

FEYERABEND AND INFORMATION SYSTEMS DEVELOPMENT : AGAINST METHODS?

P Wernick
Department of Computer Science
Birkbeck College
Malet Street
London WC1E 7HX
England
E-mail: pwernick@bbk.ac.uk

Key Words

information systems, information systems development, software engineering, philosophy of science, anarchy, Feyerabend

Abstract

This paper outlines a critique, based on Feyerabend's view of science, of the current state of development and use of information systems. We suggest that, as Feyerabend claims for science, the development of information systems needs at times to be pragmatic, with a practice unbounded both by fixed, predetermined methods, tools and languages, and by the rational, logical approach and world-view which tend to underlie them. We also suggest that the use of computer-based information systems may inhibit progress in the social systems in which they are embedded by, with their rigidity, preventing necessary illogical and anarchistic behaviour by their users.

Information systems development is a comparatively young discipline, which has made rapid advances over its brief life. Despite this, it may be asked whether it can learn from other, older disciplines. Research in the physical sciences is one discipline whose underlying mechanisms have been subject to considerable scrutiny and analysis, from which conclusions and lessons have been drawn by philosophers of science. Can information system developers learn to improve their work by looking at conclusions and lessons drawn by philosophers of science?

Consideration of Kuhn's (1970) view of science as an endeavour largely undertaken by people working within and constrained by an agreed belief system (the 'paradigm' or 'disciplinary matrix') has generated a research programme intended to make explicit the content of the equivalent belief system of software development (Wernick, 1996; Winder and Wernick, 1996). We suggest that another philosopher of science, Feyerabend, also provides an interesting viewpoint on the development and implications of the use of software-based systems. We make this suggestion on the basis of a loose *analogy* between accounts of science and of information systems development; we do not intend to state that information systems development itself is some form of 'science'.

Feyerabend (1993) believes that an examination of the history of scientific progress shows that, in order to achieve scientific progress, times will arise when any predefined or fixed rules or ways of working have to be ignored, otherwise continued progress will not be possible. Feyerabend's view is that science needs to be pragmatic, with a practice unbounded by fixed, predetermined methods. In his own words, 'anything goes', in the sense that the scientist has to use whatever means are appropriate to achieve his or her goals. What might an information systems development discipline based on this principle look like? How might it differ from current practice? In much of current information systems development practice, as described by textbook authors and academics, we see the design and use of rigidly defined methods and techniques, sometimes enforced by process support tools which constrain developers to work in the way which their designers intend. Underlying each method, tool and technique is a predefined and immutable view of 'right' and 'wrong' ways to do the job. If information system developers were to adopt a more flexible approach, such as that claimed by Feyerabend to occur in science, would information systems development practice and products be better, worse or the same as is currently the case? If they were better, how would they be better?

Feyerabend further claims (1993, p.18) that a logically-based scientific process needs at times to make excursions into anarchy and illogic in order to make progress. 'Even a law-and-order science will succeed only if anarchistic moves are occasionally allowed to take place.' 'It is clear ... that the idea of a fixed method, or of a fixed theory of rationality, rests on too naïve a view of man and his social surroundings.' How well do real world processes containing computer-based information systems cope with this demand for flexibility? Those who develop computer-based information systems and the tools for the development of such systems assume (explicitly or implicitly) that the world they are dealing with is rational and logic-based. As a result, the models which they produce are also expected to be rational and logical; formal methods are only the most explicit expression of this. Feyerabend additionally states (1993, p.18) that 'without a constant misuse of language there cannot be any discovery, any progress'; but the verbal and graphical languages used to create computer-based information systems, and which form the virtual machines of those systems, are rational, logical, and deliberately designed to prevent ambiguity. Does this inflexibility prevent developers from developing the most appropriate systems by closing their minds to possibilities; especially if they inherit the language and its logic from their predecessors as they maintain or extend an existing system?

Feyerabend also states (1993, p.21 *et seq.*) his belief in the need for scientists simultaneously to hold contradictory theories and test each observation against each theory. Since any 'fact' is seen in the context of an underlying theory, some 'facts' may only be unearthed by using an alternative to any pre-selected theory. The implication for information systems development practice is that relevant information may not be identified by the use of only one method, tool or technique, which is inevitably supported by a single underlying disciplinary matrix (Wernick, 1996). This suggests that the use of different tools and techniques, each with its own underlying theory in a single systems

development, as in current software development frameworks, or perhaps the use of complementary soft and hard approaches, would be advantageous. It further suggests a change in the way in which these complementary approaches are used from sequential to parallel, simultaneously addressing the same aspect of a problem from a variety of viewpoints. This contrasts with 'mainstream' current information systems development theory and practice, which is based on the idea of addressing any one part of the problem or process in the light of *one* single method, tools and technique, and thus of only one theory.

Finally, Feyerabend's ideas provide a starting point for deeper questioning of the wider influence of software-based information systems on their environments. The inevitable rigidity of operation of such systems may prevent useful illogical and anarchistic behaviour, which Feyerabend sees as a necessary condition for progress. How do real world processes incorporating computer-based systems cope with this demand for flexibility? If they fail to do so, do computer systems inevitably inhibit progress in the social systems of which they form part by preventing 'anything goes' pragmatism with their rigidity? Do they sterilise the parts of society they inhabit? Do they slow the evolution of the social systems which they purport to support?

In conclusion, we believe that the use of Feyerabend's work, in combination with previous work based on Kuhn (Wernick, *ops. cit.*), strongly suggests that the discipline of information systems development can learn from the philosophy of science. By taking the philosophies of science as a starting point, it is possible to pose fundamental questions concerning how best to advance information systems development theory and practice. In our view more detailed research, both in exploring Feyerabend's work in greater depth and in looking at that of other philosophers of science, is likely to be fruitful.

References

- Feyerabend P (1993) *Against Method*; third edition London, Verso
- Kuhn TS (1970) *The Structure of Scientific Revolutions*; Second Edition, enlarged; University of Chicago Press; Chicago.
- Wernick P (1996) *A Belief System Model for Software Development: A Framework by Analogy*, PhD thesis, Department of Computer Science, University College London.
- Winder R and Wernick P (1996) *Building a model of computer-based systems development: testing elements of the disciplinary matrix*, in Jayaratna N and Fitzgerald B, *Information Systems Methodologies 1996 – Proceedings of the 4th Annual Conference on Information Systems Methodologies*, British Computer Society Information Systems Methodologies Specialist Group, Cork, Ireland, 12-14 September 1996, 129–141