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# Critical Realism: he who pays the piper calls the tune

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## Abstract

*The history of information systems research is steeped in a quest for appropriate methodologies, rigueur within complexity and an evolution of approaches. Currently this evolutionary trend may be seen to culminate in a siding of IS research within critical frameworks. In this paper we will draw on a relationship between IS research and system analysis to use similarities and differences in an attempt to aid understanding in how such a parallel may influence the development of IS analysis. Could efforts to create connections across different critical approaches initially be described as a kind of critical realism?*

Key Words: critical realism, information systems analysis, information systems research

## **1. Introduction**

The history of information systems research is steeped in a quest for appropriate methodologies, rigueur within complexity and an evolution of approaches. Such an evolution of approaches may be apparent in an eclecticism of methodologies now identifiable within information systems research (Galliers, 2003). The current state of this evolutionary trend may be seen to culminate in a current siding of IS research within critical frameworks. The main subject of IS research has been rooted in observations of many decades of information systems development (Straub, 2003). In this paper we will draw on a relationship between information systems research and system analysis to use similarities and differences in an attempt to aid understanding in how such a parallel may influence the development of information systems analysis.

With an exploration of roles played by analysts and researchers what responsibilities (within such roles) may be considered similar? Could a relationship between a particular analyst and the relevant stakeholders in a specific development project, epitomized in tensions between: a) needs and understanding between users, b) objectives of budget holders and c) demands of shareholders, share a similar space to those experienced by researchers answering requirements of the publishers of their work, commissioners of research project and needs of the participants within a specific research project.

Researchers who try to fulfill certain expectations of some stakeholders adopt many theories, methods and models. But whose interests are being best served by such alignments? Is the role of the piper payer dominant in a researchers quest for truths, will, which payer and which piper dictate which is the particular tune selected?

The evolution of a field of information systems research now incorporates many approaches from both theoretical and action research practice, both within its subject boundary, and complemented by additional external resources. Information systems research has benefited from developments within systems science, complexity theory, cybernetics and critical theory etc. Whilst certain strands of participatory approaches and contextual analysis have developed from within IS research.

Issues of validity and rigueur in IS research are apparent in its continuous emancipatory battle for freedom from some of the constraints of computer science et al. Such a battle continues to be fought in the practice of systems analysis and design where good practice (or even 'what' good practice entails) can be seen to be legitimating an expansion over constraints that have been traditionally presented and experienced within overly narrow definitions of computing. If computer science under certain circumstances can be said to have tendencies to focus on rigueur, then when information systems is intertwined with a critical approach it may be described as having a focus on relevance (e.g. Lee, 2000, Bacon & Fitzgerald 2001).

Could efforts to create connections across different critical approaches initially be described as a kind of critical realism?

## **2. A Problem:**

One general aim in IS research is to develop an understanding of some kind of reality with a purpose to develop a knowledge base which could be drawn upon to reduce IS-projects failure in the future. Why would we need to reduce them? The assumption in this paper is that it ought to be possible to progress better ways of developing and using ICT infrastructure. A major problem with such suggestions is that it is not always obvious on who's behalf (or in who's interest) goals are or are not met. Never the less we suggest that information system development cannot be viewed as an activity isolated from the surrounding world. A technical information system should certainly not be isolated from the working environment which will influence its development and which will certainly influence future directions of a working environment. IS development comes down to a parallel development of the working organisation and system (Poulymenakou A. & Holmes A., 1996). This may all sound familiar with nothing new or specific to IS development and research, but if the knowledge exists then why so many failures? That knowledge and possibilities alone were not enough to make an impact on everyday activities and practice was showed in Bednar et al (1985). In the material research area there seemed to be a lot of knowledge of the pros and cons of using boron steel. The major industrial players had much competence and knowledge within the domain. Unfortunately the traditions and culture in the businesses did not support the move from the use of more traditional special steel (chrome-molybden-vanadim) to boron steel.

That IS development is closely connected to organisational matters can be looked upon as obvious but the actual system analysis and design may remain isolated within the organisation. This was discussed by Bednar and Wang (1994) where several ongoing and partly parallel system development processes were investigated over a two year period. One of the system development processes was interconnected with ISO 9000, another was closely related to organisational strategy and TQM and a third was an organisational IS system. All were more or less undertaken in isolation, so the analysis of the organisational impact and needs was questionable. Why should this be a problem? If they all highlighted organisational issues what then made it possible to put organisational matters on "somebody elses table"? IS analysis and development is supposed to consider organisational issues, but problems arise where IS is looked upon as a subsystem of the organisation (Bednar (1999). The approach suggested by Bednar (1999) was that the organisation itself is to be viewed as an IS. If the organisation is seen as the IS, many of the major difficulties involved in making more rigorous organisational analysis may be avoided.

