

Editorial

IT and Society – One Theory to Rule Them

All?

BERND LUTTERBECK*

Institute for Business Informatics, Berlin University of Technology

Franklinstr. 28/29, Sekr. FR 5-10, D 10587 Berlin

Bernd@Lutterbeck.org

To what extent can observing scientists achieve knowledge on complex problems? Friedrich August von Hayek, in his lecture to the memory of Alfred Nobel in 1974, gave a challenging answer: Social sciences have to deal with a kind of «organized complexity», unlike physical sciences they have to handle models «made up of relatively large numbers of variables». All the effects together may lead to «a sum of facts which in their totality cannot be known to a scientific observer, or any other single brain». (von Hayek 1974) Von Hayek urges scholars to prevent social sciences from a «pretence of knowledge». The field of IT and society might be good example for his warning.

«I hope that important technologies such as computing can be sufficiently understood by many social groups early on, so that important decisions about whether, when, and how to utilize computer-based systems will be more socially benign than would otherwise be the case.»¹

Rob Kling, probably one of the most vital and creative researchers in the field of IT & Society in the U.S., has expressed his dream on the edge of the new millenium: An academic discipline of its own which exclusively deals with the social dimensions of the information society, calling it «Social Informatics». He presented the cornerstone of his theory in a kind of textbook which contains

* Published in: Poiesis and Praxis. International Journal of Technology

Assessment and Ethics of Science. Special issue on Information technology and society, Vol 3 No 4 (autumn 2005). The original publication is available at [http://www. Springerlink.com](http://www.Springerlink.com).

¹ Quotation from Rob Kling on the website of the Center for Social Informatics, Indiana University Bloomington, <http://www.slis.indiana.edu/CSI/index.html>.

Rob Kling died 2003, aged 58.

nearly 80 essays by various authors on around a thousand pages – an impressive and hefty volume (Kling 1996).

With similar intentions, German philosopher Wilhelm Steinmüller envisioned an academic discipline which he called «Applied Computer Science» in his opus «Informationstechnologie und Gesellschaft» [Information Technology and Society] in 1993:

*«This textbook will introduce interested readers in the world of applied computer science, in the art of creating humanized information technology.»
(Steinmüller 1993, p. 1)*

As Kling's work, this one contains around 1000 pages with 250 pages of references alone – an impressive and hefty volume, too.

I know as a fact that both authors stood in personal contact to each other. Strangely though, this did not affect their respective approach to basically the same intellectual problem: The definition of an overarching theoretical frame of reference into the various facts and scientific concepts could be subsumed.

Rob Kling, in a typical «anglosaxon» fashion, chooses a problem-oriented approach, offering chapters on «mental models for travelling through the computer world», «dreams of technological utopianism», «computerisation and the transformation of work», and others dealing with privacy, system safety or computer ethics issues.

Steinmüller on the other hand, in tune with the German «teutonic»² academic tradition, approaches the problem in a more hierarchical way, striving to build an overarching theory. Using the metaphor of building a house, his chapters deal with the «construction plan: applied computer science», the «building material: information», the «house: information system», the «environment: impacts of information system», and the «architecture: assessment of consequences through creating information systems».

Beneath their difference in approach though, both authors agree in one fundamental tenet that there exists a core theme, an «essence of society», under which all special problems can be subsumed. For Steinmüller, this central theme is the concept of «information», whereas Rob Kling positions the concept of «work» into the center of many, if not all issues of IT & Society.

Their belief in the existence of such a core theme might explain the baffling similarity of the reactions for their respective work: In the case of Steinmüller's work, admiration for the stupendous effort to put together such works, but at the

² See (Galtung 1981) for anglosaxon, teutonic, and other intellectual styles.

same time scepticism on the empirical viability of the theoretical approach³. Kling's book was criticized for relying too much on case studies which too soon were obsolete and proved to be only of historical interest⁴.

But the best indication of the obsolence of their approaches was the emergence of the Internet which rapidly penetrated all areas of society and gave rise to a new globalized economy with all its new opportunities as well as dangers. Neither Kling nor Steinmüller did foresee or even suspect the amazing power with which the Internet would establish a new environment; in Steinmüller's work, the Internet, copyright or software patents do not even appear as important concepts. The reality of the Internet left the great blueprints—both anglosaxon and teutonic—as academic casualties.

