Journal of Information Technology (2004) 19, 165–171

palgrave-journals.com/jit

Debates and Perspectives

Paradigm wars: ceasefire announced who will set up the new administration?†

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Abstract

This paper presents a personal overview of the history of the IS discipline over the last 20 years. It highlights two particular strands of development over which there has been much controversy – the so-called paradigm wars which were an epistemological battle between positivism and interpretivism; and the related debate over a critical approach to information systems. It is argued that the battle has died down and a period of stability has emerged. But further development needs to occur, especially in the area of critical management, and the philosophy of critical realism can be a significant way forward.
Journal of Information Technology (2004) **19,** 165–171. doi:10.1057/palgrave.jit.2000021
Published online 3 August 2004
Keywords: critical realism; critical theory; epistemology; ontology; paradigms

Introduction

The paradigm wars have been raging for over 20 years but we can now announce that at long last a ceasefire has been agreed. Whether through the 'unforced force of the better argument' (Habermas, 1974: 240) or simple exhaustion and boredom both sides now recognise the legitimacy of the other's position. Generally, positivists now accept that there are important aspects of the social and psychological world that simply escape measurement and quantification, and that interpretive research can be both insightful and rigorous. Interpretivists in their turn accept that there are important aspects of the world, including the social world, that go before and beyond the individual's meanings and beliefs, and that quantitative analysis can sometimes be useful. There are of course pockets of resistance on both sides who will carry on guerrilla campaigns.

The question is now, what will the complexion of the new order be? Will the two sides remain apart in uneasy mutual toleration, staking out their particular territories and enclaves in university departments and journals? Or will there be a dialectical impetus towards some new synthesis that goes beyond either? If there is, will it be able to develop the critical agenda that seeks to challenge the complacency of today's practice in the hope of realising a better future for all?

A personal reflection on the war

My personal background,[1] along with many of those who became involved with IS/IT, was basically scientific. My first degree was in Management Sciences and I specialised in operational research (OR) and computing. At the time, OR was a relatively new subject and I engaged wholeheartedly with its underlying premise – OR was the science of rational action. In order to make a decision about some course of action, define the objective (usually assumed to be minimising costs or maximising profits); collect relevant data; build mathematical or computer models of the various options; and choose the optimal one. This seemed to my scientific mind eminently sensible, and I embarked on a career in information systems (or systems analysis as it was then called) and OR with several large companies confident that the power of computer-based modelling would solve all problems. It is interesting to note, for the later discussion, that many of the founders of OR in the 1940 s were of a strongly left-wing persuasion and genuinely believed that OR would make the world better for the majority of people (Rosenhead, 1987, 1989; Mingers, 1992a).

Sadly, I was in for a rude awakening. While there were some occasions where a fairly standard technique such as mathematical programming was genuinely helpful to a manager, I soon discovered that real-world organisations were not easily and tidily fitted into mathematical models – they had social and political dimensions which were not touched by the OR techniques I had learnt. There were interpersonal problems of dealing with people – communicating with them, gaining their confidence, understanding what they were really wanting (to the extent they themselves knew), and convincing them of one's proposals.

There was the discovery that neither managers, nor for that matter myself, spent all out time single-mindedly 'maximising profits' or 'minimising costs'. Rather we had a whole range of organisational and personal goals that, in reality, we pursued but which I could not formally model, or even acknowledge. There was the embarrassment of relying on data that turned out to be patchy, often impossible to measure, and as much a reflection of its own processes of production as a reflection of 'objective' reality (Mingers, 1989). Most importantly (and shockingly) I discovered the politics of organisational life. The projects that never got started because certain people refused to cooperation or provide information; the projects that were eagerly welcomed because they could be used by one department against another; and the antagonism towards us, and indeed attempts at sabotage, when our studies threatened the power position of particular groups. These "extraneous factors", that were never mentioned in OR or IT books or courses, seemed to have more influence over the success or otherwise of my work than anything I might do with my formal knowledge.

