

**A Critical Study of The Multiview Methodology:  
a poststructuralist textual analysis  
of concepts in inquiry**

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<sup>1</sup> These words have been intentionally crossed through.

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# Abstract

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This thesis considers the concept of information as meaning through the following research question: how can we work critically with a tradition of information systems development methodologies? Motivation for this derives from the way 'hard' methodologies have traditionally regarded information as structured data. This neglects 'soft' concerns for how people attribute meaning to data through a process of 'inward-forming' as they use data to make sense of a situation. The research is potentially important insofar as it considers how viewing information as structured data may have confused attempts at theory building. That is, if information is conceived of as structured data, then this may be reflected in how we conceive of a methodology's theory with the result that the meaning of a methodology becomes guaranteed by the theory. This gives rise to a prescriptive tradition of theory that is potentially misleading because it neglects the personal skills of those who use methodologies.

This is investigated through a descriptive/interpretive research approach using a poststructuralist textual analysis of concepts in the theory and practice of a methodology. While structuralism views meaning as something static contained 'within' a text that readers passively consume, poststructuralism emphasises how readers actively derive meaning through their interactions with texts. In addressing the hermeneutic and deconstructive aspects of poststructuralism, the research draws on the philosophers, Paul Ricoeur and Jacques Derrida respectively. With regard to Derrida, deconstruction is used to argue how the main position asserted by a methodology's texts is undermined by elements within the texts themselves. This critically questions the foundations on which a methodology claims to be based.

The general purpose is to build theories of methodology that address information as meaning. To this end, the thesis centres on four areas of investigation: it considers themes associated with linking 'hard' and 'soft' methodologies, investigates a specific methodology that links such approaches, raises a critical element by deconstructing concepts in inquiry, and considers implications for the relationship between theory and practice of methodology. The area of application for the research was Multiview Methodology (MVM) because it combines a range of existing methodologies that reflect 'soft' concerns for how people interpret meaning as well as a traditional 'hard' focus on structuring data for use on computerised information systems.

The deconstructive approach used in this research is not yet common in the field of information systems. As such, this research is intended to contribute towards new critical strategies that challenge methodologies as conceptual systems in their own right as distinct from strategies that challenge their authors. Focusing on the conceptual implications of methodologies rather than their authors' intentions resulted in four main outcomes: a conception of paradigm as network, which refers to a shared conception of meaning, though commitments to beliefs in particular models vary from heuristic to ontological; a Trojan horse phenomenon, which refers to tendencies to reiterate limitations criticised in others; constraints of traditional print media insofar as these are associated with linear and static descriptions of methodology in use; and methodology as metaphor, which refers to the process through which we understand the unfamiliar in terms of the familiar thereby creating new concepts while still retaining aspects of our past experiences.



1.

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## INTRODUCTION

The purpose of this thesis derives from an area of concern over a conception of information as meaning and its implications for building theories in information systems development methodologies. Drawing on Boland (1987), information is conceived of as a process of inward-forming that arises in us through interacting with structured data. This view of information as meaning is problematic to research in an empirical field such as information systems, partly because processes of inward-forming are not readily observable.

Consequently, traditional 'hard' information systems development methodologies may have avoided a conception of information as meaning by assuming that information is structured data. This may be linked to traditional conceptions of information systems as primarily *technical* artefacts with social implications. However, continued failures of

information systems due to factors associated with social rather than technical matters, suggest that we should revise our conception of information systems (Davis et al., 1990; Hornby et al., 1992; Meyers, 1993).

In re-conceiving of information systems as primarily *social* systems that use technology, researchers are building theories of ‘soft’ methodologies. These address a conception of information as data plus the meaning people attribute to it (Checkland, 1981). Nonetheless, the continued dominance of traditional conceptions of information systems as technical artefacts has a potentially important implication for methodologies: the process of inward-forming that is so critical to the effective use of information systems is often neglected in analysis and design. This may have resulted in a misleading conception of methodology insofar as its meaning becomes somehow ‘guaranteed’ by the theory. This conception is an inappropriate projective model for practice because it undermines *human* skills in communication.

In researching how to work critically with a tradition of methodologies, this thesis develops a descriptive/interpretive research approach using a poststructuralist textual analysis of concepts in inquiry. The investigation focuses on Multiview Methodology (MVM) since this combines a traditional ‘hard’ focus on data with a ‘soft’ concern for how people attribute meaning to data (Wood-Harper et al., 1985).<sup>1</sup>

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<sup>1</sup> With regard to meaning attribution, the authors see MVM as having moved from a synthesis of the ‘best’ from an existing range of ‘hard’ and ‘soft’ approaches to a contingent and now towards a critical approach (Wood-Harper, 1989).

In considering an area of concern for building theories of methodology that address information as meaning, this thesis is structured in two parts. These are summarised below.

## 1.1 Part I: A Theoretical Matrix of Critical Themes

Part 1 draws on significant prior research to consider the area of concern of information as meaning through a range of critical themes associated with linking ‘hard’ and ‘soft’ methodologies.

*Chapter 2: Information as Meaning*, considers an area of concern of information as meaning and its implications for information systems development methodologies. This includes a problem of meaning; purpose, motivation, and research question; definition of key terms; motivation for focusing on Multiview Methodology (MVM); potential importance and relevance of this research; aim and areas of investigation; and a research approach for investigating meaning.

In considering how to address limitations of approaches to information systems development, *Chapter 3: Themes Giving Rise to Concerns in Linking Hard and Soft Methodologies*, examines significant prior research. This sets out themes associated with linking ‘hard’ and ‘soft’ methodologies as follows: criticisms of ‘hard’ methodologies, criticisms of ‘soft’ methodologies, ways of linking ‘hard’ and ‘soft’ methodologies, criticisms of existing combinations, and possibilities for future developments.

*Chapter 4: Meaning's Two Meanings*, relates significant prior research to the area of concern described in this thesis by developing an organising framework of *meaning's two meanings*. The main outcome is a conception of a paradigm as network. This refers to a way of thinking about methodologies not as self-enclosed theories but as a disciplinary matrix of loosely connected concepts working with the tension deriving from two contrary aspects of meaning both as a general structure and a specific instance.

*Chapter 5: Research Approaches in Information Systems*, considers two traditions of research: those derived from the natural sciences and those derived from the humanities. The chapter is structured as follows: criticisms of research approaches adapted from the natural sciences, the need for a tradition of human centred approaches, and research traditions and meaning's two meanings.

*Chapter 6: Defining a Descriptive/Interpretive Research Approach*, considers a suitable way of learning how to work with meaning's two meanings in methodology. A taxonomy for choosing an appropriate research approach is used to define a descriptive/interpretive approach. Following this, reasons for using a poststructuralist textual analysis of a methodology's theory and practice are given. A justification for this research approach is its potential suitability for an apprentice researcher to learn how to reflect on a methodology's cumulative tradition.

## 1.2 Part II: Problems with a Critical Strategy in Practice

While Part I focuses on critical themes in relation to methodology, Part II reflects on some practical difficulties that arise in criticising concepts in inquiry.

*Chapter 7: A Critique of Multiview Methodology's Theory*, is structured as follows: identifying the authors' preferred readings, critique of conceptual implications in MVM's theory, and main outcome -- the Trojan horse phenomenon, which is a tendency to reiterate limitations criticised in others.

*Chapter 8: A Critique of Multiview Methodology's Practice*, critiques the authors' preferred readings as follows: a critique of MVM's practice as it is described in case studies and its main outcome -- constraints of traditional print media. These constraints emphasise linear and static descriptions of methodology in use, which neglect its iterative and dynamic aspects.

*Chapter 9: A Critique of Three Metaphors in Multiview Methodology*, considers conceptual implications of three metaphors associated with MVM's synthesis of five perspectives on developing information systems. The chapter is structured as follows: metaphors in reality construction and goal enactment, the metaphor of progress in information systems development, the balance scale metaphor in decision making, and the metaphor of MVM's five perspectives as tools.

*Chapter 10: Interpreting Methodology Under Erasure -- between ~~theory~~ and ~~practice~~,*<sup>2</sup> considers implications for the relationship between theory and practice in light of the argument developed in previous chapters (Watson and Wood-Harper, 1995c). This consolidates an implication of the Trojan horse phenomenon by the concept of interpreting methodology under erasure: in drawing on the resources of a tradition,

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<sup>2</sup> The scoring out of these words is intentional; they have been 'erased.'

interpreting 'under erasure' recognises the necessity of using existing terms and activities, yet it also addresses their inadequacies (Derrida, 1977a). Hence the terms theory and practice are crossed through in the chapter's title. The rest of the chapter is structured as follows: a dichotomy between using and describing methodology in use, methodology in use as a hermeneutic process, and main outcome -- methodology in use works as metaphor. This refers to the way we learn to understand the unfamiliar through the familiar, thereby creating new concepts while still retaining aspects of our past experience.

*Chapter 11: Reflections on Research*, draws on Checkland's (1991) model concerning the elements of any piece of research to reflect on findings through a framework of ideas and a research approach to investigate an area of application. Four main outcomes are summarised, and from these, three lessons concerning a hermeneutic framework of ideas are described. Next, three lessons concerning a descriptive/interpretive approach using a poststructuralist textual analysis are considered, and six lessons concerning the area of application of information systems development methodologies are set out.

*Chapter 12: Afterword*, concludes the research. Limitations of the research are considered as follows: taking a degree of pride in prejudice, marginalising other conceptions of information systems, the need for a value system, choosing a different methodology for research, and choosing a triangulation of research approaches. Following this, case-based reasoning is discussed as a practical area for further research insofar as it is an information technology that has the potential for representing as well as reflecting on multiple points of view.

The four main outcomes of this research are described below.

## 1.3 Four Main Outcomes

### *1.3.1 Paradigm as network*

The continued proliferation of methodologies suggests that there is considerable variation in theory and practice. Consequently, while a methodology has its own structure that is constituted by sets of oppositions and relations, a methodology is itself part of a larger structure of meaning. This led to a conception of a paradigm as network in which different methodologies are loosely connected insofar as they share a similar conception of meaning as general structure and specific instance.

### *1.3.2 The Trojan horse phenomenon*

In developing criticisms, we do not proceed in isolation since we depend on some of the language and assumptions of others, if only to contrast them with our own point of view. Given this, criticisms often entail contrary themes within them that may have been ‘smuggled in’ with an argument. These potentially undermine the main position that is asserted. Perhaps unwittingly, we may therefore tend to reiterate some of the limitations criticised in others. These tendencies are referred to as the Trojan horse phenomenon.

### *1.3.3 Constraints of traditional print media*

Descriptions of methodology in use are limited by constraints associated with traditional print media. This tends to emphasise linear and static descriptions that neglect the iterative and dynamic aspects of methodology in use. Likewise, such constraints result

in descriptions that neglect non-verbal and non-visual aspects of a situation since these are not easily represented.

### ***1.3.4 Methodology as metaphor***

The gap between theory and practice is a special case of a metaphorical gap in meaning between experience and its description that occurs even in practice. That is, the meaning of experience is interpreted even in practice through the descriptions made when enacting an intervention, e.g., through entity-relationship diagrams and so forth. Indeed, these descriptions are how the stages of a methodology are distinguished one from the other. This division in meaning between experience and its description suggests that in considering information as meaning we approach methodology as metaphor since even in practice our condition is one of trying to understand certain aspects of experience in terms of others.<sup>3</sup> This outcome suggests not only that specific metaphors affect methodology, but that metaphorical thinking may explain the process we engage in when relating theory and practice.

## **1.4 Summary and Conclusion**

This chapter has introduced an area of concern for conceiving of information as meaning and its implications for information systems development methodologies. This sets out the structure of argument described in Parts I-II of the thesis as well as the main outcomes of the research. The next chapter focuses on information as meaning in detail to set out the main premises and concepts that structured the research.

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<sup>3</sup> For example, in Soft Systems Methodology (SSM), practitioners try to understand phenomena by comparing systems with real world thinking and vice-versa (Checkland and Scholes, 1990, p. 27).



Part I:

# A Theoretical Matrix of Critical Themes

I

# 2.

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## INFORMATION AS MEANING

### 2.1 Introduction

This chapter describes an area of concern deriving from a consideration of information as meaning and its implications for information systems development methodologies.