This left researchers of IT & society with new challenges: They had to cope with a whole new set of problems for which answers had to be found fairly quickly, for many administrations wanted to take over the newly opened Internet space. But the way that founding fathers like Steinmüller and Kling had paved were blocked now. It were U.S. scholars who returned to an often tested scientific virtue : If a phenomenon cannot be grasped as a whole tackle it in a piecemeal fashion by asking smaller questions. In the end, one could hope that the set of answers would provide a deeper understanding of the whole setting. For the Internet and the information society, social scientist Elinor Ostrom with her work on «Governing the Commons» (Ostrom 1990) and legal scholar Lawrence Lessig with his work on «Code and other Laws of Cyberspace» (Lessig 1999) appear the most promising examples for this specific methodical approach. The notion that the commons might – in many though not all cases – offer a superior means to organize resources than other forms of property is the merit of Ostrom's work – the sum of more than 20 years of field studies of the commons around the world. Although these results were found in non-IT settings, they have been found extremely valuable when understanding that the Internet up to now has been organized as a commons. Lessig now allows us to put this into the perspective of the «information society»: The IT, more precisely the technical architecture or «code» forms the core infrastructure of our societies for the creation and distribution of knowledge – not different from roads, electricity networks or water conduits for other human needs⁵.

Thus, actually one cannot speak of a separation of IT and society. Instead they are

³ See for example (Dotzler 1993). Steinmüller retired from his chair at 1994 at age 60, not the least because of such less than favorable reactions from the academic community.

⁴ Read for example the comments for Kling's book at <amazon.com> and (Bellin 1993) for a review of the first edition of Kling's book: «The articles in this book raise problems and point to questionable practices, but do not give any weapons with which to attack the problems.» (p 18).

⁵ See also Frischmann 2005.

interwoven to each other. Marc Weiser, one of today's most cited engineers of vision, wrote in a path-breaking paper of 1991: «The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it.» We probably will live in an age «...where almost every object either contains a computer or can have a tab attached to it.» (Weiser 1991)

Lessig's works are also important for another reason. Recognizing different regulation modalities, such as the market or even the technical architecture, he cautions against the predominance of one modality, usually law, in regulating the Internet. Following these approaches, a new generation of more moderate scholars have taken up the challenge to look beyond a 'one size fits all' solution. Instead they strive first to acquire a deeper understanding of smaller problems which then could serve as a module for a larger understanding. This issue presents some of those new generation of scholars.

The contributions of Berlin scientists Spiekerman (management science) and Pallas (computer science) and the group of the Swiss computer scientist Hilty are remarkable examples for this trend. They use the development of ubiquitous computing (pervasive computing, ambient intelligence, „UbiComp“) as an opportunity to question core expectations for productivity. Obviously, the new technologies had to fulfil certain requirements on transparency. Otherwise these techniques will install «paternalism». Pallas and Spiekermann give evidence that the loss of control could be one main problem of the new technologies.⁶

Hilty's evidence goes a step further. Economists use the colourful term «rebound effect»: «If a good gets cheaper in terms of its price or any effort necessary to obtain it, the demand for this good usually increases. For this reason, efficiency improvements do not imply savings on the input side.» Hilty et al. give evidence that rebound effects not only worsen the efficiency of computer supported work. At the same token, the problem of e-waste seems to follow the same patterns. Consider «that IBM expects that in the next five to ten years about one billion people will be using more than a trillion networked objects across the world. This would mean that there would be an average of 1000 'smart objects' per person in the richer part of the world, each containing a processor and some communication module..... This value is on the same order of magnitude as today's e-waste in industrialized countries». It is far from clear how rebound effects could be harmonized with the aim of sustainability.

By the same token, academics have to deal with a fairly new development. They might perceive this fact as either a threat or an enrichment. A great part of improvements in the field of IT-technology is invented outside the established academic community or traditional firms or organizations, increasingly, improvements which cannot be explained without the usage of the Internet as a common tool of the developers. The public discusses the facts under the term of

⁶ «The [social] problem [associated with UbiComp], while often couched in terms of privacy, is really one of control.» (Weiser 1991).

«Open Source Software OSS», but, obviously, the dimension of OSS goes far beyond the mere technical dimension and is, thus, in many details unexplored and ambivalent. (e.g. Hope 2004)⁷ OSS has, historically spoken, its roots in an ideology of freedom which than was in conflict with technic-centric ideologies. (see Malone 2004 for the trend to decentralization) The «founding fathers» came from physics, mathematics, and of course, computer science. The success of OSS later on could be explained as the success of a certain model of licensing software. There is much evidence that this model is superior to the established models - especially when formulated in economic terms. Gehring uses OSS in his contribution as an example for the rise of new kind of institutions in our society. Economists share the opinion that this new type of institutions serves human needs better than the old ones. To what extend is the work of further research.