Soft systems

These experiences led me to systems thinking as it promised a holistic approach that might have the potential to bring quantitative approaches together with the social and personal aspects of organisations that I had experienced. I decided to return to academia and joined (in 1976) virtually the only postgraduate systems course in the UK, that at Lancaster. This was much more fortunate than I realised for this was the time when soft systems methodology (SSM, although not yet christened) was being developed by Peter Checkland and others who had had very similar experiences to myself.

Checkland began as a scientist gaining a PhD in Chemistry from Oxford before joining ICI as a research chemist. During 14 years at ICI he rose to become the manager of a large research department and this experience shaped all that he tried to achieve at Lancaster. In becoming a manager he discovered for himself the peculiar difficulties of dealing with human organisations, and the general inability of textbook management science to resolve the idiosyncrasies of people-centred problems. As he later famously said, '… in 14 years as a manager, I personally was continually puzzled by the irrelevance of text-book management science to my real problems' (Checkland, 1980: 320). Checkland arrived in the newly formed Department of Systems Engineering in 1969 and already could see clearly *what* he wanted to achieve without knowing *how* to do it. His inaugural lecture (Checkland, 1969) foreshadows the major themes of soft systems thinking. He saw his task was to take conventional, hard *systems engineering* and, through practical engagements, develop it to be able to deal with the humanness of human beings and in particular highlighted the importance of irrationality, creativity and values, all of which went unrecognised within systems engineering and information systems.

During the next 3 years, after a series of projects on unstructured problem situations, many of the basic tools of SSM were developed. One study of interest was in designing an information system for a textile company (Checkland and Griffin, 1970). This recognised that systems ideas were helpful for *structuring* messy situations rather than *solving* problems; constructing notional systems rather than simply redesigning what already existed; and recognising that information needs followed from properly designed organisational activities. It thus predated BPR by some 20 years.

For myself, I became convinced that here was a genuine attempt to deal with the actual reality of organisational life, but one which employed a rationality very different from that of traditional science. By the end of my Masters I was wholly converted to SSM as embodying a new way of thinking about interventions in organisations, and I looked back on operational research and its abstract mathematical formalisms as virtually useless for dealing with real-world problems. From a later perspective this was clearly the over-zealousness of the convert and I will discuss some of the limitations of SSM, and the interpretive/phenomenological approach more generally, shortly.

SSM soon started having significant impacts in other disciplines, at least in the UK and Europe, particularly MS/OR and information systems. Within MS/OR there was recognition of the limitations of the hard approach and there had been much debate during the 1970 s about the way forward (Ackoff, 1974, 1977, 1979a, b). Methods that had similar intentions to SSM were also being developed, for example cognitive mapping (Eden *et al*., 1983) and strategic choice analysis (Friend and Jessop, 1977), but none had the sustained impact of a series of well-argued papers by Checkland (1980, 1981, 1983, 1985). The main thrust of these papers was: to put forward the now familiar distinction between hard and soft systems; and to then argue that traditional MS/OR assumed that systems existed objectively, and that goals and objectives could be clearly stated and agreed. It was therefore appropriate for particular situations where the 'logic of the situation' (e.g., a production process) was dominant, but not for situations dominated by culture and meaning. MS/OR and soft systems were thus complementary, either applying to different situations, or able to be used sequentially with a soft study generating agreement about objectives for a hard study of means.

Surprisingly, perhaps, my impression is that there was actually very little debate or antagonism towards what could be called soft OR. In part this was no doubt because it was pushing at an open door. It was generally recognised, certainly by OR practitioners, that there was much more to successful OR/MS than simply the techniques, and anything that tried seriously to address the social and political issues was welcome. However, it did to some extent lead to a schism between those who saw themselves as basically 'hard' and those who saw themselves as 'soft', particularly on the academic side of the discipline. Even today, the vast majority of papers published in, say, *J. Operational Research Society* are of a traditional mathematical nature.

