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Markku I. Nurminen

University of Turku, Finland, nurminen@cs.utu.fi

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Paradigms for Sale:
Information systems in the process of radical change

Markku I. Nurminen

University of Turku, Finland, and University of Oslo, Norway
nurminen@cs.utu.fi

Abstract

The four paradigms by Burrell and Morgan (1976) and their interpretations within Information Systems Research are critically analysed. The dominant interpretation by Hirschheim and Klein (1992) is challenged by the construction of an alternative interpretation. The tension between the alternatives gives rise to a discussion of the paradigms and their relevance, need and usefulness.

1. Introduction

Information Systems Research (ISR) is a very broad research area. Virtually any discipline of human or social sciences is a potentially valid reference discipline. This is due to the fact that the impacts of the introduction of information systems are fundamentally organisational and social, and it is not feasible to regard them as solely technical systems in a narrow sense. There are, thus, good reasons to articulate how information systems research is related to social sciences. One frequently quoted frame of reference is the set of four sociological paradigms presented by Burrell and Morgan (1979). This monograph has turned out to be exceptionally influential, even if not all occurrences in the citation indices may be counted as voices in favour of the framework (this paper is an example of this).

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It seems that this particular frame of reference has gained more or less established status also in Information Systems Research; doctoral students in ISR are supposed to know it and to refer to it. Already in 1987 the paradigms were used to classify the papers of the IFIP 8.2. Conference on "Systems Development for Human Progress" (Bjørn-Andersen 1989). Since then the framework has been widely used.

One extensive interpretation of the framework within ISR (Hirschheim & Klein 1992) is taken as the point of departure in this paper. Many of these interpretations are presented also in Hirschheim & Klein & Lyytinen (1995). In this paper I shall critically analyse this framework. The material for the discussion is produced by creating an alternative interpretation of the application of the paradigms by Burrell and Morgan to ISR. Then it is relevant to discuss whether the contradiction should be solved by finding the better of the two alternatives or by transcending it. The latter option leads to a search for a synthesis. But first we have to briefly review the main idea of the frame of reference by Burrell and Morgan.

1.1. The Four Paradigms by Burrell and Morgan

The four paradigms by Burrell and Morgan are the four combinations of the opposite ends of two dimensions. The first dimension is about the nature of social sciences which divides into two approaches, subjectivist and objectivist.

Four underlying subdimensions are recognised:

TABLE 1. Subdimensions of subjectivist and objectivist approaches

Property	Objectivism	Subjectivism
Ontology	Realism	Nominalism
Epistemology	Positivism	Anti-positivism
Human nature	Determinism	Voluntarism
Methodology	Nomothetic	Idiographic

The second dimension is borrowed from the macro level of society. The theories are allocated within the dichotomy between the sociology of regulation and the sociology of radical change.

The combinations of these two dimensions lead to four paradigms:

TABLE 2. The four paradigms by Burrell and Morgan

	Subjectivist	Objectivist
Radical change	Radical humanist	Radical structuralist
Regulation	Interpretive	Functionalist

It is unnecessary to explain the paradigms in more detail, because they are well known, but whenever necessary, more characteristics of each paradigm are presented.

One important characteristic of the paradigms is their incommensurability. Burrell and Morgan follow the notion of Kuhn in saying that their four paradigms are mutually exclusive. Many authors have accepted pluralism, a simultaneous application of several paradigms. Perhaps then the term "paradigm" should be

replaced by another word. Hirschheim and Klein (1992) also use their paradigm concept in this pluralist meaning.

1.2. Are All Classes Equal?

The power of any classification lies in its capacity to divide the population into classes. Such a discrimination is strong as far as it is based on essential, constituting characteristics. Such a classification facilitates the understanding of the phenomenon under study.

The units of the population may divide among the classes evenly. The statistically oriented researcher, however, prefers somewhat uneven distributions, because then it is interesting to ask what is the reason for the skewness and how significant are the deviations. It is of particular interest to find that one class remains empty; there must be some particular reason for it. Of course, one possible reason is that one class is empty per definitionem since it cannot contain any items, for example, the class of round squares. Another reason may be that the author wants to promote his own hobby horse by arguing that it fills the urgent need to fill a previously empty box. An extreme would be to present four classes, three of which are empty. The audience may be justified in doubting the usefulness of such a classification.

We start our study of the paradigms of Burrell and Morgan by investigating the distribution of information systems and in particular their development methodologies among the Burrell & Morgan paradigms. Fortunately, an extensive analysis (Hirschheim & Klein 1992, Hirschheim & Klein & Lyytinen 1995, see also Kuutti 1993) is available on this issue. Hirschheim and Klein (1992) have renamed two of the paradigms: the interpretive paradigm is renamed as the social relativist one and the radical humanist paradigm is renamed as the neohumanist one. Below we shall use the original names.