The chapter is structured as follows:

- area of concern -- a problem of meaning;
- purpose, motivation, and research question;
- definition of key terms;
- motivation for focusing on Multiview Methodology (MVM);
- potential importance of research;
- aim and areas of investigation; and
- a research approach for investigating meaning.

## 2.2 Area of Concern -- A Problem of Meaning

Once rare, computerised information systems are now common. They affect us either directly or indirectly in many of our daily activities. Given these circumstances, our conceptions of communication are becoming increasingly linked to experiences with using computerised information systems, and associated with this technology is a wide range of occupations and activities all based on collecting, processing, storing, and transmitting data. Dahlbom and Mathiassen (1993, p. 26) define data as follows:

Data are a formalised representation of information, making it possible to process or communicate that information.

In such forms as reports, tables, and graphs, data are readily available in quantities that are sometimes overwhelming. While data are no doubt important, by making this the focus of our efforts, we may be avoiding some elusive aspects of information. In raising this concern about information systems use, Boland (1987, p. 363) states that the meaning of information is in its name:

Information is an inward-forming. It is the change in a person from an encounter with data.

This 'inward-forming' is how meaning arises from data. Meaning may be part of a general sense-making process associated with the way we understand the world or it may be the way that we come to define a particular concrete situation. Boland (1987, p. 363) explains that the process of 'inward-forming' is elusive because we cannot readily observe it. He argues that our main problem is that we know information is meaning, yet we continue to avoid problems of meaning by assuming that information is structured data (Boland, 1987, p. 364).

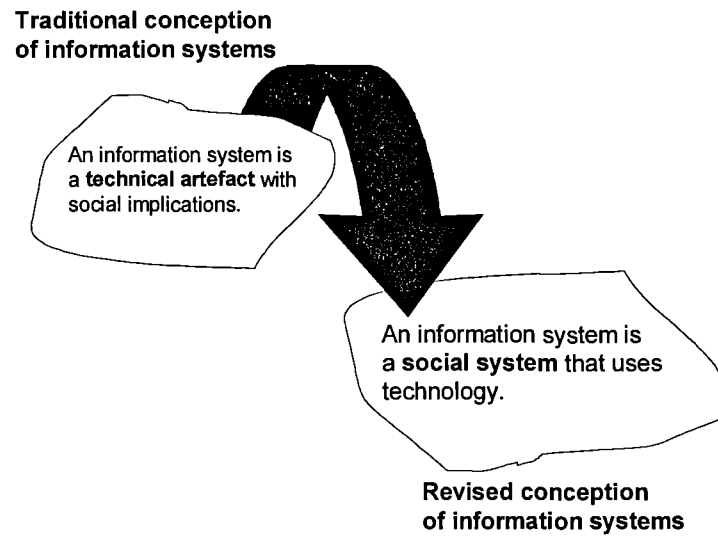
### *2.2.1 A conception of information systems as social systems that use technology*

This tendency may be linked to traditional conceptions of information systems as primarily technical artefacts with social implications (Goldkuhl and Lyytinen, 1982; Galliers and Land, 1987). Certainly this focus has resulted in impressive technological developments, but the continued failure of information systems has led to criticisms of this conception.

For example, in the United Kingdom, Mingers (1995, p. 18) describes three recent failures with large scale disastrous consequences:

1. The London Ambulance Service's emergency system failed when it was first put into use, which indirectly caused several deaths resulting in a write-off of the £10m it cost to develop the system.
2. The London Stock Exchange's paperless settlement system, Taurus, also failed, costing £75m.
3. A United Kingdom government system for the unemployed similarly failed, costing £44m.

Since failures are often due to social issues, information systems are increasingly seen as primarily social systems that use technology (Davis et al., 1990; Hornby et al., 1992; Meyers, 1993, 1994). This revised conception of information systems research is shown in the figure below:



**Figure 2.1. Two conceptions of information systems.**

### ***2.2.2 Human centred approaches to information systems research***

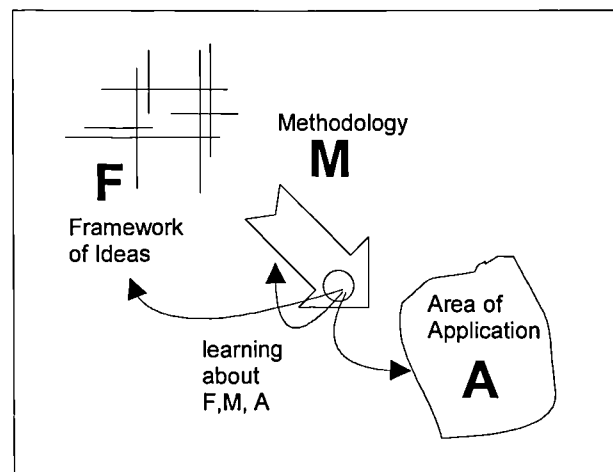
Checkland (1991, p. 397) explains that intervening in *social* systems means that other people can act in relation to researchers in ways that change the phenomena being investigated as well as the results that are derived. Researchers in social systems therefore face situations that differ from those faced by researchers in the natural sciences insofar as objects of investigation in the natural sciences, (e.g., molecules in chemistry laboratories), do not generally change their behaviour self-consciously to help or hinder a researcher's efforts.

In returning to a conception of information as meaning, Checkland (1991, p. 397) draws on Jönsson (1991) to argue that the role of a detached external observer from the natural sciences has to be modified in researching social phenomena since deriving information from data is a 'uniquely human act.' In this view, action research is seen as an appropriate way to study social systems since researchers explicitly immerse themselves

in situations working in collaboration with other people through a deliberate process of reflective learning.<sup>1</sup>

Unlike the natural sciences, it is not possible for researchers to know in advance the precise content of research since this will change through collaboration and reflective learning (Checkland, 1991, p. 398). However, Checkland (1991) argues that such researchers need to declare in advance a set of linked ideas (F) and a research methodology (M) used to investigate an area of application (A).

This is necessary since the intellectual framework sets the terms in which subsequent lessons will be defined. Both a framework and a methodology are therefore ways of making sense of accumulated experience so that general lessons can be drawn from specific instances of application that are ‘potentially transferable’ to others (Checkland, 1991, p. 402). This is shown in the figure below:



**Figure 2.2. The elements of any piece of research (adapted from Checkland, 1991).**

<sup>1</sup> In action research, theory and practice are interrelated through a cycle of learning in which theory informs practice and vice-versa. For a more detailed description of action research, readers are referred to Warmington (1980). Action research will be considered further in Chapter 6 of this thesis when defining a research approach.

### 2.2.3 *Why an explicit methodology is important*

In specifying what is meant by methodology, Checkland (1981, p. 161) first explains that this is *not* a method, i.e., a path or a way of doing something. Rather, methodology is described as follows:

*a set of principles of method which in any particular situation have to be reduced to a method uniquely suitable to that particular situation.*

(Checkland, 1981, pp. 161-62, his emphasis)

This conception of methodology recognises the potential richness and variety entailed in real world situations insofar as it leaves open possibilities of action that may not have been anticipated. Given this, Checkland (1981, p. 162) explains that methodology is intermediate in status between a general philosophy, e.g., phenomenology<sup>2</sup> and a specific technique, i.e., a series of actions that produce standard results. He therefore emphasises that a methodology lacks the precision of a technique, but it gives more specific grounds for action than a philosophy. That is, a methodology contains aspects both of ‘how’ to do something as in a technique and ‘what’ to do as in a philosophy (Checkland, 1981, p. 162).

While apprentice researchers may often assume that there is a ‘natural’ way that professional practitioners approach development, this only appears so because it is the way such professionals were taught. As such, a ‘natural’ way makes assumptions concerning the situation, how important users are, the role of the practitioner, and so

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<sup>2</sup> This will be defined later in the chapter.

forth. These assumptions are often hidden from practitioners and such concealment creates an affect of what they think of as ‘natural’ or ‘proper’ in practice.

In the conception described above, researchers using methodologies try to consider these assumptions explicitly. A knowledge of methodologies can therefore potentially help to identify assumptions that are made in conducting an intervention. If a tradition is something that apprentices are first drawn into before they learn how to reflect on it, a methodology’s theory can help them to learn about the strengths and limitations of particular practices of information systems development. An explicit methodology is potentially important for the following reasons:

1. If there is not one methodology that is ‘best’ for all situations, then it may be useful to know several.
2. A knowledge of several methodologies may help us to handle different situations effectively as our skills grow.
3. A knowledge of several methodologies may help us to evaluate the various claims made by a particular methodological theory and its adherents.

With regard to this last point, for example, there are often continuities as well as differences between theories, and those promoting an individual methodology might tend to emphasise the differences, while neglecting important similarities, perhaps out of a concern for making an original contribution to the research community.



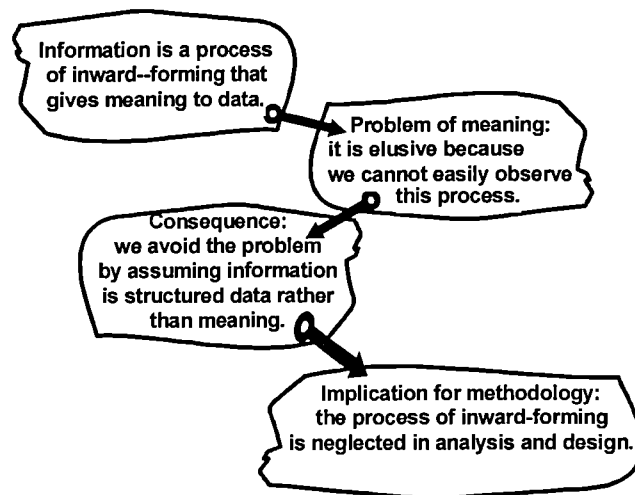
#### *2.2.4 Scope of the research and what is meant by 'hard' and 'soft' methodologies*

The scope of this thesis is limited to 'hard' and 'soft' methodologies. In this thesis, approaches that conceive of information systems as primarily technical artefacts thereby focusing on structured data are referred to as 'hard' methodologies. Those that focus on information systems as primarily social systems will be referred to as 'soft' methodologies.<sup>3</sup> An implication of viewing information systems as social systems that use technology is that developers should no longer avoid a conception of information as meaning.

This is evidenced by the emergence of methodologies such as Soft Systems Methodology (SSM) in which the concept of information is explicitly defined as data plus the meaning people attribute to it (Checkland, 1981, p. 315). Nonetheless, the continued dominance of traditional conceptions of information systems as technical artefacts has a potentially important consequence for methodologies: the process of inward-forming that is so critical to the effective use of information systems is often *neglected* in analysis and design. Following Boland (1987), this area of concern is summarised in the diagram below:

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<sup>3</sup> To avoid creating a stylistic irritation the terms 'hard' and 'soft' will appear without quotation marks throughout the rest of this thesis. For a criticism of conducting inquiry in terms of hard and soft methodologies, readers are referred to Taket and White (1993).



**Figure 2.3. Area of concern.**

These circumstances suggest that we may need to revise our concepts in information systems development. This thesis derives from an investigation of how theories of information systems methodologies are beginning to address a conception of information as meaning.

In considering this area of concern, the purpose, motivation, and research question are discussed below.

## 2.3 Purpose, Motivation, and Research Question

### 2.3.1 Purpose

Given the area of concern set out above, the purpose of this thesis is to contribute towards building theories of methodology that explicitly work with a conception of information as meaning, as a process of inward-forming that arises as we interact with structured data (Boland, 1987).

### ***2.3.1.1 Traditional focus on structure instead of meaning***

Checkland (1981) explains how the history of information is linked with communications theory. However, traditionally communications theorists such as Shannon and Weaver (1949) have been concerned with the statistics of signal transmission, not with the meaning of what was transmitted (Checkland, 1981, p. 284).

This results in a focus on the structure of well-formed signals rather than meaning. In a pithy statement, Checkland (1988) explains a potential danger of this approach:

To the communications engineer acting as such, there is no fundamental difference between 'I have just changed my socks' and 'I have just pressed the nuclear button'!

(Reprinted in Checkland and Scholes, 1990, p. 305)

What such signals may potentially mean to any human being has thus been beyond the traditional concerns of communications engineers.