### **3. Information Systems in context**

This section aims to contextualise, a description of what could be envisioned as the core of (organisational) information systems. The background to this description could be said to have its starting point in the assumption that there are many diversified understandings of what information systems could imply and comprise. The differences between diverse understandings shapes a wealthy ground from which misunderstandings may emerge. Explicitly stating that certain misunderstandings may occur can be seen as an attempt to bring the understanding of individuals under question. The resulting discussion surrounding individual differences of understanding of the relationship between such terms as organisation, information system and a number of generic 'users' create a communicational space. This discussion is viewed as a point at which more informed information systems projects may be undertaken and, the focus of this work. Such initial discussions enable wider theoretical discussions towards a definition of information systems:

Information systems are systems where information technique is used for information treatment, which aims to transfer 'messages' in time and space. (Bednar, 1999)

Drawing on Bednar (1999) there are two ways in which this definition may be understood are: IS(1) and IS(2). The first IS(1) is delimited through individuals and their use of hard and software. The other, IS(2) also extends such a delimited usage to include the wide range of inter individual communication. Another important difference is that information systems according to IS(2) are equivalent to the organisation in context. Both interpretations could be seen as usable, but a successful use of IS(1) would in an organisational perspective need to pre assume an active understanding and work in accordance with IS(2). This is because organisations are comprised of individuals with their own social communicational networks and consideration of the total information system would benefit from the inclusion of such networks. The co-play between technology, individual and organisation is the core of this matter.

Information systems is obviously a key concept and a discussion around the understanding of this term may be seen as a prerequisite for professional information systems work. The discussion of key concepts may be utilized to attempt to forge a level of consensus between the owners and users of such terms in order to raise issues that may prove troublesome to the work in question. Such discussion of understanding are undertaken in order to support active reflection on terminology where there may be many levels of comprehension that may be coupled to problematic circumstances in an area of interest or systems focus. These circumstances are to a greater part strongly associated with the discussion about which signification the meaning of information systems could have given organisational or societal perspectives.

#### **4. A Method:**

What can we as researchers do? - Try to "visualise" a "new" way of looking at what IS can mean. This may, for example, then raise a greater awareness of a needed integration between "macro" and "micro" perspectives. IS analysis and individual contexts are also about communicational contextual influences both for systems and information system development. The reasoning is, that it is possible to visualize flexible IS systems as undergoing a process of continual development or construction and reconstruction, where the reflections over the perceptions can

be seen as an ongoing learning process (see Walsham G, 1993). How do we intend do it?

Through combining the knowledge based in a number of diverse areas and to integrate those areas and theoretical approaches in one suggested problematized framework. The "micro" area is based upon an individual perspective, often represented in HCI, philosophical and cognitive IS research. The "macro" area has its base within IS strategy, organisational IT, organisational IS and information systems methodology research.

#### **4.1 Understanding and Communicating.**

It does not matter if the ambition is only to give recommendations about how 'things should be', for instance criteria or principles, or if the 'only' wish is to share an understanding (or misunderstanding) of the world and context relevant to the problem situation. The identification of the 'correct' (if there can be such a thing) interpretation is the owned by the users of the methodology. It is therefore the 'problem solver' that decides under which forms and combinations of descriptions and language use the communicative interactions can be made. The mentioned communicative interactions are those that make the base for the social construction of the world (e.g. Habermas, 1984).

The relation between theory and praxis within system science and cybernetics ('version 1') has sometimes been understood as a question of technology (or techniques). Of course it also has been argued that such an approach denies the human capacities of actors in the social construction of 'reality'. Control is then presupposing humans as passive objects (e.g. Weiner, 1948; 1950). To be efficient the social engineering then would be necessitated to use pressure and different kind of power. That this would ultimately lead to totalitarian regimes is well known today. There is a more developed version 2 of cybernetics that with proposed relationships to hermeneutic dialectics might be looked upon as an effort to accommodate concepts such as 'freedom' for individual agents. Gregory Batesons' (1972) work in systems thinking is a clear distinction from cybernetics version 1 and focuses on emancipation of individuals within a societal context. Furthermore when looking at the theory of Autopoiesis (Maturana & Varela, 1998) we can clearly see similar emancipatory tendencies. Unfortunately this knowledge is not always transformed in to the everyday life within western culture. It could be argued that some of the ideals of social engineering (drawing on common ground with cybernetics version 1) are also well included within some organisational theories.

Some examples can be found within organisation and management activities (practice). Economy as science can in a broader perspective be looked upon as social engineering. Especially when it is trying to support technical solutions that leaders could be willing to incorporate within 'their' organisations.

