yet-dead (or, depending on the chosen definition: dead) patient also becomes a valuable *asset* with respect to organ reuse and transplantation. This is a fundamental difference to pre-modern cultures in which the dead human body had never been regarded as technically and medically exploitable asset.³¹ In the context of the new technology of organ transplantation the brain-death *definition loses its purely descriptive character* and becomes inevitably goal-oriented and purposeful. Without any suitable brain-death definition it could never be determined when to cut a living heart out of the body of a brain-dead patient, to rescue another patient who’s brain is alive but who’s heart is dead. In contrast to the pre-modern age, our new ethics must be consciously and deliberately “tailored” to fit our new purposes and new abilities (such as heart transplantation). It is in this sense that Bayertz speaks about the “functionalization” of morals in the modern age. Once again we can clearly see in this example how ethical innovation follows in the trail of technical innovation.
 - III. This new kind of functionalization of morals, once it has started (e.g. in ethics of medicine), is likely to spread out from one domain to another one, with *analogy justifications* on the meta level: if we have modified our ethics in this domain in such and such a way, then, for the sake of *consistency*, we should also modify our ethics in a similar way in other practical domains. The abortion debate, related to the brain death debate, is an example of such analogy. Thus, for the sake of being “logic” and consistent –a requirement typically demanded by Western thinking– we cannot “contain” an ethical innovation which we have started. In this sense Bayertz speaks about “homogenization” of morals in our times.
 - IV. Finally, Bayertz also observes a tendency towards procedural notions, in contrast to classical “essential” notions in the new ethics. In his example of the brain-death definition it is important to note that this definition did not grow “organically” through many centuries. Instead, it was the outcome of well-regulated committee meetings which were purposefully organized towards the formulation of an acceptable brain-death definition. Also in Germany the legally relevant criteria of brain-death are the result of a purposefully conducted *norm generation process* which took place for more than one decade before these norms were eventually enshrined in positive law. It is also worth mentioning that the need for “future versions” of this norm was explicitly stated already when the “first version” of the norm was released. Such a deliberate, explicit *temporal “versioning” of ethical norms* would have been almost unthinkable in the pre-modern age in which valid

³¹ I explicitly exclude from this consideration the superstitious practice of killing children for the purpose of making “*muti*” (i.e. “magic medicine”) from their mutilated body parts – a practice still found in South Africa every now and then, for which Western lawyers recently developed the notion of “faith crime”.

norms were widely considered to be timeless and eternal.³² Thus, Bayertz states: progress in science and technics induces *permanent* pressure towards *permanent* re-definitions of valid moral norms and ethical criteria. Once the first brain-death definition was released we cannot reasonably expect any end in the chain of re- and re-re-definitions in the further future. Moreover it is important to note how not only the genealogy of the brain-death definition but also its very *contents* is strongly characterized by procedural elements: the definition states *what brain-death is by stipulating the procedure of its diagnosis* in minute detail – who has to do what and when before the diagnosis “brain-death” may be validly declared and signed. It is in this sense that Bayertz speaks about the “proceduralization” of modern morality.

It is especially in point (IV) that we find yet another fundamental difference to classical moral norms (e.g.: “help the poor”) which tell us *what* to do but *not how* to do it. In modern *procedural ethics*, according to Bayertz, the previously separate *applicability conditions* of a norm become an *intrinsic part of the norm itself*, such that the classical separation between ethical *justification* and practical *application* of a moral norm gets increasingly blurred. Therefore, Bayertz concludes, we do not only need ethics to reflect upon the consequences of innovation in technology: we also need *meta ethics* to reflect upon the consequences of our purposefully invented “designer ethics” following in the trail of technical innovation. In other words, our new ethics is not only about technics and positive systems of morals any more – it is also about reflection of ethics itself.

8. Jan P. Beckmann : Benefits and Limits of Engineers’ Codices

According to I. Kant, there are basically two philosophical questions: *what can we know?* and: *what shall/may we do?* For engineers, the latter question can (and should) be refined to the question: *what shall/may the engineer do?* (that is: in his or her capacity as engineer – in addition to being a citizen and a member of humankind). To this question, two types of wrong answers in the form of professional codices can be given:³³

- I. Answers (respectively engineer’s codices) that remain sub-standard by demanding little more than what the engineer is anyway supposed to do in his capacity as a member of the society or humankind in the wider sense, and
- II. Answers (respectively engineer’s codices) that demand too much by being overly general and not providing sufficiently concrete guidelines with sufficient practical relevance.