### ***2.3.2 Motivation***

This research is motivated by an implication of this for systems designers: in conceiving of information as structured data rather than meaning, we may atrophy our skills in constructing and reconstructing information in ways that are humanly meaningful. Specifically, this conception of information without *in-formation* may give rise to a tradition of methodology that undermines human skills in communication (Boland, 1987).

#### ***2.3.2.1 Criticising a tradition***

The example from Checkland and Scholes (1990) discussed above indicates how this discipline's roots extend into a tradition forged by engineers. We may feel pleased, hostile or ambivalent about applying engineering principles to designing information

systems, but like it or not, this inheritance continues to affect our work. Checkland (1989), for example, takes care to emphasise that SSM is best understood in relation to its origins in hard systems engineering. Additionally, Checkland and Scholes (1990, p. 284) describe the limitations imposed by talking of experience in the language of ‘problems’ and ‘solutions which eliminate problems.’ They explain that this reflects their early conception of SSM as a ‘re-cast systems engineering,’ and they criticise the language associated with this tradition as follows:

[It] is too poverty stricken to cope semantically with the complex mix of actions, norms, standards and judgements which constitute the flux of everyday experience.

(Checkland and Scholes, 1990, p. 284)

To reflect their learning of how SSM helps inquiry into the complexity of such situations, they continue to describe how serious users of SSM soon addressed these limitations by speaking in terms of ‘problem situations’ instead of ‘problems’ and by using the methodology’s stages flexibly rather than sequentially (Checkland and Scholes, 1990, p. 284).

This example indicates how we begin critique not in isolation, but in a tradition in which we already believe ourselves to be. It also suggests that traditions are not necessarily closed or self-contained; instead, they are often open to interpretation from other traditions (Gadamer, 1975, 1976). Consequently, while we develop new ways for conducting and describing interventions that focus on the elusive aspects of human meaning, we do not suddenly abandon our past. Rather, we continue to use many of its concepts and activities. This relationship is even maintained in the structure of research: we establish the significance of new work in terms of what others have already said and

done. Notice, for example, that Checkland (1981) does not simply abandon the concept of data in his redefinition of information. Rather, he works with this concept, emphasising that this should also entail meaning.

### ***2.3.3 Research question***

The above criticisms involve a general reflection on what we have inherited from an established tradition with a specific focus on methodology. This centres on a limited concept of information insofar as it neglects meaning in favour of structured data. In extending this line of criticism, this thesis investigates meaning through the following research question: *how can we learn to work critically with a tradition of methodology?*

Below six key terms used in this thesis are defined.

## **2.4 Definition of Key Terms**

### ***2.4.1 Concept***

In this thesis the term, *concept*, is used generally after Schön (1963, p. 4) to include everything from ‘a child’s first notion of his mother’ to ‘the Newtonian theory of light.’ Likewise, in this thesis, whether concepts are to be considered ‘exclusively as language, behaviour, images, logical terms, or the like, is not at issue’ since these are *all* potentially useful ways of understanding concepts (Schön, 1963, p. 4). However, like Schön (1963, p. 5), this thesis is critical of the following model underlying how we think about concepts:

When we say that we ‘have’ a concept, that it is ‘applied’ to an instance, that it ‘fits’ or does not ‘fit’ that instance, we speak as though a concept were a kind of concrete thing. We speak of ‘big’ and little ideas, ‘my’ idea and ‘yours’, ‘few’ or ‘many’ ideas. We spatialize ideas. We give them a certain generality – a single idea may ‘apply’ to many instances – but we speak as though they have definite limits and could be handled like spatial things. It is as though we thought of concepts as mental stencils superimposed on experience.

In this thesis, Schön (1963) has been drawn on because the underlying model of how we think about concepts as ‘mental stencils’ may have confused attempts at theory building in information systems. This may have resulted in a view that the meaning of a methodology is somehow ‘contained’ in a theory that we then merely ‘apply.’<sup>4</sup>

#### **2.4.2 Critical**

In this thesis the term, *critical*, is used in a general sense concerning how we understand and explain types of evaluations. This includes the kinds of evidence relevant to them, and the criteria through which they are judged. With regard to the critical theory advocated by the Frankfurt School, this is a specific type of criticism, one that makes evaluations out of an ethical concern for realising emancipatory principles (e.g., Habermas, 1970). Specifying this in terms of information systems, this type of criticism would be based in Hirschheim and Klein’s (1989) neohumanistic paradigm.<sup>5</sup>

However, in this thesis, the term, *critical*, is meant in a general sense since the research is primarily concerned with understanding a tradition in the role of an apprentice researcher, perhaps as a first step towards further inquiry into ways of addressing the constraints that a tradition may impose on information systems development.

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<sup>4</sup> This will be discussed later in this chapter in relation to Reddy’s (1993) criticism of the ‘conduit metaphor’ in communication.

<sup>5</sup> Hirschheim and Klein’s (1989) four paradigms are discussed further in Chapter 3.

### **2.4.3 Methodology**

In this thesis, the term, *methodology*, is used with reference to developing information systems as follows:

a coherent collection of concepts, beliefs, values and principles supported by resources to help a problem-solving group to perceive, generate, assess and carry out in a non-random way changes to the information situation.

(Avison and Wood-Harper, 1990, p. 20; modifying Checkland, 1981; and Lyytinen, 1987)

This particular definition was chosen since it is given by the authors of Multiview Methodology (MVM), which was the research area investigated in this thesis.

### **2.4.4 Metaphor**

In this thesis, the term, *metaphor*, refers to a process of thought through which we bring our understanding of the familiar to bear on the unfamiliar to yield new concepts while still retaining aspects of our past experience (Schön, 1963, p. ix). In this view, metaphor is not merely a decorative use of language that deviates from normal usage; rather, it is a *fundamental* process of thought central to linguistic creativity (Ortony, 1993, p. 2).

### **2.4.5 Paradigm**

In this thesis the term, *paradigm*, is used in Thomas Kuhn's (1970, p. 175) two senses. First, it describes a degree of unity in a community giving it a common identity through a shared pattern of assumptions to characterise phenomena that are recognised as the foundations for further practice. Second, it also refers to 'concrete puzzle-solutions' that are used as model examples or *exemplars*, such as Newton's Second Law of Motion,  $f=ma$  (Kuhn, 1970, p. 188). A paradigm gives the community a common identity while recognising that within this there are rival methods that are debated. Nonetheless, such

debates take place in light of a common background of beliefs and values such as those suggested by a methodology in information systems. In relating this to software development, Dahlbom and Mathiassen (1993, pp. 84-5) explain:

In such a paradigm there are beliefs about the subject of software development, what it is and some general truths about it, as well as beliefs about knowledge and the methods by which it is obtained. But most of all are the *exemplars*, model examples of how software development is done when it is done well. The exemplars can be real or invented. They are used in teaching, and they can be used when we cannot spell out in explicit detail what we do as systems developers. We learn the methods by studying the examples, and we remember the methods by remembering the examples.

While Kuhn's (1970) explanation of paradigm has been highly influential, the concept is used with some reservation, especially insofar as he is critical of how appropriate it is to describing disciplines apart from the physics community from which his research is derived. This will be discussed further in Chapter 4 in considering a conception of paradigm as network with reference to Schön's (1963) criticism of concepts as 'mental stencils' and Kuhn's (1970) own revision from paradigm to disciplinary matrix.

#### **2.4.6 Perspective**

In this thesis the term, *perspective*, is also used after Dahlbom and Mathiassen (1993, p. 251) as follows:

A perspective is a way of ordering the world, a simplification by exaggeration of the structure of the world, a highlighting of certain differences into fundamental distinctions. It is a conceptual framework of basic categories, a taxonomy enabling us to group and classify phenomena in the world, ordering them according to their relative value and importance. It is a few fundamental beliefs about what is and what is not. As we use the term, a perspective can be anything from a simple point of view to a whole philosophy.

This definition was chosen since it parallels Checkland's (1981, p. 161) view that a methodology is somewhere in-between a philosophy and a technique. This variation is similar to Kuhn's (1970) discussion of a research community's commitment to models ranging from heuristic to ontological.



### 2.4.7 Practice

The term, *practice*, is used in two main senses after Schön (1983, p. 60):

In the first sense 'practice' refers to performance in a range of professional situations. In the second, it refers to preparation for performance. But professional practice also includes an element of repetition. A professional practitioner is a specialist who encounters certain types of situation again and again. This is suggested by the way professionals use the word 'case' – or project, account, commission, or deal, depending on the profession. All such terms denote the units which make up a practice, and they denote types of family-resembling examples.

Insofar as this represents an apprentice researcher's first attempt, the practice from which this research derives may be understood in terms of Schön's (1963) second sense as a *preparation* for future practice.

### 2.4.8 Theory

In this thesis the term, *theory*, is used after the *Concise Oxford Dictionary* (1988, p. 1109) as follows:

supposition or system of ideas explaining something, especially one based on general principles independent of facts, phenomena, etc., to be explained.

This definition reflects what is described in Chapter 4 of this thesis in terms of meaning as a general structure, which has a tendency to suppress a second aspect of meaning as a specific instance. This is evidenced, for example, in the way SSM was first conceived of as a general structure, i.e., a sequential seven stage model (Checkland and Scholes, 1990, p. 284). The inadequacy of this conception of theory as a general structure is suggested by subsequent revisions to SSM reflecting less formal internal uses of it as a thinking mode (Checkland and Scholes, 1990, p. 281).

### 2.4.9 Tradition

In this thesis the term, *tradition*, is used in a general sense after Palmer (1969, p. 177) as follows:

Tradition, then, is not over against us but something in which we stand and through which we exist; for the most part it is so transparent a medium that it is invisible to us – as invisible as water to a fish.

This was used because it reflects the hermeneutic recognition that tradition gives us a host of concepts within which we stand in attempting to distinguish fruitful assumptions from those that prevent us from seeing and thinking in new ways (Palmer, 1969, p. 183).

This section has set out definitions of key terms. Reasons for focusing on MVM in researching how to work critically with a tradition are discussed below.

## 2.5 Motivation for Focusing on Multiview Methodology

In drawing on the resources of a tradition that is simultaneously criticised, it is misleading to claim that a point of departure can be justified absolutely (Derrida, 1977a, p. 162). This is particularly so in situations faced by apprentice researchers insofar as points of departure arise in relation to their roles of *learning* from the traditions in which they find themselves to be (Mumford, 1985, p. 317).

In relating this to the area of concern discussed at the beginning of this chapter, traditional concepts of information systems as technical artefacts that manipulate structured data are limited because the concept of information without in-formation neglects meaning (Boland, 1987). Such limitations are also reflected in traditional hard methodologies with their focus on manipulating structured data (Boland, 1987). In

contrast to this, Checkland and Scholes, (1990, p. 54) write that viewing information as a 'symbol rather than signal' reflects a view of information systems as cultural rather than technical phenomena.

In addressing this, SSM emphasises how people interpret meaning. Yet a potential criticism of SSM is that it lacks material impact since it does not offer support for implementing the changes it suggests (Vidgen, 1993). Because of this, other methodologies concerned with meaning have developed that combine SSM with more traditional methodologies (e.g., Avison and Wood-Harper, 1990). These reflect a concern for avoiding the separation of an SSM analysis and the task of making a computerised information system (Lewis, 1994). Such criticisms suggest that people still need data to make interpretations, and a potential strength of hard methodologies is their ability to structure and manipulate data.

While such developments are further evidence that traditions are not simply abandoned, a criticism of methodologies that use SSM as a 'front-end' to technological design is that they do not challenge the assumptions of traditional development (Miles, 1988). That is, users participate up to a point, and then the process becomes technology-driven (Stowell and West, 1994). In beginning to address this criticism, opportunities to draw on parallel research in the Information Systems Research Centre at the University of Salford were the motivation for focusing on MVM since it combines a range of established hard and soft methodologies. Because MVM links a range of established methodologies, outcomes of this research might therefore be relevant not just to MVM, but also to the traditions of methodologies from which MVM is derived.

(A description of MVM's theory is given in Chapter 7 of this thesis.)

The potential importance of this research is discussed below.