A first observation in the review by Hirschheim and Klein is that the Functionalist paradigm is very crowded. Practically all the traditional approaches are allocated to this class. On the other hand, there is much more space, for example, in the interpretive paradigm, and many items in this class are even characterised by the reflection of existing practices rather than by the formulation of alternative development methodologies. In ethnological terms, people in the interpretive paradigm are well qualified in reading but poor in writing.

The radical paradigms, on the other hand, are practically empty. Some Scandinavian approaches seem to belong to the radical structuralist paradigm, even if, to a great extent, they share the objectives of socio-technical approaches, in which the Functionalist paradigm is said to be dominant. The radical humanist approach is not very rich in development methodologies. The SAMPO methodology (Auramäki et al. 1988) is here, but it looks more like an academic exercise than a widely applied development methodology. In addition, the speech act framework has been applied also in groupware systems.

If we were able to count the chi square of the table, there cannot be any doubt that the skewness would be statistically significant. A curious mind is likely to ask why. Preliminarily we suggest that the skewness might be due to one or more of the following three factors:

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- Information technology in itself (as a rational technology) has a built-in functional bias as a natural orientation.

- The criteria of classification are biased. Reinterpretation may cause another distribution.

- The set of four classes in itself is not relevant to serve as a basis for paradigmatic classification.

The relevance could be improved by choosing more essential factors for new classes. To improve the relevance, these factors should probably be more specific to information systems.

Below we take a closer look at the skewness of the distribution between the paradigms of Burrell and Morgan when applied to information systems and their development methodologies.

2. The Radical Structuralist Paradigm and its Reinterpretation

The term *structuralist* in the name of this paradigm indicates that it deals with objective, even structural changes, and the term *radical* tells us that the change can be and should be sudden, perhaps even discontinuous. It is thus possible (and desirable) in a change process to take voluntarist action decisively and enter instantly into a radically new situation. No cosmetic face-lifting is acceptable.

This paradigm has its roots in dialectical thinking which assumes that contradictions (between the thesis and the antithesis) are the major driving force for development. There are often interest groups behind such conflicting interests: employer vs. employee or teacher vs. student. The contradiction can be tran-

scended, if it is consciously analysed. The solution (synthesis) is said to rise to a new, higher level, which often implies structural changes. The object of treatment is the illness itself, not only the symptoms of it.

Many interpretations of this paradigm have associated the Radical Structuralist Paradigm with various progressive revolutionary ideologies. This tendency is visible also in the choice made by Hirschheim and Klein when they apply Burrell's & Morgan's paradigms to ISR. As representative of this paradigm they identify certain research projects which have been conducted in collaboration with trade unions. In what follows I present my view on these projects, regarding them as instances of the Radical Structuralist Paradigm. I believe that it adds novel aspects to the discussion which has been going on even in this journal.

2.1. Defensive Action Research

These projects have been called The Collective Resource Approach (CRA) (Ehn & Kyng 1987) and they have taken place in three Scandinavian countries. The first of these projects was performed together with the Norwegian Iron and Metal Union (NJMF), followed by the DEMOS project in Sweden and the DUE project in Denmark. In spite of the individual characteristics of each project they had many important common properties, which are briefly outlined below.

The CRA projects may be seen as a reaction against the introduction of socio-technical approaches in the form in which they had been introduced in Scandinavian countries a little earlier (Bansler 1989). Progressive researchers criticised the socio-technical developers

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for their harmony perspective: while these seemed to believe that there is a solution to be found which satisfies the needs of both employers and employees, the progressive researchers preferred to emphasise the conflict between these parties. Burrell and Morgan (1987, p. 18) describe this distinction as one between regulation and radical change. They illustrate the distinction in following terms:

TABLE 3. Regulation and radical change

Regulation	Radical change
the status quo	radical change
social order	structural conflict
consensus	modes of domination
social integration and cohesion	contradiction
solidarity	emancipation
need satisfaction	deprivation
actuality	potentiality

The CRA projects were carried out according to the best principles of action research. It was one-party research, which implied an alliance with the employee side, the local trade union. This bias seemed to be justified and legitimate because the opposite bias, towards the employer and management side, had been dominant before. A few research projects could by no means even compensate for the earlier bias.

