

PHIL & TECH 4:4 Summer 1999

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CONCLUSION: TECHNOLOGICAL RESPONSIBILITY AND THE HUMANITIES; THE UNIVERSITY OF KARLSRUHE

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I have been asked to say something about the role of the humanities in a technological university—particularly in the University of Karlsruhe. This seems to be a fitting way to bring closure to a set of proceedings on advances in the philosophy of technology.

The University of Karlsruhe holds the proud position of being the oldest technical university in Germany. As is generally known, it was patterned after the prestigious Ecole Polytechnique in Paris. From the very beginning, the university supported interdisciplinary programs, and by the end of the nineteenth century these included programs in the humanities. For example, already in the nineteenth century there were professorships in philosophy and in general psychology.

We have had outstanding humanities scholars, for instance, the well known social psychologist Willie Hellpach—who was also, incidentally, runner-up in a race for the presidency of Germany in the 1920s. Also, as Rector Magnificus, we have had Heinz Kuhnle. And the well known historian, Franz Schnabel, in his *Deutsche Geschichte*, was one of the first to include in his account the history of technology.

After World War II, philosophy professor Simon Moser was one of the first to attend to the political and social necessity of coping with the increasing problems associated with technology, with technological innovations, technological inventions, and large-scale implementations of technological systems. He talked about these issues in a number of seminars co-taught by colleagues in other departments, colleges, and schools of the university. In doing so, he was highly critical of traditional philosophy of technology.

One of our sociologists, Hans Linde, has emphasized the role and function, even the dominance (his term) of technical artifacts in relation to social

reality—a subject which had been ignored or neglected by social scientists of that era. (That is, in my opinion, still true today.)

Following in these footsteps, some of our humanities departments have continued to initiate programs dealing with methodological, philosophical, and social studies of technology. We might describe these as normative or qualitative assessments of technology—though they antedate technology assessment as a field in the true sense. A number of publications by the three or four-person team of Simon Moser, Ernst Oldemeyer, Günter Ropohl, and myself gave rise to a certain international recognition of our work in philosophy of technology: we have been described as the "Karlsruhe school" of philosophy of technology. (There really is not any such school, even minimally, at the institutional level.)

A proposal to establish a center to study the conditions and impacts of technology was made as early as the middle fifties, but it never materialized. The same fate has so far befallen a more recent proposal to establish a center for methodological and social studies of the impacts of technology—even though it got favorable reviews from the Research Commission 2000 of the State of Baden-Württemberg.

However, there is still hope, and we are grateful to have at least two new humanities professorships focusing on studies of technological problems: one held by Helmut Spinner, who specializes in the philosophy, including the social philosophy, of technology; and the other held by Rolf-Jürgen Gleitsmann-Topp, a historian of technology.

Moreover, we have a newly-established Institute of Applied Cultural Studies, which has as one of its objectives to deal with interactions between social science and humanities studies of technological problems, including (among others) technology transfer especially to other countries.

So far, we have no general program for engineering education like that at the Technical University of Berlin before 1968. However, our School of Civil Engineering does require its students to participate in social science and philosophy seminars.

In general, we have no comprehensive program in the philosophy,

methodology, social philosophy, or theory of technology comparable to standard programs in the philosophy of science. So far, we have only been able to focus on particular studies in the social philosophy of technology, on the technocracy debate of a couple of decades ago, on the sociology of technology, on "the technological intelligentsia," technology evaluation, technology assessment (first steps only, so far), and technology and ethics—with special reference to problems of responsibility in both science and technology.

Finally, as mentioned above, several of us have been active for over thirty years in the group, *Mensch und Technik: Der Ingenieur in Beruf und Gesellschaft* [humans and technology; professional and social responsibilities of engineers], of the German Engineers Association (VDI). There we—including, at various times, Professors Moser, Oldemeyer, Ropohl, and myself—helped to write and promulgate general guidelines for the assessment of technology. And in 1991, after more than a dozen years of collaboration and dedicated committee work, the Association published *VDI-Richtlinie 3780: "Technology Assessment: Concepts and Foundations,"* which (among other things) defines and underscores the responsibilities of engineers at all levels of science and technology.

At this point I want to remind readers of a number of things I have written in the pages of this journal (2:3-4[1997]; 3:4[1998]; and 4:1[1998]) and elsewhere about the context of this issue of technology and the humanities. For one, I have said that, in the course of human history, mankind has never had at its disposal as much effective power, energy, and material as it does today. And all of this is a product of technology and its progress; and technology is no longer only an instrument, but a world-changing, a world-shaping, a world-making factor. This is, I think, very important.

Proportionate with this power, human responsibility ought to be increasing—indeed, at an explosive rate. Today more than ever before, huge ethical and moral problems have evolved in step with the rise of technological power—with the power to impose on the non-human environment or nature, and the power to manipulate life, including human life. Because of technological power and the great reach of technological activity, a new context demanding ethical awareness seems to be evolving, and it calls for new ethical rules. Even if there continues to be a basic core of ethical principles, carrying them out—applying the principles to today's conditions—requires further development.

We must adapt to new modes of behavior, new activities with novel side effects, and new institutional arrangements, including new responsibilities. And this is a difficult task that we must undertake.

I have also tried to characterize the reasons for this expanded scope of responsibility, listing six possibilities: the number of people affected; impacts on natural systems; the possibility of manipulating human nature through pharmacological and genetic means; a rising technocratic tendency on the part of information systems, including threats to privacy; an attitude of "can implies ought"; and, finally, effects on future generations, both of humans and with respect to the ecosystem as a whole.

Within this broad context, I believe that engineers and other experts and technical practitioners typically do exercise professional and humane responsibilities. But much can still be done to improve the situation, to deepen their consciousness of moral and social responsibilities, as well as of potential conflicts between them and their personal consciences. The humanities and social sciences can and should help make them aware of intricacies and conflicts, of the complicated interplay of values and norms with contracts and laws, etc. At the same time, none of this should detract from the engineer's professional responsibility or freedom of decision-making and acting.

It is an especially challenging task of the humanities, and of philosophy in particular, to make this imperative work, unobtrusively helping the engineer, the practitioner, the manager, the entrepreneur, as well as political decision-makers to know how to abide by social, moral, and humanistic values and norms. They should also help solve or at least mitigate conflicts among them.

In short, they should fulfill the ancient obligation of the humanities to share in the work that is needed for the survival and progress of humankind in our complicated technological world.