If the use of 'power' is less obtrusive the effects can be seen as relatively small but still there would be some kind of effects. It is the questionable results of, and lack of efficiency within, the art of social engineering that could be the reason for the great pressure on the use of IT. To be accepted in the 'modern' society a method or methodology would arguably in an extent have to be oriented and focused somehow on an actor perspective. It would probably also within that perspective have to allow people to take part of their own definitions, and definition making processes.

## **5. 'New' Ideas.**

Critical thinking is a popular phenomena, and variants of this thinking contribute to the post-modern discourse. But in its extreme form the denial of ideas relating of any kind of 'truth' could lead to an ultimate and destructive form of skepticism. Whilst being very supportive of criticism, the view in this paper is that total relativity is an unproductive concept to fully embrace.

Although some deconstructive elements of post-modern discourses may be utilized to support an understanding of social phenomena and may therefore be useful for guiding reorganization or in support of IS development implementation or research. Such an adoption of deconstruction may be seen to support critical systems thinking where 'system thinking' in this case is not a metaphor but rather a 'figure of thought'.

System thinking can be used to identify aspects within both the organisation which is studied and the problem situation of concern. There is however a need for care as the 'system' is dependent on the people within it and therefore it is necessary to study how their actions revive, correct, uphold and change this system. Structuration theories and the work of Giddens (1984; 1991) do seem to support this kind of inquiry and systems thinking.



What constitutes a social system is grounded in the relation between the actors. These are mainly communicated with the help of their language (inclusive behaviour). The ability to understand the 'system' or how it could be changed or reorganised would most certainly be dependent upon the communicational abilities of the actors involved. The manner in which communicating actors interpret what they have individually learnt may be described as 'sense-making'.

Sense-making is something which is critical to Soft System Methodology (Checkland, 1981), and is also of major concern within debates of communication theory (Dervin, 1989). Sense making is of interest whilst some kind of understanding (or misunderstanding) forces an extrapolation from individual interpretations and subjective experience.

### **5.1 Reflections on Analysis**

What does analysis mean? It is clearly not obvious what analysis is, what it stands for or even the scope of current thinking especially ideas and descriptions from within a field of study as diverse as 'Information Systems'.

Analysis could be looked upon and/or described as an activity where ones actions are supposedly supporting an understanding for the surroundings of a future IT system. It could also be argued that such a definition should support aspects of decision-making. Such decision-making would then be a description of the possibility to make choices understood as relevant to some externally viewable qualities.

It is however a problematic issue that although many descriptions at a meta-level look similar they are nonetheless very different in substance. For instance it sometimes is clearly supposed that some kind of system definition already exists when the analysis is begun. This is a totally different approach and understanding of what is presented in SSM (e.g. my interpretation of SSM).

If we look on the 'seven-stage' model presented in SSM, step 7, is similar to the point, which in many (too many?) methods is presented as the starting point for what they call the 'analysis' phase. This is therefore a problem of definition. So what some methods call analysis is in some other methods rather presented as 'implementation' or 'design'.

So then we might ask ourselves, where should we start when discussing a description of an analysis stage in a methodology?

## **6. A Contribution:**

The questions raised in summarising the previous sections, how do we agree a definition of information systems?, how should we promote understanding and communication?, what do we mean by analysis?, lead us to the identification of an underlying philosophy which can contribute to more meaningful discourse.

Meaningful discourse is fundamental to effective Information Systems research as well as information systems analysis. It is proposed here that critical realism might offer a philosophical framework which supports the development of meaningful and productive discourse for IS. This is not a new proposition (e.g. Carlsson, 2004, Dobson, 2001). Bhaskar (1978) outlines what he describes as the real, actual and empirical domains of a form of realism. These domains are crucial to the investigation of an ontologically stratified and differentiated world. In a world of Information Systems, critical realism may offer an opportunity to acknowledge and study ('scientific', 'objective' and 'technologically' justified) facts and values as intertwined and difficult to disentangle from embedded beliefs, values, biases and prejudices of the people who use them.

It can however be argued that it is impossible for the social scientist to take this detached view of values, as he/she is a member of society and culture, motivated by personal presuppositions and beliefs. Weber admits:

There is no absolutely 'objective' analysis of culture ... or of 'social phenomena' independent of special and 'one-sided' viewpoints ... All knowledge of cultural reality, as may be seen, is always knowledge from a particular point of view. (Weber, 1949, pp72-81)

Critical Realism is promoted as an alternative to a dichotomy between positivism versus interpretivism (Bhaskar, 1978). It is an effort to create a more inclusive and systematic view of a relationship between the natural and social sciences. The relationships between these areas, does suggest that humans are governed by chemical, physical and biological laws. Humans however,

can do things that go beyond what the chemicals of which they consist could do if only specific chemical laws were followed. So Critical realism includes the proposition that the study of humans cannot be reduced to the study of their biological, physical and chemical properties (Collier, 1994, pp107-9). Some of these assertions could be related to statements such as 'when we look inside peoples heads all we see are brains (Garfinkel, 1967).