What was important in these action-research-oriented research projects was the local and concrete character. For example, intensive administrative structures were introduced in order to maintain the representativeness of the worker representatives (Ehn & Kyng 1987). The local union club members were informed about the progress of the development project and the representatives received feedback and objectives for future negotiations. All this was meaningful only when supplemented with continuous learning activity among both the representatives and all club members. These practices justify the giving of another label to the CRA: participatory design.

The main mission of action research is not to collect data from the research object; rather the intention is to bring about a deliberate change. Even if many actors in the CRA projects probably viewed their activity as a part of the general progress in capitalist societies, they certainly understood that local activity most often has only local consequences. The minimum program was to support the employee side defending itself against the real threat of negative changes in the work place (degradation of work, detailed control, etc.). By the side of this defensive strategy, glimpses of a more offensive one can be seen. There were minor attempts to give formulation to a radically alternative design for entire systems or some parts or properties of them.

Such offensive strategies were not, however, very successful in projects at the local level: often there were no significant permanent changes after the researchers had left. In retrospect this is quite natural, because already the defensive strategy had to be accompanied by extensive learning about the impacts and side-effects of the introduction of information technology. In fact, a significant part of this knowledge had to be created in connection with these projects. More important, however, was the in-

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tensity characteristic of the action research approach itself. It is unrealistic to expect that this level of participative intensity could be part of the permanent life of any organisation.

Action research, on the other hand, does not promise to solve all the problems in the world. If the spelled out intention is to cause local changes, it is not fair to expect global ones. There are limits to generalizability and to transferability of the results of action research, but this is known in advance. Yet, action research may have and does have an important role among the variety of ways of acquiring knowledge. Action research is, when skilfully performed and documented, a proof of existence. It demonstrates that certain things are possible. The question as to whether this thing is possible in another context or whether that thing is too expensive to be applied on a large scale are not on the agenda, they are challenges for new subsequent research efforts, they do not take away the value of the proof of existence.

2.2. Offensive Design

For the CRA, the challenge after the action research projects was twofold:

1. What is a positive formulation of the good application of information technology? How do we know that a certain IS is good? (After the criticism, i.e. the negative formulation)

2. If we know what we want to achieve (a good IS), how can this be done?

It is obvious that these questions of a more offensive (or positivistic, if you like) strategy cannot be answered by referring only to participative design. Participation alone cannot guarantee the quality of the result of development. We have to specify what are the issues on the agenda of participation and what is the competence needed. Yet it is possible that participation—whatever that is—is a necessary part of most successful development processes, even if it alone does not say anything about the result of this process.

Such offensive strategies are not the business of local trade union clubs. In addition to our knowledge of professional practice, a multidisciplinary expertise is needed to create innovations. This is exactly what happened when the CRA was transformed into a central union activity in the UTOPIA project. The project was defensive in the sense that its intention was to defend the professional skill and knowledge of graphical workers in a situation where the very existence of the whole profession was threatened by the introduction of IT. The obvious impossibility of defending the status quo forced the formulation of an offensive strategy: to create new, IT-based tools for future graphical workers. It is interesting to note that this new strategy was no longer determined by class conflict. Of course, the class conflict had not disappeared, and it obviously continued to be a source of inspiration, but it was moved into the background. A few years after UTOPIA, the dream of software based on the professional knowledge of graphical workers had come true in the form of commercially available programs for word processing and desktop publishing. This software was to a great extent accepted by all parties, by employers and employees, by users and professionals. The original confrontation of the CRA against socio-technical approaches had been neutralised. Again we can realise the importance of the CRA in this proc-

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ess, but it is not easy to see what could be a similar challenge today for the CRA to solve. Perhaps the redesign of the entire working life in the networked environment with non-typical jobs (Greenbaum 1995) would be the next challenge.

The Radical Structuralist paradigm explains rather well the nature of the local trade union projects, even if these did not give the answer to the challenge of positive formulation. The defensive projects did not present any systems development methodologies. In the same way, this paradigm explains the background and history of the UTOPIA project, but the object of research and research methods of the latter do not fit in very well. The focus of UTOPIA, professional competence, is fundamentally dependent on the existence of professional individuals. There are also many factors which suggest that subjective characteristics are more significant than structural ones when we talk about professional competence. In the co-ordinates by Burrell & Morgan we should have a look in a direction with stronger subjectiveness and milder structural radicality.

To sum up, we leave the Radical Structuralist paradigm with a suggestion to move part, the offensive one, of it to the subjectivist side. We also realise that the remaining part, the defensive one, has not presented an IS development methodology.