Gehring gives economic reasons for his point of view, not different from Fleissner, a researcher of econometrics from the Vienna University of Technology, in his contribution on commodification and value. Fleissner brings again to mind the ancient distinction of Aristotle, the value in use and the value in exchange. On the example of leading firms like Google and Amazon he gives evidence for a new type of value building processes. According to his thesis we witness a new balance of the value in use and the value in exchange. Including Hilty these articles suggest a trend in modern academic writing on «IT & Society», with own approaches where they differ from previous works of for example Kling and Steinmüller. Modern economics, specially institutional economics, have removed the than leading disciplinary approaches. Thus, it is not surprisingly that modern economists in this field has attained again the «foundations of human sociality». (Heinrich ea 2004; Fehr/Schwarz 2002) May be these attempts are successful in establishing economics as «mother» of all social sciences.

The age of «the» great unified theory for IT & society might be over. The scope for the academic dreams of Kling and Steinmüller might be narrow, but the room for their goals is still to be explored.⁸ Thus, we need to understand where computers are helpful and where not and we need to find a human degree for our decisions. Admittedly, today we have to handle the society as a whole, not just small parts. Until now we have not enough knowledge about the information society to frame a new theory. But, the approaches of the new academic generation are encouraging enough to harden us against a «pretence of knowledge». (von Hayek 1974)

⁷ In our Open Source Yearbook 2005 we refer to OSS as «Between software development and new models of society.» (Lutterbeck/Gehring/Bärwolff 2005).

⁸ The starting point for serious criticism of the current computerization was certainly the bestseller of (Weizenbaum 1976). It may be of some worth to read his book again.

References

- Bellin, David (1993): Book Review of Dunlop/Kling (eds.): Computerization and Controversy. Academic Press: New York 1991, in: ACM Computers and Society, December 2003: 15-18.
- Dotzler, Bernhard (1993): Alles, was Programm ist. Frankfurter Allgemeine Zeitung v. 28.9.2003.
- Fehr, Ernst; Schwarz, Gerhard (eds.) (2002): Psychologische Grundlagen der Ökonomie. Verlag Neue Zürcher Zeitung: Zürich.
- Frischmann, Brett W. (2005): An Economic Theory of Infrastructure and Commons Management. Minnesota Law Review, Vol. 89:917-1030, SSRN Electronic Paper Collection http://papers.ssrn.com/sol3/papers.cfm?abstract_id=588424.
- Galtung, Johann. (1981). Structure, Culture and Intellectual Style. An Essay Comparing Saxon, Teutonic, Gallic and Nipponic Approaches. Social Science Formation, Vol. 20: 817-856.
- von Hayek, Friedrich August (1974): The Pretence of Knowledge. Lecture to the memory of Alfred Nobel. December 11, 1974, <http://Nobelprize.org>.
- Henrich, Joseph ea (2004): Foundations of Human Sociality. Economic Experiments and Ethnographic Evidence from Fifteen Small-Scale Societies. Oxford University Press: Oxford.
- Hope, Janet E. (2004): Open Source Biotechnology. SSRN Electronic Paper Collection, http://papers.ssrn.com/paper.taf?abstract_id=755244.
- Kling, Rob (ed) (1996): Computerization and Controversy: Value Conflicts and Social Choices. 2nd Edition, Academic Press: San Diego.
- Lessig, Lawrence (1999): Code and Other Laws of Cyberspace. Basic Books: New York.
- Lutterbeck, Bernd; Gehring, Robert F.; Bärwolff, Matthias (Hg.) (2005): Open Source Jahrbuch 2005. Zwischen Softwareentwicklung und Gesellschaftsmodell. Lehmanns Media LOB.DE: Berlin, download <http://www.opensourcejahrbuch.de>.
- Malone, Thomas W. (2004): The Future of Work. How the New Order of Business Will Shape Your Organization, Your Management Style, and Your Life. Harvard Business School Press: Boston, MA.
- Ostrom, Elinor (1990): Governing the Commons. The Evolution of Institutions for Collective Action. Cambridge University Press: Cambridge.
- Steinmüller, Wilhelm (1993): Informationstechnologie und Gesellschaft. Einführung in die Angewandte Informatik. Wissenschaftliche Buchgesellschaft: Darmstadt.
- Weiser, Marc (1991): The Computer for the Twenty-First Century. Scientific American, Vol. 265, No. 9: 94-104.
- Weizenbaum, Joseph (1976): Computer Power and Human Reason. From Judgement to Calculation. W. H. Freeman: New York.