

## **STRIVING FOR SCIENTIFIC DISCOURSE ON INFORMATION SYSTEMS DEVELOPEMENT RESEARCH**

Yvonne Dittrich  
Christiane Floyd  
University of Hamburg  
Hamburg, Germany

Comments on „Exploring the intellectual structures of information systems development: a social action theoretic analysis“ by R. Hirschheim, H.K. Klein and K. Lyytinen.

### **1 Introduction**

In the article the authors approach a central topic of interest in the discussion about information systems: What *is* information systems development (ISD) and how can the field of ISD-research dealing with this question be structured? As researchers in this field we share the authors' basic concern, and as we perceive the implementation of computer applications not only in its technical dimension but in its social dimensions as well, we appreciate their discussion of interdisciplinary approaches necessary for understanding the interrelation between technology and society, between computer applications and users in their organisations.

We certainly agree with the authors' diagnosis. The discussion until now tends to be characterized by either adopting a techno-centric position, according to which the subject is tractable with "hard" methods like those in traditional engineering disciplines, or by criticizing the techno-centric position and emphasizing "soft" approaches. As more and more critical approaches emerge and mature, "fragmented adhocracy" is indeed the state of affairs, the only unifying paradigm being that of a common opponent. The field now needs a better orientation than that. The credit for having identified that need and for getting the necessary discussion under way goes to the authors, who have already made a series of significant contributions along the general line pursued here. In fact, the names of Hirschheim, Klein and Lyytinen stand for a continuous and substantial effort in establishing foundations for ISD-research. Thus, the present paper must be seen against the background of previous contributions in the same area, each having to do with systematization in different ways (See for example Klein and Lyytinen (1983) or Hirschheim, Klein and Lyytinen (in press)).

In this paper the authors propose a framework for classifying existing approaches in ISD-research. In our discussion we shall focus on this classification framework and bring out several points which we consider problematic. These are:

- the difficulty to follow the authors' arguments because of the over-abundance of citations,
- the question, whether a classification based on combining Habermas with Etzioni is defensible,
- the suitability of the proposed matrix as a classification tool.

Lets have a more detailed look at these points.

### **1 A forest of citations**

Our main trouble with the paper is the the over-abundance of citations. It includes well over three hundred references to literature from several academic disciplines, covering the works of thinkers from all over the world and spanning a period of more than two centuries. These citations are distributed over the whole text from the first to the last paragraph. This makes it impossible for us to follow them up individually and to judge their relevance in the context of citation. Furthermore, the authors make numerous connections between the citations which leads to the additional problem of appreciating their relation to one another, as seen by the authors.

Start right with the first paragraph (which is not even needed to motivate the paper!). We can readily see the value of establishing a better foundation for ISD research without making an appeal to Kant. There is no need to suggest a similarity between the significance of Kant's Prolegomena for Ethics and the works of Ackoff, Boulding and Anthony for the field of management. Whether or not such a similarity holds, is simply irrelevant to the topic of the present paper. But we are left with an uneasiness: What does the similarity consist in? What if we have not read these works? Do we need to understand it in order to follow the rest of the paper? Are we supposed to agree that it holds? Do the authors wish to claim an analogy between their paper and the works quoted?

While this particular instance may be seen as a baroque ornament, the style continues where substantial references are made to those citations, on which the argumentation rests. One example is the mentioning of other works on the nature and purpose of IS research. Rather than just giving a long list of references, it would be more valuable to indicate the main strands of argumentation in these works and relate it to the author's own comprehension of the field. In the beginning of this paper the introduction of the subject hides behind a bunch of citations

and is far too short for the ambitious purpose of the article. Less citation and more detailed discussion is needed here.

Another example is that the authors took several concepts from Etzioni to build up their framework. But it is not obvious from the way of their citation, whether these concepts are central to Etzioni's work, how they are embedded there, what Etzioni was arguing for, and if the use of Etzioni's concepts in the context of the present paper is compatible with his original intentions.