3. The Functionalist Paradigm and its Reinterpretation

As the Radical Structuralist paradigm now seems to be more empty of IS methodologies than it was in the beginning, we should have a look at whether we can find some refill from the other paradigms. If we are afraid of jumping over to one of the subjectivist boxes, we must try to have a look at the Functionalist paradigm. On the objectivist side, the shift from the Radical Structuralist paradigm to the Functionalist one means a shift from Radical Change to Regulation, reflecting the dichotomy between order and conflict. Having crossed the boundary from radical change to regulation, we have to make clear which arguments we can use to allocate information systems development to one side of this dichotomy or the other. In other words: What is the purpose of information systems development? Is it maintenance of status quo and regulation as Hirschheim and Klein indicate to be the case in most traditional approaches? Or is it radical change with the intention to make structural changes?

My answer to this question is on the side of radical change and is supported by the following arguments.

1. The radical change in the Radical Structuralist paradigm has not been defined on the basis of the object of change alone. The radicality seems to be dependent also on the direction of the change. The change is radical if it is "progressive" and serves the class interests of the workers, but a corresponding structural change in the opposite direction does not count as radical. On the other hand, it is unnatural to classify radical reactionary changes as belonging to the regulation part of the co-ordinates. We have either to introduce another paradigm for reactionary changes or to elaborate a two-way interpretation of radical structural changes. The latter approach would keep value statements outside the essential research object: we are then

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able to study both "desired" and "undesired" changes within the same frame of reference. If we have a theory which explains both increasing and decreasing temperatures, it is more powerful than a theory which can only deal with increasing, but not decreasing, temperatures.

2. The notion of radical structural change was originally introduced at the macro level. It is not clear whether it can be transferred to the micro level as such. The activity of an enterprise is not conditioned by the class conflict in the same way as the society as a whole. In an enterprise there is the organisational structure which has many other dimensions—and tensions—than the class dimension. These structures may be determined functionally, regionally, professionally, temporally, by customer groups or any other imaginable criterion. The official structure is supplemented by unofficial practices and organisational cultures. Implementation of an information system typically causes significant and discontinuous changes in most of these structures. It is challenging to study changes in these structures also by analysing the "mechanism" which produces such changes, rather than only to observe them in terms of their progressive or reactionary direction of.

3. Today radical changes are marketed under many labels such as Business Process Reengineering (BPR) (Hammer & Champy 1993). The four key-words of BPR are Fundamental, Radical, Dramatic and Processes. What is promised is for example:

- Workers make decisions.
- Work is performed where it makes most sense.
- Checks and controls are reduced.

- People's roles change—from controlled to empowered.

There is no doubt about the allocation of BPR into the framework; it belongs to the Radical Structuralist paradigm, even though this is not universally agreed upon. For example, reviewer no 6 writes:

> "When reclassifying BPR the author(s) conveniently ignore the regulation—conflict dimension. Clearly BPR tries to stabilize organizations by reaffirming the profit goal. In that sense it is not at all change oriented and hence functionalist."

This seems to be one of the sediments which have their origin in the interpretation by Hirschheim and Klein. It clearly demonstrates the dangers of reification. I cannot believe that the reviewer really thinks that ISD projects should encourage the companies to stop making a profit in order to qualify for the Radical Structuralist paradigm. Yet, this reinerpretation leaves us in a state of uncertainty or uneasiness. Does the BPR really produce the emancipatory effect it promises? Is it not a conceptual trick for more intensive exploitation of employees? Anyway, the discussion demonstrates that the framework by Burrel and Morgan is unable to protect us from such doubts and confusions.

4. Management is about voluntarism. Otherwise there is little use for managers. Managers often want to see the effect of their actions rather than being content with mere regulation. Of course, this voluntaristic notion presupposes a remarkable degree of determinism in the immediate environment. Otherwise, the manager does not have people and technology to execute his/her objectives. Because the underlying assumption behind many traditional systems development methodologies is a controlled (deterministic)

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change, the voluntarism does not suffice to shift BPR and traditional approaches to the paradigm of Radical Humanism.

These four arguments give rise to a radical redistribution of various approaches among the paradigms. In this section we have moved the majority of traditional approaches from the Functionalist paradigm to the Radical Structuralist paradigm. We must, however, recognise that the need for the redistribution made in this section to a great extent has its origin in the work of Burrell and Morgan. The confusion between the macro and micro levels comes from their original paradigms, it has not been created in the interpretation by Hirschheim and Klein.