Within information systems, similar moves in an anti-positivist direction were also being made, not least the 1984 IFIP 8.2 conference (Mumford *et al*., 1985) which aimed to stimulate interest in new research methods in IS research. SSM was again heavily involved although not really in the US. Wood-Harper *et al*. (1985) constructed an IS development methodology based at least partly on SSM; papers

comparing SSM and traditional design methods appeared in the *The Computer Journal* (the journal of the British Computer Society) (Avison *et al*., 1987; Benyon and Skidmore, 1987; Mingers, 1988); and a series of seminars were held (Mingers, 1992b) discussing whether to, and how to, link SSM to traditional IS development methodologies which culminated in several special issues of *Systemist* and a book (Stowell, 1995). Information systems became ever more important in the applications of SSM and Checkland and Holwell's (1998) book was actually devoted to SSM and IS.

As with OR, SSM was not the only non-positivist approach. The main one was interpretivism (Walsham, 1993, 1995a, b; Lee *et al*., 1997; Lee, 1999) which emphasizes the inherent *meaningfulness* of the social world. Several different strands can be identified – for example, ethnography, (Harvey and Myers, 1995) hermeneutics, (Boland, 1991; Myers, 1994; Olson and Carslisle, 2001) ethnomethodology (Crabtree *et al*., 2000; Bhattacharjee and Paul, 2001) and phenomenology. (Boland, 1985; Coyne, 1995; Dreyfus, 1996; Introna, 1997; Mingers, 2001b). While the importance of soft approaches was accepted fairly readily outside the US, it was much harder for it to make headway in the top, largely US-dominated journals which still published mainly positivist research as been demonstrated in several surveys of the literature (Orlikowski and Baroudi, 1991; Walsham, 1995a; Nandhakumar and Jones, 1997; Mingers, 2003) as well as in more theoretical contributions. (Banville and Landry, 1989; Benbasat and Weber, 1996; Hirschheim *et al*., 1996; Iivari *et al*., 1998; Goles and Hirschheim, 2000). Even in the early 2000 s, when journals such as MISQ and ISR had recognised the legitimacy of non-positivist research, relatively little is published.

Critical systems

I must return briefly to my personal journey. Having embraced SSM and its phenomenological underpinnings whole-heartedly I began to discover the limitations of such a philosophy. If you follow this path to its logical conclusion then you end up in a solipsistic pit from which it is difficult to escape. Every theory becomes simply another viewpoint or Weltanschauung, another interpretation of the world, no better or worse than any other. There can be no external social world that enables or constrains us, indeed no world at all that is more than a construction of the observer:

> {we} need to remind ourselves that we have no access to what the world *is*, to ontology, only to descriptions of the world, … that is to say, to epistemology. … Thus, systems thinking is only an epistemology, a particular way of describing the world. It does not tell us what the world *is*. Hence, strictly speaking, we should never say of something in the world: "It is a system", only: "It may be described as a system". … The important feature of paradigm II {soft systems} as compared with paradigm I {hard systems} is that *it transfers systemicity from the world to the process of enquiry into the world*. (Checkland, 1983: 671)

This recognition, not just on my part, led to the development of a 'third way' – *critical* systems thinking – drawing in the main on the work of German sociologist Jürgen Habermas (Habermas, 1974, 1978). First, it was pointed out that there were in fact some parallels between SSM and critical theory in their rejection of positivism as an appropriate rationality for social intervention (Mingers, 1980). Then both Jackson (1982) and Mingers (1984) produced strong critiques of the subjectivism and regulatory nature of soft systems. Jackson's paper in particular generated a heated debate which rumbled on for some years (Ackoff, 1982; Checkland, 1982, 1992; Churchman, 1982; Jackson, 1983; Flood, 1993) without reaching any substantive conclusion.The main tenets of critical systems as it developed were two fold:

1. To critique both positivism and interpretivism thus demonstrating that whilst both had a degree of validity in particular circumstances neither had a sole claim to truth and so other approach(es) were necessary. At the time this was seen as Habermasian critical theory; now I would argue that it is critical realism.
2. To critique the inequitable and repressive conditions prevailing in society in order to bring about a fairer and more rational one. In the emotive words of Edward Said:

> It is not practicing criticism either to validate the status quo or to join up with a priestly caste of acolytes and dogmatic metaphysicians … {t}he realities of power and authority – as well as the resistances offered by men, women, and social movements to institutions, authorities, and orthodoxies - are the realities that … should be taken account of by criticism and the critical consciousness. (Said, 1983: 5)

The development of a critical approach also occurred in other parts of the IS discipline, for example the language action approach of Scandinavian academics (Lyytinen and Klein, 1985; Lehtinen and Lyytinen, 1986; Lyytinen and Hirschheim, 1988; Lyytinen, 1992) and the critical theory of some Americans (Klein and Lyytinen, 1985; Hirschheim and Klein, 1989; Ngwenyama, 1991). For a detailed survey see Klein and Huynh (2004).

The later stages – pluralism

Once interpretivism and then critical theory had entered the scene, several other positions were also proposed, for instance postmodernism, (Ciborra, 1998; Robinson *et al*., 1998; Greenhill, 2001) and actor-network theory (Walsham, 1997). There has been a range of reactions to this plurality of philosophical approaches. *Imperialists*[2] argue for the dominance of one particular paradigm (usually positivism), either on epistemological grounds (that it is the correct way to generate knowledge) or in the belief that it is necessary to create a strong discipline (Pfeffer, 1993; Benbasat and Weber, 1996). *Isolationists* tend to accept the arguments of Burrell and Morgan (1979) that there are distinctively different paradigms within a discipline and that these are generally incommensurable (i.e., cannot be directly compared with each other because they are based on radically different assumptions) – therefore research should develop separately within each paradigm (Parker and McHugh, 1991; Deetz, 1996). Finally, *pluralists* accept, and indeed welcome, a diversity of paradigms and research methods.

Within this group we can distinguish between those who welcome diversity for its own sake (Van Maanen, 1995a, b); those who see different methods as being more or less appropriate for particular research questions or situations (Landry and Banville, 1992; Robey, 1996); and those who argue that research should strive to be trans-paradigmatic, routinely combining philosophically distinct research methods (Goles and Hirschheim, 2000; Mingers, 2001a). The information systems discipline is not unique in respect of this diversity – most social sciences, for example, organisation theory, sociology, economics or geography, are equally split.

The ceasefire and the future

So, to what extent can we characterise the current situation as a ceasefire, and what of the future?

The ceasefire

First, with regard to the differing research paradigms it does seem to me that there is, in general, an acceptance of at least the hard and soft approaches. Even the most traditional of journals such as MISQ and ISR have accepted qualitative research (Introna, 2001). However, there are several caveats to this. The whole institutional culture, especially in the US, makes non-traditional (i.e., non-positivist) research a hard proposition especially for the younger researcher still seeking tenure (Applegate and King, 1999). This is borne out by a recent survey of the IS research literature (Mingers, 2003) which found that observation, surveys and case studies accounted for 63% of all papers describing empirical research. When experiments and interviews were included this rose to 85%; thus only 15% of instances used "non-traditional" research methods. The proportion of multi-method research is also quite low (20%) and the vast majority of that is combinations involving questionnaires, interviews and case studies. So, hostilities have ceased but in practice individuals, departments, and journals still tend to occupy their rather narrow enclaves and seldom venture to meet the other side.

However, the picture with regard to critically inspired research is much less healthy. With a few notable exceptions (e.g., Ngwenyama and Lee, 1997) there has been little work with a strong critical element[3] although just recently there has been a conference devoted to critical IS (Salford, 2001) and a special issue of the Journal of Information Technology (June 2002). Nor is there much development on the theoretical side. Habermas's theory of knowledge-constitutive interests, the basis of the early critical IS work, was itself extensively critiqued (Thompson and Held, 1982; Honneth and Joas, 1991; McCarthy, 1991; Mingers, 1997b). Habermas himself developed his theory into that of a theory of communicative action (Habermas, 1984, 1987), which shifted the focus away from science and knowledge as such towards the underlying structures of language and communication. Midgley (1992) and Mingers (1997a) used this as the basis for a multimethodology approach to intervention and research. Another source of potential interest here is the work of Foucault (Foucault, 1980, 1982) and his critique of rationality and power/knowledge. This has developed extensively in the social sciences but apart from Zuboff's (1988) seminal book there has been little follow-up (Willcocks, 2004).