## 2.6 Potential Importance of Research

Our technology and our institutions, such as methodology, affect our thought not only directly by changes in behaviour they force upon us, but indirectly by presenting themselves as 'projective models' for our theory (Schön, 1963, p. 197). That is, they are influential in 'problem setting' which is the 'process by which we define the decision to be made' (Schön, 1983, p. 40).<sup>6</sup> While Checkland (1981, p. 284) argues that the 'idea of meaning' will be seen as important as the ideas of energy and information, a problem with meaning is that processes of inward-forming cannot be directly observed.

Consequently, research concerning information as meaning is potentially important insofar as hard methodologies may have avoided meaning by presenting us with theories that assume information is structured data. This may confuse attempts at theory building in the following way: if information is conceived of as structured data, then this may be reflected in how we conceive of a methodology's theory with the result that the meaning of a methodology becomes somehow 'contained' in the theory we create. Reddy (1993) refers to this as the *conduit metaphor* in which communication works through the physical transfer of thoughts and feelings. Evidence for this is suggested by

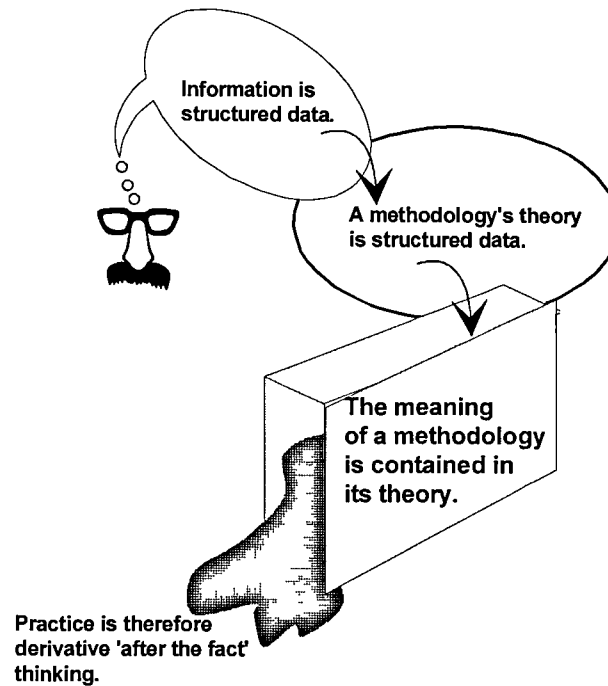
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<sup>6</sup> This is considered in Chapter 9 in terms of a critique of the projective models associated with three metaphors in MVM.

the way communications engineers have traditionally treated information as signals rather than symbols (Checkland and Scholes, 1990, p. 305).

This conception of information is relevant to information systems insofar as it may continue to affect how we conceive of theory in information systems development. Hence we speak of 'putting thoughts into words' or 'putting theory into practice.' In this view, failures in communication are what require explanation, while success appears to be automatic (Reddy, 1993). This may give rise to a concept of theory that is fully formulated in terms of a 'mental stencil' that we impose on experience (Schön, 1963, p. 5).

We may then think of theory and practice in terms of a concept-instance relation, and practice becomes derivative, a matter of 'after the fact' thinking (Schön, 1963, p. xi). Checkland's (1981, p. 144) position regarding the application of hard systems thinking to soft problems is based in a criticism of this type of 'after the fact' thinking. That is, traditionally, engineers start after they accept a specification, and they then focus on *how* to do things since the *what* is 'already answered elsewhere' (Watson and Wood-Harper, 1995a, my emphasis). In following Schön (1963), this conception of methodology is shown in the figure below:



**Figure 2.4. A concept of practice as derivative 'after the fact' thinking.'**

In practice if we take a methodology's theory literally as given, it becomes a prescription for our actions in developing a system. So long as a practitioner follows the appropriate stages correctly, a methodology's meaning then becomes an object *guaranteed* by the theory. The United Kingdom's government standard, Structured Systems Analysis and Design Methodology (SSADM) is an example of such an approach to methodology (CCTA, 1989).

This thesis argues that such a conception is potentially misleading since it implies that a methodology's success is independent of its user (Checkland and Scholes, 1990, p. 285). Conversely, a main premise of this thesis is that information is meaning, and this can only be achieved through continued practical discourse in human communities. As such, it considers the possibility that a methodology's theory may atrophy our critical

skills in communicating if it is based on the assumption that information is solely structured data.<sup>7</sup>

This research may be important insofar as it offers evidence that information is *not* an object; it is a skilled human accomplishment (Giddens, 1979, also quoted in Boland, 1987, p. 376). The skills of those who use a methodology therefore play a vital role in interpreting its meaning. Evidence for this is reflected in recent developments of SSADM that now incorporate SSM as a 'front-end' (e.g., CCTA, 1991).

## 2.7 Aim and Areas of Investigation

Goldkuhl (1982) argues that we should see information systems not just as technical artefacts but as linguistic constructs with the purpose of informing people with data to support their actions. Stamper (1977, p. 293) describes the central problem of database design as 'how to select the appropriate universe of discourse and how to relate the data structures within the information system to the real entities in the world.' Lyytinen (1985) draws on theories of language and considers how perspectives on information systems development can be characterised by the language views underlying them. Mingers (1992a) also considers theories about information and meaning and the relationship between the two.

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<sup>7</sup> This view may also affect how we conceive of people using information systems, i.e., so long as they follow the users' manual correctly, the success of an information system is guaranteed.

In learning how to work critically with a tradition of methodology, this thesis draws on such research with the aim of revising our understanding of methodology to take account of information as meaning. This emphasises a conceptualisation of information systems as linguistic phenomena by focusing on language as a way making of sense of our experiences in developing information systems.

However, this is *not* to claim that there is nothing beyond language, only that language is one way of addressing the difficulties we have in communicating our experiences to others.

To this end, the thesis centres on four areas of investigation:

1. Consider themes giving rise to concerns in linking hard and soft methodologies.
2. Investigate concepts of inquiry in a specific methodology that combines a concern for meaning with a traditional concern for structured data.
3. Raise a critical element by deconstructing concepts of inquiry.
4. Consider the relationship between the theory and practice of methodology.

A research approach for investigating information as meaning is set out below.



## 2.8 A Research Approach for Investigating Meaning

### 2.8.1 *A hermeneutic framework of ideas*

Generally, this thesis reflects a hermeneutic perspective. Hermeneutics derives its name from Hermes, a messenger of the Greek gods, and it refers to an area of philosophy concerned with interpretation, the problem being that once a message was delivered it required interpretation because its meaning was unclear or ambiguous (Boland, 1991). Historically hermeneutics emerged out of a concern for interpreting the meaning of biblical texts. However, this has been extended to the interpretation of actions as well, on the premise that texts so often describe actions (Ricoeur, 1991a).

Boland (1991), Meyers (1993, 1994), and Lee (1994) discuss information systems use as a hermeneutic process. This perspective was also considered appropriate to researching methodologies since meaning is a hermeneutic problem and methodologies are constituted by texts and actions. The hermeneutic problem of interpreting messages is raised, for example, when we conceive of information as a symbol rather than a well-formed signal, e.g., in situations in which it *is* important to distinguish implications of changing socks and pressing nuclear buttons (Checkland and Scholes, 1990, p. 305).

This is evidenced by the way methodologies help to make meaning of experiences not just through actions, but also through descriptive models that arise as we read and write in each situation. So, for example, activities such as debates about change using SSM are initiated by comparing ‘models based on a range of worldviews’ with real situations (Checkland and Scholes, 1990, p. 43). Drawing on Latour and Woolgar’s (1979) discussion of laboratory life, an implication of this process of reading and writing in

information systems development is that methodology might be understood as the organisation of persuasion through a series of ‘literary inscriptions.’ This is evidenced, for example, in Goldkuhl’s (1987) view of information systems as constituting a professional language in action. In this view, the purpose of an information system is to influence certain people and their actions through communication. While methodology is certainly not the only factor affecting the perception and interpretation of a situation, it does play a role in this process as suggested by the information requirements analysis methodology (IRQA) Goldkuhl (1987) develops.

### ***2.8.2 A descriptive/interpretive research approach***

In light of criticisms of traditional research approaches in information systems adapted from the natural sciences, the research drew on Galliers’ (1991a) taxonomy in defining a descriptive/interpretive approach.<sup>8</sup> Insofar as strengths of descriptive/interpretive approaches are their abilities to reflect on cumulative traditions (Galliers, 1991a, p. 338), this was considered an appropriate way for an apprentice researcher to learn how to work critically with a tradition of methodology that is beginning to address a conception of information as meaning.

The research approach from which this thesis derives stems from a *phenomenological* school of thought, the main assumption being that knowledge derives from the phenomena that constitute our experience (e.g., Husserl, 1936; Boland, 1985).

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<sup>8</sup> Although it is common to refer to research *methodologies*, the term *approach* is used in this thesis to avoid confusion with the research topic of information systems development methodologies.

Phenomenology and hermeneutics belong to the same family of inquiry, and while a discussion of their relationship is beyond the scope of this thesis, interested readers are referred to Ricoeur (1991a, pp. 25-52) for a succinct comparison. This school of thought was considered appropriate to working critically with a tradition of methodology because it repeatedly questions assumptions in refining an understanding of the phenomena under study.

### ***2.8.3 A poststructuralist textual analysis***

A poststructuralist textual analysis was used. Specifically, the research drew on deconstructive approaches derived from the work of the philosopher, Jacques Derrida (1973, 1977a, 1977b, 1982, 1986). Taket and White (1993) suggest this as a way of addressing limitations of binary thinking in information systems, such as, for example, the way we tend to conceive of methodologies in terms of hard and soft. Beath and Orlikowski (1994) likewise use deconstruction in their critical assessment of James Martin's (1989, 1990a, 1990b) Information Engineering to argue that it contains contradictory assumptions about the role of users and analysts during systems development. Watson and Wood-Harper (1995b) also use a deconstructive approach to critique Lyytinen's (1987) taxonomic perspective in confronting meaning that is context bound but contexts that are boundless.

Deconstruction does not explain texts in the traditional sense of trying to grasp their unifying content or theme. Instead, it investigates the work of oppositions in arguments and focuses on conceptual implications rather than authorial intentions (Culler, 1983). Deconstruction derives from a concern in questioning traditional metaphysical

assumptions in philosophy (Culler, 1983), and while such concerns are beyond the focus of this thesis, the approach was considered an appropriate example of how to work critically with a tradition.

#### ***2.8.4 Research diary***

A research diary was also maintained from 27th November 1992 to the 28th March 1994. Initially this was useful in helping to scope the research with the intention of developing a formally assessed proposal as part of the University of Salford's degree requirements. Following acceptance of the proposal at the end of the first year, the diary continued to be useful in reflecting on the course of the research and the development and recurrence of ideas.

The diary was also useful for reflecting on my own process of inward-forming since as Boland (1987) points out, such processes are not directly observable. Moreover, the diary encouraged a habit of writing that was considered to be useful in composing a thesis. The diary was ended when the research began to be conceived of in terms of a formal thesis, a structured argument rather than a series of open-ended activities and ongoing investigations.

This research approach is defined in Chapter 6 of this thesis. Excerpts from the research diary are given in Appendix I.

## 2.9 Summary and Conclusion

This chapter considered an area of concern of information as meaning in the following terms:

- a problem of meaning,
- purpose, motivation, and research question,
- definition of key terms,
- motivation for focusing on Multiview Methodology (MVM),
- potential importance of research,
- aim and areas of investigation, and
- a research approach for investigating meaning.

The next chapter considers implications for a conception of information as meaning in more detail by focusing on a community of significant prior research concerned with linking hard and soft methodologies.

# 3.

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## **THEMES GIVING RISE TO CONCERNS IN LINKING HARD AND SOFT METHODOLOGIES**

### 3.1 Introduction

In considering how to work critically with a tradition of methodology, the previous chapter introduced an area of concern: a conception of information as meaning. Hard methodologies were criticised for conceiving of information as structured data rather than what data means to people. Soft methodologies begin to address this by considering that information is data plus the meaning people attribute to it (Checkland, 1981). An implication of this is that we need to build theories of methodologies that address information as meaning.

This chapter draws on significant prior research to investigate the area of concern in more detail. Five critical themes giving rise to concerns in linking hard and soft methodologies are set out as follows:

1. criticisms of hard methodologies,
2. criticisms of soft methodologies,
3. ways of linking hard and soft methodologies,
4. criticisms of existing combinations, and
5. possibilities for future developments.