Before continuing our reinterpretative adventure we briefly introduce an alternative approach, which offers a different solution to the nature of structural changes and to the dilemma between determinism and voluntarism. Instead of emphasising (and romanticising) the (mutually exclusive) dichotomy, Cashmore and Mullan (1983) show that the most interesting area is in the boundary area between the two domains. Instead of two dimensions they use only one, which has behaviourism at the one end and structuralism at the other. These describe two categories of factors which restrict human action internally and externally, respectively. Psychological and physiological limits prevent people from the radical change of starting to fly, whereas social and structural rules (hopefully) prevent people from killing each other. In the middle of the scale there is an area called interactionist which represents the maximum of voluntarism. Changes in the structure (objective) remain ineffective unless the actors understand and

have internalised (subjective) the meaning of the new structure.

4. The Radical Humanist Paradigm and its Reinterpretation

In information systems research, the Radical Humanist paradigm—like the Radical Structuralist one—seems to be particularly underrepresented. We already observed that this is at least partly due to the particular class-conscious interpretation of radical change, borrowed from the macro level to the micro level without sufficient problematising. The Radical Humanist paradigm is not content with structural changes alone, the subjects must also change. One main source of inspiration in the interpretation by Hirschheim and Klein (1992) has been the Frankfurt School and its Marxism with a human face. Non-distorted communication (free from dominance, Herrschaft) is one of the qualifying objectives for this paradigm (c.f. Lyytinen 1986).

In ISR, the ideal of non-distorted communication implies user participation, otherwise there is not even distorted communication. People should have a say in issues which are significant for their work. Socio-technical approaches with their concern for job satisfaction, self-steering groups and user participation are therefore obvious candidates to this paradigm. Hirschheim and Klein, however, classify socio-technical approaches as belonging to the Functionalist paradigm (dominantly). This may be due to the tandem structure between the technical and the social systems or because there are also many structural changes (e.g. organisation of work) by

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the side of more subjective ones (job satisfaction). Another reason for this surprising allocation may be in the harmony/conflict dimension. We should remember that the researchers of the Collective Resource Approach criticised socio-technical approaches for their harmony-perspective.

There are, indeed, many other hindrances to non-distorted communication than those originating in the class conflict. These may have their origin in age, gender, profession, cognitive style etc. Many of them are certainly not consequences of the introduction of new information systems and many of them cannot be eliminated by means of information technology. If we want this paradigm to have any explanatory power for information systems and their development, we probably have to articulate it as an application specific for information systems. Otherwise, it is difficult to see the particular role which information technology can play. Perhaps such a discourse would help us to understand why user participation may sometimes belong to one and at other times to another paradigm.

One way to concretise the idea of non-distorted communication is to study what threats and opportunities information technology may have for it. One of the most obvious threats is that some information system functions replace or hide important parts of social communication. The user of a data base, for example, does not see the origin (i.e. the human senders of the particular messages) of the data she receives as the answer to her query. The destination of updated data is similarly invisible, hidden behind the system. Human communication is turned into technical transactions with the machine. In parallel, the illocutive force of speech acts is likely to disappear.

The speech act theory has proved useful in explaining the functioning of an information system (c.f. e.g. Winograd & Flores 1986). It indicates that information systems not only inform people; the users also act by means of them. A message also has the illocutive force which carries its function. It may be a commitment, a declaration, a question, a command, etc.

There are at least two approaches to meet this danger of increasingly objectified communication: In the first one, called *modelling strategy*, the speech acts are modelled during the analysis by means of well-defined standard types of illocutive forces. Thus, the developers and hopefully also the users will be aware of the original social character of the transaction. This is what is done in the SAMPO approach, allocated within the Radical Humanist paradigm, even if some Functionalist tendencies have been noted, e.g. by Iivari (1991) and Hirschheim and Klein (1992).

The challenge can, however, be met by means of another type of approach, here called *strategy of social interpretation*. It aims at a design of the IS and its use situation which needs less explanation of objectified communication by reducing that objectification. This is done by categorically denying the assignment of the actor role to the computer or IS. For example, particular (groups of) users could be responsible for particular segments of the data base; these people would be the knowing subjects, because within this approach, the computer does not know anything. The communication which takes place via the IS then would

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be visible human-to-human communication in the same way as (electronic) mail is. This makes the modelling of speech acts unnecessary, because the parties to the transaction (competent actors) are visible and present themselves.

The modelling of speech acts does not liberate communication to a great extent; at its best it can reduce the harm caused by objectified communication. It is, however, not easy to find a proper paradigm for this approach, since it implies structuration under restricted objectification. Any of the four paradigms could be advocated but the Functionalist paradigm is the most obvious candidate, if the purpose is not to make structural changes. The strategy of social interpretation, on the other hand, fits better into the Interpretivist or Radical Humanist paradigm, depending on the degree of the changes (other than the new IS) in the work organisation. Therefore, the strategy of social interpretation also has more emancipatory potential than the modelling strategy. Again we have realised a need to slightly modify the categories: the modelling strategy of speech acts has been moved to the Functionalist paradigm.