Much can be said about the use of Habermas, especially. Here we restrict ourselves to a comment on the classification of Burrell and Morgan, which the authors already relied on in other contexts. Burrell and Morgan classify theories of social research under a distinct management oriented perspective. Their classification may well be appropriate in that context. Taken on its own, it is misleading. For example, Burrell and Morgan distinguish humanistic social research theories – where they place critical theory – from marxist ones. From a philosophical point of view, critical theory is definitely a neomarxist theory with strong roots in Marx' and Hegel's work. Following up these roots might lead to an understanding of technology, language and organization as products and media of interaction between human beings and their surrounding, which is in our view more compatible with Habermas' communicative action than the position adopted by the authors.

## **2 On combining Habermas and Etzioni**

The classification framework proposed by the authors takes the form of a two-dimensional matrix. The columns are labelled with notions taken from the critical theory of Habermas. The rows reflect 'domains of change', distinguished by their degree of 'malleability', following Etzioni<sup>1</sup>. The elements of the matrix are *categories* which are discussed and applied by the authors at two levels:

- *object systems classes* referring to views of how an approach sees the outcome of information system development,
- *development strategies* proposed by the approaches in order to achieve their aims.

In their classification scheme there is a one to one correspondence between development strategies and object system classes.

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<sup>1</sup> One of us is quite familiar with critical theory. By contrast, we don't know Etzioni's work. The following comments only refer to the citation and explanation within the article under discussion.

A first glance at the matrix reveals an asymmetric occupation of the fields. That might be an indication that the two dimensions are not independent. So let's have a closer look at them: How do the two dimensions taken from two different theories fit together?

Referring to Habermas, the columns indicate *primary emphasis* - control, sense-making, argumentation - and corresponding *attitudes* - instrumental or strategic, communicative, discursive. This does not match with Habermas' own categorization, which is a hierarchy, distinguishing social from instrumental action at the first level and then subdividing social action further into symbolic, communicative, and strategic action. Discourse is a special form of communication which takes place when communicative action gets problematic. In discourse, communication itself and its validity claims become subject of communication. Thus, there is a mismatch between the classification proposed by the column headings and the theory of Habermas. This is one problem.

In order to bring out an orthogonal dimension, the authors were looking for a way to distinguish different perspectives on the subject of action. They do not argue in detail why they use Etzioni's concepts. "Though Etzioni's essay is not inspired by critical theory we found it extremely useful because he tries to elaborate concepts to distinguish and understand classes of qualitative different changes in human societies." What does "usefulness" mean in the present context? What is the reason to refer to Etzioni's work in particular? And how do his ideas relate to Habermas' concepts?

They introduce the term 'domains of change' with the following sentences (p.10):

"The simple word 'change' in the context of ISD is intended in the sense of 'purposive' or 'wilful' change (as opposed to saying that the universe is subject to change without clear identification of a purposive actor) and thus assumes an independent actor and his or her active orientation to the domain. Hence goal-oriented change is possible through human action, we must assume the world (in total) can be differentiated into two parts: that which is subjected to purposive human action ('domains of change'), and that which is doing the changing (the actor)."

We would like to bring out two points:

The first is, that these sentences describe instrumental action only. It is the subject who is achieving his or her goals through her action. This concept of action is incompatible with a communicative or discursive attitude in the sense of Habermas, and this incompatibility, in turn, leads to ambiguity in several descriptions of individual categories.

In section 4.3.2 (Institutional Democracy design) this is most obvious. The authors want to describe development strategies focussing on organisation with a discursive attitude. In this section the relation between design and democracy seems a bit hazy. According to our notion of democracy, it is possible to design *by* democracy, as, for example, when organizing a participatory process and helping the users to formulate their interests against management and computer scientists. You can also design *for* democracy. That means for example to design in a way that does not hinder democratic flow of information. But to design democracy is a self-contradictory intention. Democracy can't be designed by information systems developers. Democratic control of power, checks and balances must be introduced by a democratic process. Subconscious bias, self-deception, defensiveness and other psychological barriers can only be reduced by the subjects themselves, not via information systems. Organization can't be *designed* by information systems developers with a discursive attitude.