This is certainly unfortunate because now more than ever we need to develop, in researchers and indeed in managers, an ability to critically reflect on current practices and assumptions. Through processes of globalisation, trans-national corporations are gaining ever more power at the expense of nation states. Increasingly, it is the decisions made by managers in the likes of Microsoft, Shell, etc. that are shaping the world of the future. Such managers are not elected; nor do they necessarily have allegiance to values other than those of the corporate shareholders or their own future career. This makes it vital that management education, whether at degree or post-experience level, has at its core a grounding in values and ethics; is not simply technique-driven; and develops a questioning and critical attitude (Alvesson and Willmott, 1996, Mingers, 2000b).

The future

Both of these issues – research paradigms and critical management – can be addressed by a philosophical approach that has been developing within the philosophy of science for 20 years: critical realism (Bhaskar, 1978, 1979, 1993; Mingers, 2002). This has arisen in response to the fundamental difficulty of maintaining a realist position in the face of the criticisms from interpretivism, constructivism and post-modernism of an empirical and naturalist view of science. It is becoming influential in a range of disciplines – geography (Pratt, 1995; Yeung, 1997), economics (Fleetwood, 1999; Lawson, 1997), organisation theory (Tsang and Kwan, 1999), sociology (Sayer, 2000), and research methods in general (Sayer, 1992; Layder, 1993). Its aims are:

(i) To re-establish a realist view of *being* in the ontological domain. That is, to demonstrate the existence of an independent domain of structures and mechanisms, physical and non-physical, that generate the events we experience in both the natural and social worlds.
(ii) At the same time, to accept the inevitable relativity of knowledge as socially and historically conditioned in the epistemological domain.
(iii) To argue for a critical naturalism in social science. The use of the qualifier 'critical' reflects several themes. First, that mentioned above – that it is not naively realist or naturalist, accepting significant limitations on the objectivity of our knowledge. Second, and relating to critical social theory, is the argument that no social theory can be purely descriptive, it must be evaluative, and thus there can be no split between facts and values, and, following from this, the view that social theory is inevitably transformative, providing an explanatory critique that logically entails action (Archer *et al*., 1998, Part III).

This, I believe, is an important new direction for information systems in the future.

Conclusions

The call for papers for the 2004 IFIP8.2 conference in Manchester (20 years after the first one mentioned above) talks of the radical "young Turks" who founded it 20 years

ago in order to challenge the stultifying *status quo*. Where are those young Turks now? In many instances they (we!) *are* now the Establishment, well-paid Professors managing departments and institutions, and travelling the world. According to Marx this should be good news for the radical agenda; for realising critical management. For he argued that, "{t}he ideas of the ruling class are, in every epoch, the ruling ideas" (*German Ideology*). So, if we are the rulers why are our ideas not the ruling ideas? Why are they still on the margins? Why have we still so much to achieve?

The answer to this is deep and complex but perhaps in part it capitalism's amazing ability to absorb and enrol the most antagonistic force, and in part our own inevitable ageing and mellowing. We are no longer enraged at the unfairness, injustice and sheer insanity of the world to which we were born. Indeed, we have all done rather well out of it and now in many ways have a vested interest ourselves in the maintenance of the *status quo* rather than its disruption. It is now the time for the next generation to challenge the way thing are, and indeed that means to challenge us.

Notes

† Parts of this paper draw on Mingers (2000a).

1 In this personal section, I will discuss operational research (OR) as well as information systems, and will concentrate on soft systems methodology (SSM) and critical systems thinking (CST) as these are my own particular backgrounds.

2 These terms are based on an analysis of the discipline of organisation theory by Reed (1985).

3 Indeed, when I submitted a paper to ISR with a critical slant one referee said that the critical approach was not popular with an American readership and should be cut out!

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