Before proceeding to the last paradigm, the Interpretive one, we shall have a look at another alternative framework, the Activity Theory (Leontiew 1978), and its capability to deal with the shift from objectivism to subjectivism. This boundary is often fuzzy due to different interpretations. For example, as Deetz (1996) notes, "the political agenda (behind the Radical Structuralist) paradigm is quickly understood as simply another "subjective" position. No wonder that his paper has a provocative subtitle: "The Boring and Misleading Subjective-Objective Problem".

The Activity Theory has a psychological point of departure, which makes it promising for subjectivist approaches. This point has also proved to have good applicability in the design of computer interfaces and of computer-supported work in general (Bødker 1987, Kuutti 1991). The Activity Theory also lends itself to the analysis and design of larger units than the work situation of one individual worker. It has been used for developing entire work organisations (Engeström 1991, Volpert 1975). Thus, its power is not restricted to subjective aspects only; it has the capacity to support the intention to transcend the dualism between subjective and objective.

According to the Activity Theory, human activity is driven by motivation and is carried out as actions which have their purpose in the origin of the related activity. This implies that computers are not qualified to be subjects of any activity or action, because they do not have motivation nor goals of their own. Only operations may be performed by means of computers, and even there a human actor can be identified, otherwise there cannot be a meaningful responsibility. Another important emphasis in the Activity Theory is its mediatedness. The relationship between the subject and object of the activity is mediated by the tools. These properties mean that the Activity Theory addresses the issue of whether the computer can perform tasks or not. The paradigms by Burrell and Morgan and their interpretations do not address this fundamental ontological issue, even if it is crucial in all the human activity facilitated by information technology and its development.

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5. The Interpretive Paradigm and its Reinterpretation

The major problem in the Interpretive Paradigm is that it spends so many resources on the tasks of understanding and interpretation. Within IS research, this paradigm originated during the growing interest in the impacts of computerisation, starting from the 1970s. Sometimes this research interest was called poverty research, because many of the unintended consequences turned out to be negative—the positive ones could be found in the intended objectives recorded in the project plan. This research on the consequences of IT was, often with good reason, criticised because the criticisms were only seldom accompanied by positive alternatives. The offensive strategy adopted by the UTOPIA project may, indeed, be seen as one answer to these criticisms.

The paradigmatic framework has given this paradigm a conservative role. It has reminded us of the multifaceted network of impacts by generating the most extensive list of reference disciplines. There is a continuous warning that any factor in the broad frame of reference may turn into a hindrance to the intended change. In particular, the resistance to change characteristic of many social institutions (Berger & Luckmann 1966) raises a scepticism against the possibility of radical change. Resistance to change is not a monopoly of users and user organisations. IS developers have established their own institutions, "ordinary work practices", as Hirschheim and Klein call them. Understanding these practices does not necessarily help us to understand the business activity or the users' work practices which the systems are supposed to support. Such institutionalised work practices of the professionals may even be the main obstacle to radical changes which the organisation would like to carry out.

This paradigm does not, however, deny the possibility of intentional change, even if it is the diametrical opposite to the Radical Structuralist paradigm. Evolutionary approaches to ISD, as well as prototyping, belong to the Interpretive Paradigm, to the extent that we emphasise the concrete experience the user gets by means of the prototype instead of formal descriptions. This paradigm is also likely (more than the others) to foster creativity and excellence: it supports strong subjective involvement without coupling it to a predetermined change process. If one is willing to promote the quality of ISs, one cannot ignore this paradigm, even if many approaches to the total quality movement seem to anchor the quality to the development process, a Functionalist production procedure, rather than to its outcome. The tension between the paradigms is strong here: it is very difficult to order anyone to be creative.

The interpretive paradigm pays much attention to understanding ordinary work practices in all their richness. All three main roles must be taken into account: expert, manager, and user. The paradigm reminds us that we cannot continue the expert-centered development strategy forever, because the IT cannot be the end in itself. The user and manager perspectives will become more and more important. Therefore, we need more knowledge of human work and human activity as they are supported by information technology. The Interpretive paradigm

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has much to offer, but left alone it seems to be powerless.