J.P. Beckmann analyses examples for both types of engineer’s codices. For example, the 1914 ethic codex of the American Society of Civil Engineers (ASCE) mentions little more than that the engineer should be honest, should not be illoyal towards his clients or superiors, should not engage in unfair competition, and should not bring the dignity of his

³² Remember, for example, that philosophers like *Platon* were not willing to attribute “truth” to anything that is subject to the flux of time.

³³ J.P. Beckmann, *Vom Nutzen und von den Grenzen von Ingenieur-Codices*, pp.160-172 in A. Gethmann-Siefert (Ed.): *Wissenschaft und Technik als Gegenstand philosophischer Reflexion*. Lecture Notes 3393-9-01-S1, Institute of Philosophy, University at Hagen (Germany), 1996.

profession into disrepute. It is easy to see that this old engineering codex is not particularly engineering specific: it would equally apply to merchants, hairdressers or any other professional guild. It is thus an example of a sub-standard ethical codex.

On the other hand, Beckmann analyzes the highly idealistic German VDI codex of 1950, formulated under the impressions of the disturbing experiences of the second world-war. This codex “correctly” mentions high values such as human dignity, human rights, service to the community, humbleness in the name of god (etc.) throughout the paragraphs of its document, but remains insufficient in three aspects:

- I. It does not mention at all the concrete *dangers* which can arise from technology.
- II. It does not provide any concrete hints about what to do and what not to do in order to “serve the community” (etc.), especially as far as those (not mentioned) dangers of engineering and technology are concerned.
- III. The German codex of 1950 remains purely individualistic and does not mention any corporate responsibility as far as the institutions (companies and universities) are concerned into which the individual engineer is embedded.

Since those two rather naïve and “home-made” examples of engineer’s codices –the one overly pragmatist, the other one overly idealist in tone and spirit– Beckmann concedes that the ethical awareness of corporate engineering has become considerably more professional. More recent examples of engineering codices are considerably *stricter* and show more sense of responsibility than the simple American engineering-business codex of 1914, but on the other hand also considerably *more critical and practical* than overly abstract and highly idealistic German codex of 1950. Since not only the profession of engineering but also the profession of philosophical ethics has made considerable progress, modern engineering codices are no longer “home-made” by philosophically naïve engineers. Nowadays they are mostly outlined in cooperation with professional ethicists. The result is usually a much better balance –or, in the terminology of above: a much better *applied ethics*– in the middle ground between a simplistic collection of moral guild rules on the one hand, and non-specific theoretical ethics on the other hand.

Beckmann concludes –and this can also be the conclusion of this review– that the problems of humankind will neither be solved purely technically (materialistically) nor purely ethically (idealistically) but only in a combined approach in which *technics and ethics* are mutually aware of each other’s strengths and weaknesses.

9. Outlook

It remains to be seen whether a techno-optimistic 3rd-world country like South Africa will eventually reach the level of social and philosophical techno-skepticism (sometimes even: pessimism) which parts of the society of the technologically highly developed Germany have reached, or whether a wiser and more considerate introduction of new technics or technologies will prevent such techno-skepticism from cropping up on the soil of bad experience or even catastrophes. Whether this way or that way – anyway the question of ethics of technology as such *will* rise as a matter of concern also in Africa, as Africa is likely to get hit hard by the consequences of the technologically induced global

climate change. The fact that little-industrialized Africa is not the main producer of this climate change does not provide an excuse for Africa for abstaining from this discourse. On the contrary: the risk-distribution-maxim by Gethman (section 5), according to which the bearer of a risk shall also participate in the related opportunities, seems –at least in my opinion– to be applicable not only within one country or one village, but also on an intercontinental, global scale.

Appendix

An extended bibliography on philosophy and ethics of technology, including references to several classical works, can be found online at <http://www.stefan-gruner.de/Bibl-Phil-Eth-Techn.zip>