Focusing on concerns associated with linking hard and soft methodologies in the discussion below has resulted in some difficult choices as well as some exclusions. While this was necessary to keep within the scope defined in Chapter 2 centring on hard and soft methodologies, implications of this research are related to other critical developments in information systems in Chapters 9-11.<sup>1</sup>

### 3.2 Theme 1: Criticisms of Hard Methodologies

Hard methodologies assume that information systems development concerns primarily technical change. However, as discussed in Chapter 2 of this thesis using examples of information systems failures, criticisms of this assumption have resulted in a growing awareness that information systems development concerns ‘multi-dimensional social change’ (Lyytinen, 1987). From this perspective, the main theme that associates

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<sup>1</sup> For example, implications are related to Critical Systems Thinking (CST), e.g., Flood and Jackson’s (1991b) Total Systems Intervention (TSI).

criticisms of hard methodologies is that their underlying philosophy is inappropriate to social situations since information systems are primarily cultural rather than technical phenomena (e.g., Checkland, 1981; Galliers, 1987; Klein and Hirschheim, 1987; Mingers, 1993; Lewis, 1994).

This is discussed below as follows:

- assume a neutral reality and emphasise objectivity,
- problem solving focus is inappropriate,
- not encourage participation among stakeholders, and
- other paradigms are more appropriate to understanding social situations.

### ***3.2.1 Assume a single neutral reality and emphasise objectivity***

Mingers (1993) explains how hard methodologies have generally said very little about their underlying philosophy, yet in practice they have assumed a single objective reality. Klein and Hirschheim (1987) also criticise hard methodologies for their realist ontology and positivist epistemology. A realist ontology refers to the view that entities in data analysis are objectively given and exist empirically (Kent, 1978; Klein and Hirschheim, 1987). A positivist epistemology refers to the way observable phenomena are explained through causal relationships (Klein and Hirschheim, 1987). Klein and Hirschheim (1987) consider how such assumptions impose limitations in data modelling. For example, the most common approach, which they label 'realist-positivist' presents a one-sided view of the role databases play in organisations, and while it emphasises 'consistency and correspondence with the facts,' this neglects the way that data are often



used to advance each stakeholder's position 'opportunistically' during information systems development (Klein and Hirschheim, 1987, p. 13).

Lewis (1992, pp. 169-70) also criticises the way hard methodologies assume that data models are value free as well as the assertion that 'data analysis merely uncovers an independently existing, objectively true structure.' Instead, he argues that in practice hard methodologies are neither neutral nor objective since the criteria that are chosen to evaluate various alternatives for change reflect the concerns of what some group believes to be important. Moreover, Lewis (1992) argues that organisations do not have objectives; rather, these are attributed to organisations by different people according to their interests. Additionally, in focusing on formal aspects of a situation, hard methodologies favour quantitative rather than qualitative aspects of a situation (Lewis, 1994, p. 31).

In contrast to the way hard methodologies emphasise objectivity, SSM focuses on the subjective aspects of information systems development and explores different views of the problem situation that derive from various values and beliefs (Checkland, 1981). Consequently, in SSM, data analysis focuses on 'notional' systems, those that are meaningful to the individuals involved, and unlike hard methodologies, it does not claim that entities exist in resulting models (Checkland, 1981).<sup>2</sup> In this view, reality is constituted by multiple points of view that need to be continuously negotiated between

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<sup>2</sup> This difference between hard and soft methodologies is discussed further in this chapter under, Theme 4: Criticisms of Existing Combinations, with reference to two different uses of the concept, 'system.'

different people (Berger and Luckman, 1971; Beynon-Davies, 1992; Floyd, 1992a, 1992b).

### ***3.2.2 Problem-solving focus is inappropriate***

Checkland (1981) explains that the main difference between hard and soft methodologies is that the former takes the problem as given. This results in a means/end approach to problem solving focusing on the 'how' since the 'what' has already been decided (Checkland, 1981, pp. 190-1). Consequently, hard methodologies tend to conceive of problem-solving as making choices between an already established end (Checkland, 1981, pp. 15-16), or of weighing up objectives, alternatives, and ranking them (Miles, 1973, quoted in Lewis, 1994, p. 28).

However, as Lewis (1994) argues, it is inappropriate to approach social systems in this way since they are characterised by diverse and conflicting values that affect how different people see a situation as well as what they consider to be 'desirable' change. Soft methodologies therefore address ill-defined problem situations in which means and ends are themselves problematic (Checkland, 1981, pp. 190-1). Galliers (1991b, 1995), for example, uses SSM's multiple points of view to consider a range of different scenarios based on various stakeholders' perceptions of alternative futures for strategic information systems development. In light of an uncertain future, this helps stakeholders to develop a shared view rather than a consensus (Galliers, 1995, p. 66).

### ***3.2.3 Not encourage participation among stakeholders***

In developing a socio-technical methodology, *Effective Technical and Human Implementation of Computer-based Systems (ETHICS)*, Mumford (1983) criticises traditional methodologies for not encouraging participation among stakeholders. Out of a similar concern, Klein and Lyytinen (1985) draw on Habermas' (1970, 1972, 1974) critical theory as a foundation for information systems. From this basis, they see information systems development as a process of communicative action through *ordinary* language that is neglected by hard methodologies since they focus on technological concerns using specialised technical language.

Because hard methodologies have not developed methods for assisting and sharing opinions, they argue that these cannot address how different stakeholders should participate in information systems development or examine this theoretically (Klein and Lyytinen, 1985, p. 226). Similarly hard methodologies have been criticised for the way they support the status quo by adopting the views of power-holders (Lewis, 1994; Stowell and West, 1994).<sup>3</sup>

### ***3.2.4 Other paradigms are more appropriate to understanding social situations***

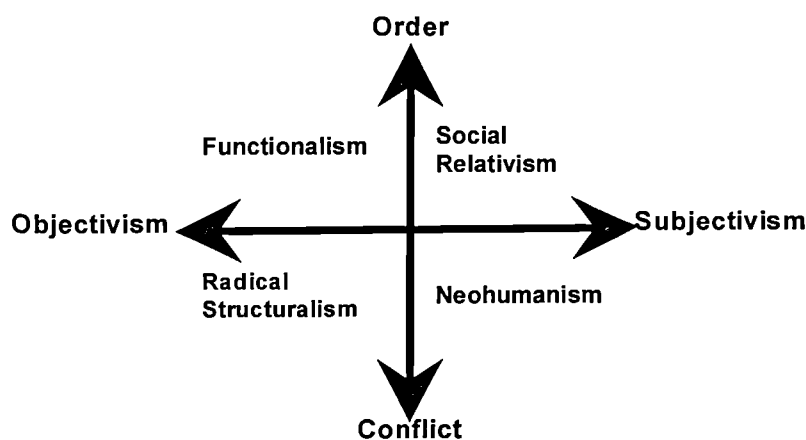
Davies and Wood-Harper (1989) argue for a conceptual overview of methodologies to clarify and challenge their assumptions. This interest derives from a desire to make the assumptions that underpin methodologies explicit so that they can be critically analysed

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<sup>3</sup> This criticism has also been made of SSM by Critical Systems Thinkers, e.g., Jackson, 1982. This criticism is also a general characteristic of Scandinavian approaches insofar as they focus on co-operative involvement of workers in consultation with trade unions. For a discussion of Scandinavian schools in information systems development, readers are referred to Bansler (1989).

regarding their strengths and limitations as guides to practice. Further examples of this include Wood-Harper and Fitzgerald, 1982; Jackson, 1990, 1992; Jackson and Keys, 1991; Oliga, 1991; and Schecter, 1991.

In considering other approaches that may be more appropriate to understanding social situations, Burrell and Morgan's (1979) four paradigms of inquiry in sociology have been influential in structuring the form and focus of critical debates about methodologies. They use two axes to distinguish four paradigms of inquiry as follows: Radical Humanism, Radical Structuralism, Interpretive Sociology, and Functionalist Sociology. The first axis is concerned with epistemology. This reflects different views of the nature of science and inquiry, which they represent on a subjective/objective axis. The second axis centres on ontology, with the nature of society distinguished as ranging from social regulation and order to radical change. Hirschheim and Klein (1989) adapt Burrell and Morgan's (1979) paradigms to identify four ideal types of systems development practice. After Hirschheim and Klein (1989, p. 1202) this is illustrated in the diagram below:



**3.1. Four paradigms of systems development (adapted from Klein and Hirschheim, 1989).**

Unlike Burrell and Morgan (1979), who claim that paradigms are mutually exclusive, Hirschheim and Klein (1989) argue that methodologies may be complementary. However, they criticise almost all hard methodologies because these fall within the Functionalist paradigm in which analysts intervene as systems experts. They explain that there are other roles open to analysts.<sup>4</sup> For example, in the Interpretive paradigm (labelled Social Relativism by Hirschheim and Klein, 1989) analysts intervene as change agents making sense of an emergent world in which the criteria for success are consensus and acceptance. SSM, for example, falls within this paradigm. In the Radical Humanist paradigm (labelled Neohumanism by Hirschheim and Klein, 1989) analysts intervene as emancipators concerned with improving technical control, mutual understanding, and emancipation.

While Hirschheim and Klein (1989) cannot identify analysts working within this paradigm, developments in Critical Systems Thinking (CST) might be characterised in this way (e.g., Flood and Jackson, 1991a, 1991b). In the Radical Structuralist paradigm, analysts are labour partisans intervening against capitalist forces. The UTOPIA project in Scandinavia falls within this paradigm (Ehn, 1988).<sup>5</sup>

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<sup>4</sup> Lewis (1994, pp. 26-33) also criticises hard methodologies for the way they focus on a single level of analysis, that is, on those aspects of a situation that caused the intervention. Lewis describes this as the 'problem content,' and while he states that this is important, he criticises hard methodologies for the way they neglect how the intervention itself may be problematical.

<sup>5</sup> In Scandinavian languages UTOPIA is an acronym for Training, Technology, and Products from the Quality of Work Perspective.

Theme 1 focused on criticisms of hard methodologies. Criticisms of soft methodologies are discussed below.

### 3.3 Theme 2: Criticisms of Soft Methodologies

To return to the area of concern raised in Chapter 2 of this thesis, soft methodologies begin to address information as meaning by emphasising how *people* perceive and attribute meaning to situations differently depending on their values and interests. However, there are also criticisms of soft methodologies which suggest that hard traditions might still have something to contribute. These are discussed below as follows:

- neglect capabilities of technology,
- lack material impact, and
- boundaries between social and technical are problematic.

#### *3.3.1 Neglect capabilities of technology*

While the technical focus of hard methodologies neglects social implications such as the way technology is embedded within organisational contexts, the organisational focus deriving from soft methodologies tends to neglect the capabilities of technology (Avison and Wood-Harper, 1990; Jayaratna and D'Arcy, 1993). For example, while SSM concludes by proposing changes that are culturally feasible and systemically desirable, it does not focus on how a solution can be implemented aside from suggesting that SSM

could be used to structure implementation by conceiving of the situation as yet another 'problem situation' (Checkland and Scholes, 1990; Jayaratna, 1994).

With reference to this, Jayaratna (1994) argues that the cultural context in SSM used to establish what is feasible and desirable for a notional system is different from the cultural context in which the resulting system would be implemented. For this reason he states that SSM's initial cultural analysis should be extended to encompass those who will have to work with the resulting computer system. Jayaratna (1994, pp. 206-207) also asks, for example, if these people can challenge the previously agreed notional system.

### ***3.3.2 Lack material impact***

Kuhn (1970, p. 59) argues how technical apparatus are designed to collect data according to the assumptions of theories that gave rise to their design. As such, if SSM continues to neglect technical design, then the values that are reflected in computer systems will continue to be those of the dominant functionalist paradigm as discussed above with reference to Hirschheim and Klein's (1989) four paradigms for information systems development.

In arguing that reality is socially constructed, Dahlbom (1992) explains that material conditions have an impact in organisations. With regard to SSM's Conceptual Models (CMs), their impact may therefore continue be less than expected despite criticisms of hard methodologies because analysts consider these too far removed from technical design. For this reason, despite the above criticisms, techniques associated with hard methodologies may continue to be more widely used because they give more power to

analysts than conceptually-oriented methodologies like SSM in which material implications remain unclear. In raising such concerns, Vidgen (1993) therefore argues that SSM requires a more direct link to technology so that resulting systems can reflect the values of interpretive paradigms.