One problem throughout this discussion on the paradigms has been its generality. The concepts used have not been very specific to information systems. This generality has invited rather different interpretations, as we have seen throughout the discussion. Another alternative framework is given by the three perspectives of Nurminen (1988), which are formulated specifically to reflect information systems and their development. The systems-theoretical perspective emphasises the role of the computer, whereas the humanistic perspective gives the primary role to the human beings. The socio-technical perspective looks for a balance between these two. They fit rather nicely into the expert, user and management perspectives.

The novel perspective is the humanistic one. It has a strong subjectivist bias, but it also transcends the distinction between subjectivism and objectivism by stating that "It is an objective fact that there are human subjects". The other two perspectives give support with more objectivist aspects. Each perspective has its characteristic notions on epistemology and ontology as well as on the way in which information technology is integrated with business activity and work. The perspectives also live in peaceful co-existence: they are not incommensurable or exclusive.

The humanistic perspective is also more specific when it comes to the appropriate unit of analysis. The interpretation of Burrell and Morgan criticised in this paper does not obviously regard information systems as technical constructs only, but it is not easy to find the unit of analysis. Intuitively, it must follow the notion which each of the analysed methodologies has. The humanistic perspective takes the individual job as the basic unit, which lends itself as a building block for constructing collective units of activity of different size. Another aspect which the humanistic perspective adds to the paradigmatic discourse, is the incorporation of IT artefacts as inherent parts of human activity. This is not very well articulated in the paradigmatic discussion based on Burrell and Morgan and its interpretation in ISR. Each of the three paradigms can take two rather different forms depending on whether the artefacts are regarded as an external factor which has an impact on human activity or as an inherent part of it.

6. Summary

In the beginning of our analysis, the Functionalist paradigm seemed to be most crowded. We did, however, in the above regard a typical information systems development as voluntary action with the intention of making structural and often radical changes. The crowd was thus moved into the Radical Structuralist paradigm. A new question emerges, whether the Functionalist paradigm now remains empty. At first sight, there seem to be left a few cautious conservative approaches which copy old, often manual practices into the information system, without changing their activities or organisation at all. Such development projects with solely rationalisation objectives were dominant in the 1960's and still usual in the 1970's. Today they are regarded as less ambitious; IS professionals want to develop systems with

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strategic significance, i.e. aiming at a voluntary radical change. The stock-taking in the subjectivist-oriented paradigms did not give an abundance of approaches either. This is at least partly due to the lack of clarity surrounding the subjectivist-objectivist dichotomy.

6.1. The Comparison between Interpretations

Above we have been moving items from one box to another. Thus, we have created an alternative interpretation of the four paradigms by Burrell & Morgan to challenge the interpretation by Klein & Hirschheim. Before we start arguing about which one is better, we summarise the most important weaknesses found in the interpretation criticised above.

The class conflict at the macro level of the society is used at micro level without appropriate adaptation. The capacity of information technology to support radical structural changes in organisations has not been sufficiently realised. Politically flavoured structural changes are emphasised, and only "progressive" ones are taken into account.

The use of the subjectivism-objectivism dichotomy is problematic; it remains unclear who is the subject: the user, the developer, or the researcher. Probably it would be more adequate to classify schools in ISR rather than in ISD, because the paradigm concept is more valid for research than professional practice. The dichotomy between subjectivist and objectivist assumptions is particularly cumbersome when we are analysing situations where people work both as individuals and in collectives—with or without computers. We do need both a subjectivist and an objectivist view on work in order to understand it. As Will-

mott (1990) has pointed out, this dichotomy should be transcended. He has two good candidates to refer to in this attempt: the institutionalisation by Berger and Luckmann (1966) and the structuration by Giddens (1984). For example, Berger and Luckmann emphasise that institutions are shaped by people and people are shaped by institutions.

I believe that these points give good arguments for preferring the alternative interpretation I have introduced above. However, before making the decision we should reconstruct the conditions for the argumentation.

This paper is a proof of existence: now there is another and credible interpretation of this framework into ISR. Consequently, we cannot exclude the possibility that a number of new interpretations will appear later. This implies that no particular interpretation can be regarded as the right one. Rather, a continuous debate is going on and the dominant status must be earned again and again.

However, such a debate would be meaningful only if we accept the framework by Burrell and Morgan as a useful (and the only) platform for such interpretations. Then also the criteria should be derived from this framework. The reinterpretation generated in this paper indicates that it is not easy to reach a consensus about the orthodox interpretation.

Before letting the fight between the alternative interpretations gain momentum, it might be sensible to ask why we should be orthodox in respect of Burrell and Morgan. Will our research be of lower quality if we choose one interpretation instead of another? Or do we get new friends and lose old ones if we shift the interpretation? These questions provide

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us with another set of criteria which are derived from the usefulness and fruitfulness of paradigmatic frameworks. As Deetz (1996) states:

> "The question is not: Are these right categories or who fits in each? But: Are these differences that make a difference? Do these dimensions provide insight into genuine differences in research programs?"