Critical realism (according to Bhaskar, 1978) includes a transformation model of social activity which can be seen as an effort to deal with problems of social reductionism and psychological reductionism. This may be viewed as a profoundly integrationist view of the relationship between individual and society. The intention is that instead of focusing the research efforts on a) society to understand individual behaviour, b) individuals to understand society, or both. Bhaskhar describes a reciprocal interaction between individuals and society resulting in a transformation of both. Individuals and societies being mutually interdependent where individual behaviour and beliefs are influenced by the surrounding society and the behaviour in turn transform this same society.

## **7. Discussion and Conclusion**

As visible from within hermeneutic dialectics, there is no such thing as mixed methods (e.g. Radnitzky, 1970). The hermeneutic dialectic take on mixed methods is to begin with not an obvious but a little noted heresy. The reason being that an idea of mixed methods only makes sense in opposition to the idea of un-mixed or even "pure" methods. If there is a difference between scientific paradigm and method then there are no un-mixed methods or any mixed methods. Or more appropriately - both can always exist from within any same paradigm. So within a specific paradigm and a specific case it can only be justified that there are only adequate or inadequate methods.

Start with the seemingly easy one: quantitative methods. Measurements can be explained as social acts which includes the questions of what phenomena are of interest and how to operationalize (objectify) them. These kind of acts are helplessly qualitative judgements, try as hard as we might to hide them behind "hard" facts and objective numbers. For someone entering a long-quantified discipline, the judgements behind the numbers and formula may be long buried

and hard to resurrect, but they are there none the less. Philosophy of science types will recognize here "bridging rules" connecting a particular quantification to a particular phenomena - this in a way disqualifies assumptions of going from the particular to the general and back again to the particular (which is impossible within the same framework).

Qualitative research is similarly haunted by the question of representation. How is it possible to know that any account establishes a particular nature of a particular phenomena which is presumed to be spoken to? It is possible to view this as fundamentally a question of sampling. Even if there are no attempts to generalize, but instead to 'only' provide descriptive narrative of one particular hour of one particular person's life. It is not possible to trace every thought, feeling or action. In fact it is not even possible to determine and trace the 'most' important ones, the reason being that if there is no 'closed' amount of alternatives the 'best' one cannot be determined. However this does not mean that something cannot be evaluated as 'good enough'. In a different perspective it should not be forgotten that the way something is described also is infiltrated through and through with internalized operationalizations guided by (conscious and unconsciously made) theory. This is not simply to say that an ethnomethodologist or phenomenologist or symbolic anthropologist or sociologist will give very different accounts of an event it also means that the very same individual is able to give very different accounts due to different contexts.

The methods questions could be viewed as being more or less rhetorical questions. How does one persuade an intended audience? In other words, what genres of communication are persuasive in the audience particular context. An example of an important aspect can be their sensitivity to how something is presented as being made through systematic or unsystematic approaches. How well is something defined as being the subject of a particular research? Is there appropriate attention given to potential counter-examples as well as supporting evidence? Is it presented as an approach that gives the impression to the audience as letting them more or less fairly assess the balance of the presented evidence? Or perhaps a dramatic anecdote is seen as more relevant and persuasive? Experienced unsystematic approaches can hide behind numbers, but also qualitative accounts can be based on extremely systematic investigation.

What is bad or good can only be judged in relation to a particular research its goals and the relevant research audience, this can be viewed as an example of an academic rhetorical process.

It is to be argued that underneath a simplistic qualitative-quantitative dimension lies a more complex but still foundational paradigmatic dimension. Once a particular approach is sufficiently systematically intertwined and clarified within a particular paradigm, applying any methods should also help to achieve a desired academic systematicity as this is the only general quality assessment academically accepted in the western world.

By undertaking a critical approach (whilst drawing on Hermeneutic Dialectics) to some existing approaches to IS analysis, our project aims to develop and extend systems thinking in practice that could be used to evaluate and challenge the use of more traditional approaches to analysis in methodologies. The fundamental assumption underlying this approach is that existing leading approaches do not support the methodology user in a contextually relevant integration of individual and organisational perspectives in IS analysis. So can we honestly pursue and believe in Critical Realism? Maybe not, but then again we might achieve Critical Idealism...

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