### ***3.3.3 Boundaries between social and technical problematic***

Bloomfield (1992) agrees with the critical literature cited above insofar as the technical view of hard methodologies emphasises only one out of several possible paradigms. However, he argues that criticisms emphasising the social aspects of development (e.g., Boland and Hirschheim, 1987; Hirschheim and Klein, 1989) have two main limitations:

1. In questioning the dichotomy between social and technical, he argues not that hard methodologies have neglected social aspects of organisations but that they have ‘ignored the social nature of the *technical* aspects of practice’ (Bloomfield, 1992, p. 191, his emphasis).
2. By emphasising the influence of computers on social structures, such literature marginalises how the discipline of computer science makes assumptions about organisations and society (Bloomfield, 1992, pp. 191-2).

For these reasons Bloomfield (1992, p. 194) criticises the way people conceive of technology as something made outside and then brought into organisations to ‘be applied.’ With reference to Layton (1977), he argues that this view tends to reify<sup>6</sup>

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<sup>6</sup> Reify refers to the process by which we make abstract ideas concrete, thereby mistaking them for reality. The way hard methodologies use the concept, ‘system’ as if systems really existed is an example of this process (Klein and Lyytinen, 1985, pp. 143-44).



computer science, and he explains that consequently we tend to view the discipline as a ‘black box’ assuming that if we were to look inside we would find not just facts and logical formalisms, but also social structures and representational practices like dataflow and entity-relationship diagrams (Bloomfield, 1992, p. 194).<sup>7</sup>

In opposition to this conception, Bloomfield (1992, p. 194) argues that computer science has been influenced by other disciplines and that it is ‘shot through’ with assumptions about society that affect its technical practices. For such reasons, it is problematic to distinguish between social and technical in absolute terms since the boundaries between them are *social* conventions (Bloomfield, 1992, pp. 194-5). Similarly, when explaining the limitations of instrumental mappings in terms of functional and deterministic assumptions in mainstream literature, Lyytinen (1987) cites Kling and Scacchi’s (1982) criticism of ‘discrete-entity’ analysis and their development of web models as a ‘richer family of models’ to reflect the way categories are intertwined (Lyytinen, 1987, p. 25).

Theme 2 has focused on criticisms of soft methodologies. Such criticisms have led to concerns in ways of linking hard and soft methodologies. These are discussed below.

### 3.4 Theme 3: Ways of Linking Hard and Soft Methodologies

After Checkland (1981), Beeby (1993) discusses an implication of recognising the difference between information and structured data: if we conceive of information systems as consisting both of data manipulation, which computers can do as well as

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<sup>7</sup> This is similar to Reddy’s (1993) conduit view of communication discussed in Chapter 2 of this thesis in which meaning is somehow ‘contained’ in words or in a methodology’s theory.

attributing meaning to data, which people can do, then it might be possible to factor information systems into use of information by people and data by machines. If this is the case, then it might be possible to address criticisms of hard and soft methodologies outlined above by using the former for data and the latter for information aspects.

Drawing on Mingers' (1992b, 1995) summary, ways of linking hard and soft methodologies include the following:

- traditional Lancaster,
- front-ending SSM onto hard structured design methodologies, and
- embedding hard structured methodologies within SSM.

### *3.4.1 Traditional Lancaster*

Mingers (1992b, 1995) describes the traditional Lancaster approach of Wilson (1990) and Checkland and Scholes (1990) as follows:

1. SSM is used to derive a primary task model of activities for supporting an information system.<sup>8</sup>
2. Information categories describing general types of information are derived from the primary task model.
3. Each activity is considered to identify the inputs and outputs needed to achieve information flows between activities.

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<sup>8</sup> This is based on a consensus of what everyone agrees the system should do.

4. With techniques like Wilson's (1980) Maltese Cross, required information flows are compared with what is actually happening in the situation.

While initially SSM did not develop implications for hard information systems modelling techniques, Checkland and Scholes (1990, pp. 54-58) have gone some way towards indicating how a CM could be related to an information flow model. This would then be linked to data structures by specifying information categories to indicate points at which design would begin. Nonetheless, Checkland (1995, p. 57) states that the transition from SSM to a detailed computerised design remains to be achieved.<sup>9</sup>

In discussing the practice of database design, Beynon-Davies (1992) concludes that formal information systems arise from the contexts of the informal information systems that surround them, so it is necessary to consider these before database modelling begins. To this end, there has been much interest in linking SSM with technical specification as a way to meet demands of computer-based information systems development.<sup>10</sup> These are discussed below.

### ***3.4.2 Front-ending SSM onto hard structured design methodologies***

In continuing his analysis, Mingers (1992b, 1995) draws on Miles' (1988) distinction between two approaches to linking hard and soft methodologies: grafting or embedding.

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<sup>9</sup> *Theme 5: Possibilities for future developments*, will consider the potential for developments along this line.

<sup>10</sup> In a related field, Mitev (1994) discusses changes in knowledge-based systems methodologies (KBS) from being technology-driven to business led, and to this end, she argues that KBS methodologies can complement information systems development methodologies.

Instances of grafting methodologies are characterised by the way they use SSM as a 'front-end' to hard structured design methodologies. Examples of this include Wood-Harper et al., 1985; Schafer et al., 1988; CCTA, 1989, 1991; Avison and Wood-Harper, 1990; Wilson, 1990; Bell and Wood-Harper, 1992). In such methodologies, SSM is used to analyse the situation, and the results are used to begin structured design.

Mingers (1992b, 1995) explains that such grafts are generally achieved by linking SSM's CMs (Conceptual Models) to DFDs (Dataflow Diagrams) from structured design methodologies. Prior (1990), for example, argues that translation can be interpretive and iterative, not just mechanical in the following way. First, a DFD can be constructed so that it closely matches a CM. In this instance, some activities in the CM are adapted so that they become names of data flows, while others name data transforming acts in the traditional Lancaster way. Second, Prior (1991) justifies translating CMs into DFDs from the premise that the latter are conceptual reflections of particular points of view.

Such translations draw on Checkland's (1981, p. 163) distinction between under-the-line systems thinking and over-the-line real world thinking. Sawyer (1991), for instance, takes a similar approach achieving translation from CMs to DFDs in two epistemological shifts. First, the CM describing 'under-the-line' notional acts is translated to 'over-the-line' activity. Second, possible real world activities are translated into data models by identifying potential changes to activities and data flows. That is, each activity is considered in terms of its input and output requirements, and the activity may then be changed to reflect data transformations. For instance, activities may

become sources and sinks for data with the result being a ‘logical, desirable DFD’ (Mingers, 1992b, 1995; Stowell, 1995).

Gregory (1991, 1993) also draws on Checkland’s (1981) distinction between information and data to identify two information theories. Similarly, Gregory (1991, 1993) refers to Shannon and Weaver’s (1949) model that takes information to be a physical signal. However, he also draws on Carnap (1950) who considers the logical basis of information. While the first theory suggests empirical and inductive ways for developing information systems, the second suggests an analytical, deductive approach. From this basis Gregory (1991, 1993) argues that SSM is characteristic of Carnap’s (1950) logical theory. As such, he considers CMs as descriptions of Wittgenstein’s (1961) language games wherein different stakeholders use language to describe problem situations, and he draws on SSM’s concept of continuous iterative debate to translate CMs into ‘logico-linguistic’ models. Resulting models represent the logical structure of an information system into which specific empirical facts may subsequently be entered.<sup>11</sup>

While Wood and Doyle (1989) describe grafting methodologies as, ‘doing the right thing’ and ‘doing the thing right,’ there are limitations to grafting methodologies, as will be discussed in *Theme 4, criticisms of existing combinations*.

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<sup>11</sup> While drawing on the early Wittgenstein (1961) as a philosophical basis for his approach, Gregory does not address how subsequent developments in Wittgenstein’s (1974) thought might undermine this ‘logico-linguistic’ foundation. In relation to meaning’s two meanings discussed in the next chapter, Gregory’s approach could be understood as an example of suppressing meaning as a specific instance in favour of developing meaning as a general structure.

### ***3.4.3 Embedding hard structured methodologies within SSM***

Mingers (1992b, 1995) continues his discussion by explaining how Miles (1988) objects to grafting and instead argues that SSM should frame the whole project. As such, Miles (1988) suggests embedding IS methods within SSM. Miles (1992) expands this possibility in the following way: instead of translating CMs into DFDs, new constructs can be incorporated into SSM at the CM stage. Mingers (1992b) summarises this as follows: new constructs include a conceptual flow and a conceptual data model. As its name suggests, the flow model represents flows of information. However, it is not intended to serve as a conceptual DFD since it lacks data sources and includes the same activities as the activity model. The concept model is derived from the flow model, and it describes entities and their relations, so it is similar to an ER (Entity-Relationship) model. While Mingers (1992b) does not compare Miles' (1992) additions to the analysis of MVM's *Stage 1 -- Human Activities* and *Stage 2 -- Information Modelling*, a main difference is that the models discussed by Miles (1992) are then fit into an SSM format rather than serving as a basis for a technology driven design.

Theme 3 considered ways of linking hard and soft methodologies. Criticisms of linking hard and soft methodologies as described below.

## **3.5 Theme 4: Criticisms of Existing Combinations**

Criticisms of existing combinations of hard and soft methodologies are set out as follows:

- philosophical arguments that hard and soft methodologies are not compatible,
- different uses of the concept 'system,'

- superficial similarity between types of diagrams,
- benefits of SSM lost when using it as a front end to technical design, and
- linearity of traditional practice.

### ***3.5.1 Philosophical arguments that hard and soft methodologies are not compatible***

Many criticisms of linking hard and soft methodologies are rooted in philosophical objections. These are linked to wider considerations associated with Kuhn's (1970) notion of revolutionary paradigm shifts and paradigmatic incommensurability. Doyle and Wood (1991a), for example, argue that the rationale of hard and soft methodologies makes them incompatible. Hard methodologies derive from an objective view of reality and are therefore representative of Burrell and Morgan's (1979) functionalist paradigm, using positivist methods to find out about a real world that exists independently of the inquirer (Checkland, 1981; Jackson, 1982). In contrast to this, SSM is rooted in phenomenology and hermeneutics, and is therefore primarily representative of Burrell and Morgan's (1979) interpretivist paradigm (Checkland, 1981). Consequently, while hard methodologies focus on an observer independent truth that is correct, soft methodologies emphasise how truths are derived from various subjective and intersubjective perspectives. In embedding methodologies, one therefore risks sacrificing or altering aspects of one methodology by fitting it in with another (Jayaratna, 1992; Lewis, 1993).

In grafting methodologies, it remains unclear how such differences between hard and soft are resolved (Jayaratna, 1992; Lewis, 1993). Jackson (1992), for example, states that alternative theoretical positions should be respected, and drawing on Habermas' (1972, 1974) theory of knowledge constitutive interests, he criticises MVM for lacking

a theoretical basis for grafting apparently alternative methodologies. Similarly, Mingers (1992b, 1995) states that MVM needs further work in moving from Stage 1 which uses SSM up to its CMs to Stage 2 that uses functional and entity analysis since how the resulting system was decided upon and how the functions and entities correspond to CMs remains unclear. More bluntly, Kumar and Welke (1992, p. 262) describe MVM as a ‘grab bag of tools.’

### ***3.5.2 Different uses of the concept ‘system’***

As the above criticisms suggest, the view that hard and soft methodologies are philosophically incompatible takes many guises. One argument has focused on two different uses of the concept, ‘system.’ Hard methodologies use this ontologically, assuming that systems actually exist, while SSM uses the concept as an epistemological device (Checkland, 1981). As Jayaratna (1992, p. 115) explains, this means that the same term used in the two different methodologies leads to different conclusions. Because models in hard methodologies claim to represent what actually exists, they can therefore be validated as correct. However, in SSM the epistemological use of ‘system’ results in notional human activity systems (Checkland, 1981). While these conceptual devices are used to gain insight into a problem situation, they cannot be validated as ‘correct’ since this judgement is linked to various stakeholders’ perceptions.