Practically all paradigmatic frameworks and their interpretations agree about the significance of paradigms, but good instructions for their use are met with less frequently. Next I shall list some aspects of typical uses of paradigm concept that I have found them useful (Nurminen 1987).

6.2. What to Do with Paradigms?

A paradigm is not an axiom. A set of alternative paradigms is not given somewhere like a Swedish smörgåsbord: the researcher arrives and selects one particular paradigm in order to derive research problems and choose research methods suitable for this particular paradigm. A paradigm is something which has been acquired through a lengthy socialisation process like an apprentice in a scientific community. A scholar cannot declare a conceptual construct to be a paradigm unless there is a scientific community following the rules of that construct. The rules dictate what counts as good science, and they have been derived during a long time of research practice. Many rules are unwritten and become clear only when someone breaks them.

It belongs to the nature of the very concept of a paradigm that it asks to be hidden. Paradigmatic assumptions do play an important role in research but the best analyses are done retrospectively.

For example, the interpretation by Hirschheim and Klein is an example of good retrospective analysis. At the moment of research action, the experience characteristic of all social institutions "This is how these things are done" is dominant and any deep reflection will undermine the performance in efficiency and effectiveness. Only afterwards can the observer (sometimes not even the actor himself) extract the underlying paradigmatic characteristics.

Of course, a paradigmatic framework is also like a mirror. When we look in the mirror we see something about ourselves: who am I and to which class do I belong? But if there is only one reified framework available, the most innovative researchers are in trouble:

> "... the most innovative of the new researchers found it now even more difficult to express what they did since they had to use a language in which their meaning did not fit. They had to choose between misrepresenting themselves through Burrell and Morgan or representing themselves well but being considered obscure or bad writers." (Deetz 1996)

This is obviously especially crucial if young post-graduate students have to identify themselves in front of this mirror, when no significant research has yet been done. The Burrell and Morgan grid guarantees that no new radical approaches will (can!) be formulated.

Another issue is the commensurability. If we analyse (in retrospect) the activity of a qualified IS specialist as a researcher or as a practitioner, we can probably identify all four paradigms by Burrell and Morgan in parallel or applied sequentially—or perhaps iteratively in cycles, just like the phases in Kolb's

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learning model (Kolb 1984). This kind of multiparadigmatic style of working is actually in concordance with the view of organisations given by Morgan (1986) seven years after the publication of the sociological paradigms. Here also the interpretation by Hirschheim and Klein has adopted a liberal stance as they classify the methodologies among the paradigms. After this it is only a small step to put forward alternative candidates for the framework by Burrell and Morgan and to develop a multiparadigmatic attitude among all paradigms.

6.3. Politics with Paradigms

One of the benefits from the discourse around paradigms has been that the political aspects in the organisational use and development of IS have become visible. As a consequence, also the political character of research on IS has been put on the agenda. Burrell and Morgan have contributed remarkably to both. The next logical step would be to ask what are the politics of the paradigmatic discourse itself.

One motivation behind paradigmatic analyses is to legitimate the author's own research. As Deetz (1996, p.191) has observed, the Burrell and Morgan grid gave a kind of asylum to people who were doing fundamentally different, but legitimate kinds of research. At the same time the grid also protected the (implicitly criticised) functionalists from serious criticism defining the discourse in favour of their preferred battles (e.g., between objectivity and subjectivity).

Such argumentation presupposes clearly normative premises. One type of research is better than another, or there are other reasons for promoting it. Political power is greater if a particular para-digmatic framework gains a hegemonic capacity. The framework by Burrell and Morgan has been extremely influential and has thus a high degree of hegemony. The promotion of it in other disciplines, like ISR, without reference to other paradigmatic approaches, will probably strengthen this hegemony. At this level of politics of science, this paper is a warning against further support of an already reified paradigmatic framework. The first step is to deny the hegemony by offering alternatives whenever the Burrell and Morgan grid is presented.

The title of this paper could also have been "Against Reification". The generation of an alternative interpretation to the Burrell and Morgan grid demonstrates that the dominant interpretation is not the only possible one. The hegemonic status of the grid was also reduced because the power of any classification is limited if it has, say, seven different interpretations, and if the allocation of one's research is different depending on the actual interpreter. The glimpse of some alternative frameworks, which in certain crucial aspects have a greater power of explanation than the Burrell and Morgan framework, has a similar effect in reducing its reified status.

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