The second point is that the authors distinguish 'domains of change' according to their malleability. Technology is taken to be the hardest domain to change, while language and organisation are supposed to be more malleable. This statement should be subject to discussion: Computers as programmable machines might be much easier to change than organisations or language. If you ever tried to change an industrial company you might be glad just to develop a new data base scheme instead.

To sum up, we do not see that the classification scheme is as orthogonal as the visual appearance of the matrix suggests. It may be desirable to stay with it even so, but we feel the need of more argumentation here.

### **3 Trying to classify existing approaches**

After reading the article we tried to use the framework and the generic model for ISD on our research and the approaches of our colleagues. We tried to identify the relevant object system class and the corresponding development strategies.

We had some difficulties with that effort. As we develop methodologies that relate the implementation of computer applications to the needs of users and their organisations, our research approaches neither fit into one domain of change nor do they restrict themselves to one development strategy.

Take for example the Tools-and-Materials approach as documented by Bürkle, Gryczan, and Züllighoven (1995). This evolutionary and participative development methodology combines different object oriented techniques with the Tools-and-Materials metaphor as a guideline. The

metaphor is used in analysis to give orientation when recognizing the user's tasks, in design and implementation to structure the Information systems architecture, and in use, to give the users a central idea how to conceptualize the systems functionality.

WAM has been successfully applied in several development projects, in particular in a large bank application. Such projects give rise to a variety of problems:

- Customer consultants at a bank refuse to work with a computer application developed in a traditional style. As stakeholders they have enough power to force the management to have another system developed. – To recognize and promote that requires viewing the system as "Political System".
- The software house asks scientists to act as consultants for the new development process. The researchers propose a participatory and evolutionary development process. With this approach they cause the computer specialists to give up their model monopoly and learn from the users about their tasks. – This makes the system a "System for Institutional Checks and Balances".
- The overall concern is a system that provide support for expert users who decide on their own what to do, when and how to do it. – That refers to the "Cultural and Social Systems" view.
- Communication in design focusses metaphor: tools and materials. – Here comes a "Symbolic Interaction System".
- The 'materials' a future user will work with must be described and finally defined to be modelled within the system, the computer based 'tools' to work upon them must be designed and implemented. – Does that point to a "Manipulative Communication System"?
- To support the object oriented modelling and the design of the interface, design patterns are developed. – Here we have elements of an "Information Technology System", or if you prefer, a "Formalized Symbol Manipulation".

So real information systems development and research needs to combine several different views, perhaps sometimes all of them. How come? Maybe if you want to develop good systems it is not possible to restrict yourself to one perception of your 'domain of change'. Even different attitudes towards the same domain might be adequate during the development process.

Thus, the object system classes indicated by the authors do *not* seem to offer *categories for classifying* existing approaches. As a consequence the matching of development strategies to object system classes seems problematic.

On the other hand, the object system classes are highly useful for as analytical categories *clarifying different perspectives* which can be applied to one and the same approach. Maybe this is what we should be looking for.

## **Conclusions**

As we support the authors' basic concerns we would like to thank them for having made a valuable contribution to a necessary discussion and to suggest that they interpret our comment as constructive criticism. And we hope that the classification scheme proposed here can be transformed into a manageable tool useful for clarifying the different perspectives embodied in existing approaches.

We hold that this would be a promising way of bringing out order in the adhococracy of information systems development and research. The clarifications of perspectives might help to discuss the appropriateness of information systems development approaches and methodologies. Such a scientific discourse might be a alternative beyond a fragmented adhococracy or one unifying paradigm.

## **REFERENCES**

Klein, H.K. and Lyytinen, K. (1992). Towards a New Understanding of Data Modelling. In Floyd, C. et al. (eds.). Software Development and Reality Construction. Berlin Heidelberg New Yorck: Springer Verlag, 203-219.

Hirschheim, R., Klein, H.K., & Lyytinen, K. (in press). Information Systems Development and Data Modelling. Cambridge, MA: Cambridge University Press.

Bürkle, U., Gryczan, G., & Züllighoven, H. (1995). Object Oriented System Development in a Banking Project. Methodology, Experience, and Conclusion. Human Computer Interaction, 10, 293-336