### ***3.5.3 Superficial similarity between types of diagrams***

Many have commented on the similarity of SSM’s CMs and DFDs. As discussed above, for example, Sawyer (1991) uses a ‘stepping mechanism’ of epistemological shifts to link these types of diagrams (Sawyer, 1991). However, Doyle and Wood (1991a) argue



that similarities between diagramming types are superficial. Because such diagrams describe different ontological realms transforming one into the other is not a trivial matter (Doyle and Wood, 1991a). As stated previously, while they refer to motivations for linking soft and hard as ‘doing the right thing’ and ‘doing the thing right’ respectively, they criticise the assumption that perceiving ‘the right thing’ and ‘doing it right’ are complementary (Wood and Doyle, 1989). As such, while they believe it is necessary to have both hard and soft analyses, they view the two methodologies as essentially incompatible.

In reflecting on this objection, Mingers (1992b) summarises how Doyle and Wood (1991b) have modified their position: while they still claim that shifting between paradigms is difficult, they concede that one could complement a CM with a DFD if the resulting diagram remained conceptual. Nonetheless, Mingers (1992b) explains that for Doyle and Wood (1991b) conducting debates about what is to be created remains a central problem. That is, deriving a DFD from an agreed set of activities is comparatively ‘trivial’ because it focuses debate merely on real world implementation rather than conceptual differences between subjective points of view. As such, Doyle and Wood (1991b) conclude that we need to find ways to link hard and soft methodologies without compromising either position.

#### ***3.5.4 Benefits of SSM lost when using it as a ‘front-end’ to technical design***

Stowell and West (1994) argue that due to its emphasis on learning and self-reflection, SSM has the benefit of encouraging client participation, but this is compromised when SSM is used as a front-end to technical design, (e.g., as in Avison and Wood-Harper,

1990). Jayaratna (1992, p. 117) argues that such compromises are due to differences derived from 'problem formulations vs. design.' SSM emphasises problem formulation which means that in some situations an analysis will lead only to a better understanding of the situation and not to any implementation (Checkland, 1981).

Jayaratna (1992) explains that conversely hard methodologies focus on design. If they graft SSM on as a front end and accept that analysis might not lead to design, then they compromise the structured methodology phase. Likewise, if they use SSM's strength of problem formulation as an extension of a hard methodology to focus on data related activities, then they sacrifice the systemic aspects of SSM (Jayaratna, 1992, p. 117). These systemic aspects of SSM may be understood as shifting conceptions of system from describing some part of the world that is being engineered to the process of inquiry itself (Checkland and Scholes, 1990, p. 277).

Stowell and West (1994, p. 119) state that we need a fundamental change in the 'thinking that underpins information systems development,' and they argue that the most important development that characterises SSM is Checkland's (1981) considered attempt to establish SSM not just as a theoretical concept but as a practical way of inquiry that encourages client-led design. Similarly, Mingers (1992b, p. 86) is critical about the philosophical thrust of SSM being suppressed in the interests of developing 'a single hegemonic information system.' Similar points are also made by Galliers (1992) and Keys and Roberts (1991) who argue that we need to maintain diverse points of view in the systems we develop.

### 3.5.5 *Linearity of traditional practice*

Miles (1988, p. 55) is critical of the way grafting methodologies remain rooted in a traditional 'linear framework.' While soft concepts are used within a hard framework, this results in soft being viewed as a special case of hard, whereas in embedded approaches hard becomes a special case of soft (Miles, 1988, p. 59). Jayaratna (1992, p. 169), for instance, criticises grafting because analysts abandon SSM's conceptual artefacts such as its root definitions and CMs in favour of traditional methods such as DFDs.

The inquiring aspect of SSM as a *cycle* of learning that is ideally never ending (Checkland, 1981) may therefore be lost in linking it to a sequential engineering approach. In relating this observation to MVM, Doyle and Wood (undated) criticise its initial version for treating a range of multiple perspectives on information systems development in terms of a traditional framework or 'sequential engineering life cycle.' They suggest that evidence for the inappropriateness of this view is reflected in MVM's revisions insofar as these emphasise prototyping and evolutionary development (Doyle and Wood, undated, p. 3).

Theme 4 has focused on criticisms of existing combinations of hard and soft methodologies. Possibilities for future developments are discussed below.

## 3.6 Theme 5: Possibilities for Future Developments

The criticisms discussed above suggest that data analysis needs to cope with multiple perspectives and the different ways people make sense of situations, yet this is difficult

with hard methodologies and with databases derived from a single point of view. As such, researchers have suggested changes to data analysis and to technologies that reflect rather than hide the various ways people interpret situations. Theme 5 considers such possibilities for future development as follows:

- interpretive approaches to data analysis,
- linking subjective meaning with social structures,
- addressing differences between perspectives in organisations, and
- towards more flexible forms of technology.

### ***3.6.1 Interpretive approaches to data analysis***

Lewis (1992, 1994, 1995), for example, argues for interpretive forms of data analysis that include the perceptions of many stakeholders. This appreciates the way that definitions in SSM are only helpful to people if they can attribute meaning to the terms used. To this end, analysts proceed by identifying the cognitive categories from the system definition required to understand it. While resulting interpretive data models might not be used directly in an SSM analysis, they could be a starting point for implementing data storage structures. This could enhance SSM debate leading to additional insights concerning whether certain possibilities for change were technically feasible. Nonetheless, as Lewis (1994, p. 223) points out in the case study of the Millside Medical Practice that accompanies his description of interpretative data analysis, the systems analyst conducting the intervention can be criticised for *not* involving the doctors in his creation of data models.

Similarly, Stowell and West (1994) argue for the notion of client-led design based on interpretive systems thinking. They explain that much research emphasises problems of relating CMs to technology and the process of translating one model into another. Instead of looking strictly at the functional relation between such models, they argue that analysts should focus on learning and on how people gain an appreciation of a problem situation when they use SSM. This would mean developing and representing clients' requirements through an appreciation of their needs, and they suggest SSM Mode 2 as one approach to such analysis (Stowell and West, 1994, pp. 125-6). Taking a different approach, Ormerod (1992) suggests that analysis should derive not from SSM's CMs since these reflect a single consensus-based root definition; rather, analysis should derive from rich pictures since these retain multiple points of view.

### ***3.6.2 Linking subjective meaning with social structures***

Giddens' (1979, 1984) structuration theory derives from a concern for resolving debate about theories that focus on subjective meaning and those that focus on social structure. Giddens (1979, 1984) addresses the limitations of conducting debate through binary oppositions with a 'duality of structure' in which people and structures are interdependent (Walsham, 1993, p. 61). That is, people draw on structures in their interactions, and in doing so, structures are further produced and reproduced. In adapting this to an interpretive approach in information systems research, Walsham (1993, p. 60) argues that these two streams of theory emphasise process and context respectively. Process refers to the dynamic aspects of a situation, whereas context centres on the various systems and structures in which information systems are embedded (Walsham, 1993, pp. 4-5). Similarly, Vidgen (1993, p. 203) criticises the

opposition between hard and soft methodologies and offers structuration theory to 'recast dualisms as dualities.' In deconstructing hard and soft methodologies in operations research, Taket and White (1993) also focus on the limitations of binary oppositions, and they suggest poststructuralism as an agenda for future research.<sup>12</sup>

### ***3.6.3 Addressing differences between points of view in organisations***

While Mathiassen and Nielsen (1989, p. 75) find SSM useful, they explain that in practice people face 'hard contradictions,' such as the contradiction between existing organisational forms and our need to change them. They compare SSM to dialectical approaches (e.g., Churchman, 1971; Mitroff and Linstone, 1993), and while they believe that SSM shares similarities with such dialectics insofar as the methodology considers multiple, possibly contradictory perspectives, they point out that it lacks a primary element of dialectical analysis -- explicit thinking in terms of contradictions (Mathiassen and Nielsen, 1989, p. 75). They propose that SSM can be improved by thinking explicitly in terms of contradictions, and they suggest experimenting with this, for example by using contradictory root definitions (Mathiassen and Nielsen, 1989, p. 86).

Dahlbom and Mathiassen (1993, p. 64) criticise both hard and soft thinking for sharing a view of the world that is 'fundamentally harmonious,' and they propose dialectical systems thinking as a potential way of focusing on the way different interests and struggles for power result in organisations that operate under conditions of manifest as well as latent conflict (Dahlbom and Mathiassen, 1993, pp. 59-69). Critical Systems

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<sup>12</sup> Structuralism and poststructuralism will be discussed in Chapter 6 in defining a research approach for working critically with a tradition of methodologies.

Thinking (e.g., Flood and Jackson, 1991a, 1991b), and postmodernist approaches (e.g., Probert, 1992, 1993; Taket and White, 1993) have also been suggested as potential ways of addressing power and conflict.<sup>13</sup>

The potential for addressing differences in organisations is also expressed in movements towards more flexible forms of technology as discussed below.

#### ***3.6.4 Towards more flexible forms of technology***

Doyle (1993, p. 328) claims generally that our main difficulties lie not so much in constructing a bridge between subjective views and objective software systems. Instead, we need to focus on developing technologies that reflect and retain different, possibly conflicting views and requirements. Similarly, Galliers (1992) argues that debates about linking hard and soft methodologies are probably misplaced. That is, while there may be problems in linking methodologies with different philosophical underpinnings, we should focus instead on making 'flexible information architectures to meet changing information requirements, rather than the development of specific information systems applications which, almost by definition, will require constant updating and amendment' (Galliers, 1992, p. 146). To this end, Kumar and Welke (1992) have developed Methodology Engineering, which builds a repository of experience to reflect the way that organisations continuously adapt methodologies.

In relation to SSM, Mingers (1992b) suggests that analysts should try to maintain several CMs and points of view in systems that explicitly reflect variations. He suggests

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<sup>13</sup> As will be discussed in Chapter 9 of this thesis, postmodern approaches are critical of concepts such as *progress* since these are often used to justify repressive power relations.

Winograd and Flores' (1986) research based on a theory of autopoiesis and structural coupling (Maturana and Varela, 1980) as a theoretical basis for such systems. Rather than having analysts define everything, these systems would allow users to create their own language and conversations. Consequently, the 'same' system would maintain different definitions of 'apparently the same concept' (Mingers, 1992b, p. 86). Systems would also contain different concepts reflecting different or shared views, and these systems would appear differently to various users (Mingers, 1992b, p. 87).<sup>14</sup>

### 3.7 Summary and Conclusion

In the previous chapter traditional methodologies were criticised for avoiding a concept of information as meaning by focusing on information as structured data. Soft methodologies address this by focusing on information as data plus the meaning people attribute to it (Checkland, 1981). Nonetheless, soft methodologies often lack material impact since they do not offer support for implementing suggested changes. Consequently, there has been an interest in linking soft methodologies that address meaning with traditional hard structured methodologies. This chapter has set out significant prior research in terms of critical themes associated with interests in linking hard and soft methodologies. These were discussed as follows:

1. criticisms of hard methodologies,
2. criticisms of soft methodologies,

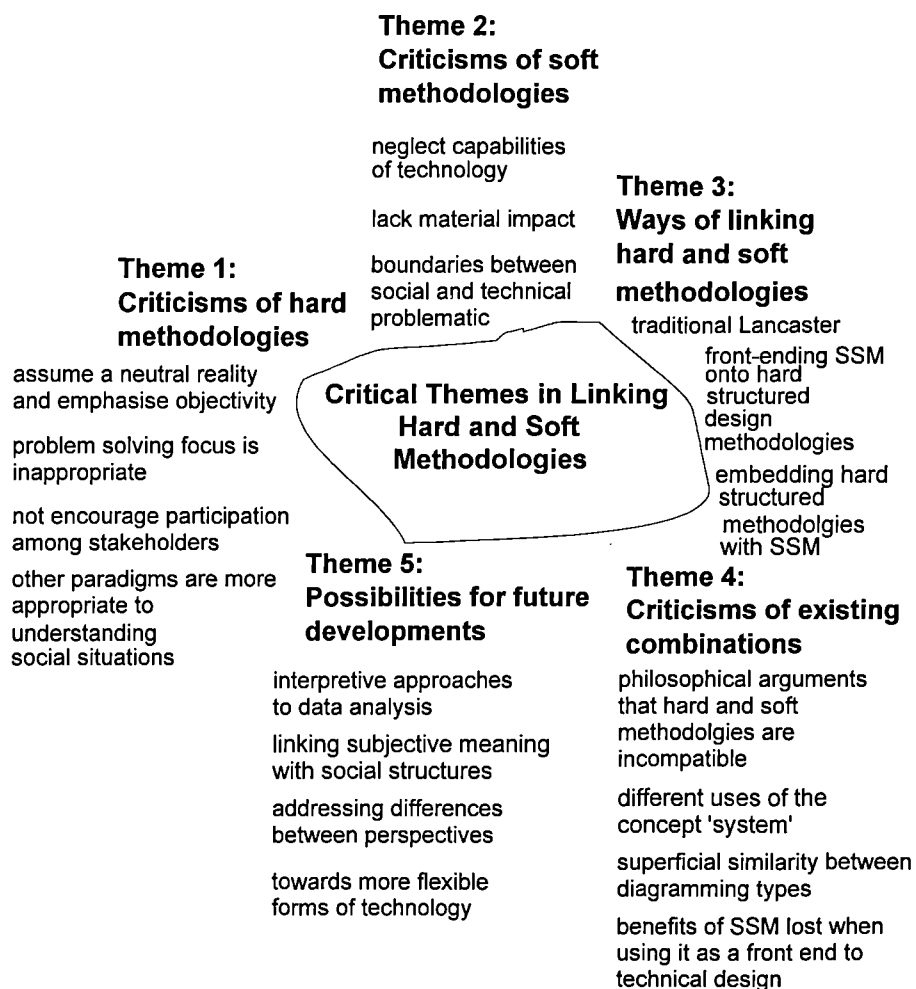
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<sup>14</sup> In the final chapter of this thesis a practical area for further research discusses a development in artificial intelligence known as case-based reasoning (CBR) as one way of reflecting such concerns, especially insofar as it draws on an organisation's experience as it is described by those *working* in it.



3. ways of linking hard and soft methodologies,
4. criticisms of existing combinations, and
5. possibilities for future developments.

Within these five themes, specific criticisms were addressed. The chapter is summarised in the diagram below:



**Figure 3.2. Critical themes in linking hard and soft methodologies.**

This chapter has drawn on significant prior research to set out themes in linking hard and soft methodologies. The next chapter relates significant prior research specifically to the area of concern set out in Chapter 2 of this thesis by developing an organising framework for considering how these criticisms bear on two aspects of meaning.

# 4.

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## **AN ORGANISING FRAMEWORK OF MEANING'S TWO MEANINGS**

### 4.1 Introduction

The previous chapter set out significant prior research in terms of five critical themes associated with concerns in linking hard and soft methodologies as follows: 1) criticisms of hard methodologies, 2) criticisms of soft methodologies, 3) ways of linking hard and soft methodologies, 4) criticisms of existing combinations, and 5) possibilities for future developments.

In learning how to work critically with a tradition of methodology, this chapter relates significant prior research to the area of concern set out in this thesis through an organising framework of *meaning's two meanings*. This is discussed below with further reference to significant prior research as follows:

- tension deriving from two contrary aspects of meaning,
- tendencies for two contrary aspects of meaning to suppress each other,
- how both aspects of meaning manifest in binary oppositions,
- methodologies that explicitly work with meaning's two meanings, and
- a conception of a paradigm as network.

## 4.2 Tension Deriving from Two Contrary Aspects of Meaning

As discussed in Chapter 2 of this thesis, Checkland (1981) is careful to emphasise that SSM (Soft Systems Methodology) is best understood in relation to its roots in hard systems thinking. In relating the range of opinions set out in the previous chapter to the area of concern of information as meaning, this chapter argues that these various critical positions have something in common: they share a similar conception of meaning, and their differences arise as they struggle with the tension that derives from addressing two contrary aspects of meaning at once.

This is discussed below drawing on William Ray's (1984) argument concerning a common conception of meaning that has informed critical developments from phenomenology to deconstruction.<sup>1</sup> Ray (1984, p. 2) begins with an example of the

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<sup>1</sup> Phenomenology was discussed in Chapter 2 of this thesis in relation to SSM. Deconstruction will be discussed in Chapter 6 of this thesis in relation to defining a research approach appropriate for learning how to work critically with a tradition of methodology that is beginning to address a conception of information as meaning.

tension between two common-sense intuitions of meaning. As such, he explains that we recognise a potential difference between

(A) what a word may mean and

(B) what I may intend it to mean.

Ray (1984, p. 2) summarises this as the difference between meaning as *fact* and *act*. That is, a word has a general meaning due to its structure, so, for example, we can find it in a dictionary, but words also have meaning due to events, so, for example, what I mean is for me to decide. This leads to the following conception of *meaning's two meanings*:

1. **Meaning as general structure:** meaning potentially exceeds our intentions, and it can be understood as a structure in a system by anyone knowing the language.
2. **Meaning as specific instance:** meaning is also governed by a particular intention during a particular event or instance.

(Ray, 1984, pp. 1-6)

To return to the area of concern discussed in Chapter 2 of this thesis, these two aspects of meaning arise in a conception of information defined as structured data *plus* the meaning people attribute to it (Checkland, 1981, p. 315).<sup>2</sup> To return to Chapter 3 of this

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<sup>2</sup> Mingers (1992a, 1993) criticises this definition of meaning as a general structure insofar as he points out that these terms are themselves problematic because the terms and relations are not precisely defined. Nonetheless, in learning how to work critically with a tradition of methodology that is beginning to address a conception of information as meaning, this thesis continues to draw on Checkland's (1981) definition.

thesis concerning interests in linking hard and soft methodologies under *Theme 5: Possibilities for future developments*, these two aspects of meaning also arise in interests emphasising more flexible technologies providing structures that maintain several definitions of the 'same' concepts to reflect and support multiple points of view in information systems (e.g., Galliers, 1992; Kumar and Welke, 1992; Mingers, 1992b).

Similarly, these two aspects of meaning arise in suggestions to change the way we approach systems analysis. Both aspects inform possibilities for addressing *conflict and power* as well as the need to link personal meaning with more general social structures (e.g., Mathiassen and Nielsen, 1989; Flood and Jackson, 1991a, 1991b; Taket and White, 1993; Vidgen, 1993; Walsham, 1993). More specifically, both aspects of meaning as a general system and a particular instance are reflected in Lewis' (1994) cognitive categories. That is, these provide a general structure or system that helps the analyst understand specific instances of how individuals make sense of systems definitions. Likewise, the structure provided by SSM Mode 2 as suggested by Stowell and West (1994) helps the analyst to appreciate a client's needs in each intervention.

This conception of meaning's two meanings has the following implication:

*the potential tension between these two aspects of meaning should inform critical studies of methodology.*

However, as will be argued below, methodologies often avoid this by relying on a theory of meaning that tries to *simplify* the phenomena in question by suppressing one of meaning's two identities.

This section discussed the tension deriving from two contrary aspects of meaning both as a general structure and a specific instance. Tendencies for either aspect to suppress the other are discussed below.

### 4.3 Tendencies for Two Contrary Aspects of Meaning to Suppress Each Other

This section considers tendencies for two contrary aspects of meaning to suppress each other as follows:

- criticisms of theories of meaning in data modelling, and
- reconsidering criticisms of linking hard and soft methodologies.

#### *4.3.1 Criticisms of theories of meaning in data modelling*

Before reconsidering the significant prior research set out in the previous chapter, Klein and Lyytinen's (1985) research regarding the issue of meaning in information systems is discussed with reference to meaning's two meanings.<sup>3</sup> With reference to scientism,<sup>4</sup> they criticise the following two types of theories of meaning in data modelling:

- denotational theories, and
  - behaviourist theories.
- 

<sup>3</sup> This is related to Klein and Hirschheim's (1987) later comparative framework of data modelling towards the end of this chapter.

<sup>4</sup> They describe scientism as 'a fairly rigorous set of canons by which the practice of science has to proceed...[and that] constitute the only route to valid knowledge (Klein and Lyytinen, 1985, p. 133). As will be discussed in the next chapter with reference to research approaches in information systems, insofar as the set of canons is emphasised in scientism, this can also be understood as a tendency to suppress the second aspect of meaning in favour of developing a general structure, i.e., a research approach whose assumptions remain largely unquestioned since they determine what constitutes valid research and hence knowledge.

Their criticisms may also be understood in terms of meaning's two meanings. For example, they discuss denotational<sup>5</sup> theories of meaning in data modelling as follows:

The basic notion of denotational semantics is that the meaning of a datum (or any symbol) is given to the class of objects to which it refers. Hence correct meaning is a matter of 'denotational correspondence' between what is said and the actual or 'real' state of affairs.

(Klein and Lyytinen, 1985, p. 148)

'What is said' may be understood in terms of meaning as a general structure, while the 'real state of affairs' may be understood in terms of meaning as a specific instance. Klein and Lyytinen (1985) use an example from Tarski's (1944, p. 15) correspondence theory of truth that Popper (1965) has made common:

The sentence 'snow is white' is true if, and only if, snow is white.

(Tarski, 1944, p. 15, quoted in Klein and Lyytinen, 1985, p. 148)

Klein and Lyytinen (1985) explain that a limitation of denotational theories of meaning is that they cannot show *how* a sentence corresponds to some state of affairs. Drawing on Kutchera (1975, p. 57) they cite Wittgenstein's (1961) criticism of this:

The difficulty faced in my theory of logical picturing was that of finding a connection between the marks on a paper and a state of affairs in the world. I always said truth is the relationship between a sentence and a state of affairs, but was never able to make out such a relationship.

Klein and Lyytinen (1985, p. 148) explain that the problem arises because this theory

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<sup>5</sup> Denotational refers to the view that a symbol has a fixed or obvious meaning. This contrasts with something that we may understand through connotation, which refers to a network of associations that a symbol may conjure up (*Concise Oxford English Dictionary*, 1988). For example, while a red rose may denote literally a red rose, it may have additional associations such as romantic love.

ignores the social processes by which predicates are created through social interaction and their meanings are anchored in the context of social action.

(my emphasis)

As such, their criticism can be understood as a tendency for denotational theories of meaning to suppress meaning as a specific instance in favour of developing a general structure.<sup>6</sup> Further evidence for this is suggested by the way Klein and Lyytinen (1985, p. 149) continue to criticise denotational theories of meaning as follows:

The realist position of meaning is also incapable of explaining how the same sentence can be used to convey an instruction, a suggestion, a request, a warning, a prediction, an assertion, a belief etc.

They argue that denotational theories cannot account for such variations because they do not recognise that meaning is not limited to correspondence with a singular reality; it is also linked to specific intentions of which there can be many different human interests (Klein and Lyytinen, 1985, p. 149). Their criticism thus parallels Ray's (1984) distinction between fact and act, between that a word means and what someone may intend it to mean.

Likewise, Klein and Lyytinen (1985, p. 149) set out a behaviourist theory of meaning as follows:

The second possibility by which scientism has proposed to describe the meaning of information is in terms of the predispositions to respond in a certain way to symbolic stimuli. Information are (sense) data which help with purposeful action or which make a difference in action etc. The basic idea is that the behaviour difference and its relationship to a predefined goal can be objectively measured.

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<sup>6</sup> This criticism might also apply to Gregory's (1991, 1993) approach set out in the previous chapter of this thesis.



Klein and Lyytinen (1985, pp. 149-50) draw on Chomsky (1983) and Kutchera (1975) to set out four criticisms of behaviourist theories of meaning as follows:

1. Behaviourist theories do not account for language acquisition. Rather, language is inherited in a way analogous to how animals such as bees inherit their signalling systems. As such, behaviourist theories do not account for the creation of *new* meanings.
2. With regard to behaviour that can be objectively measured, there are many linguistic communications that lead to behaviour that is *not* observable.
3. Behaviourist theories also neglect how people *change* their linguistic behaviour consciously due to conventions and agreements.
4. Behaviourist views that meaning is communicated if it evokes a 'goal oriented response' are too broad since these lead to a conception of information systems as 'organisational reinforcement machines or *Skinner boxes*' insofar as information systems users are conditioned to respond only in certain ways.<sup>7</sup>

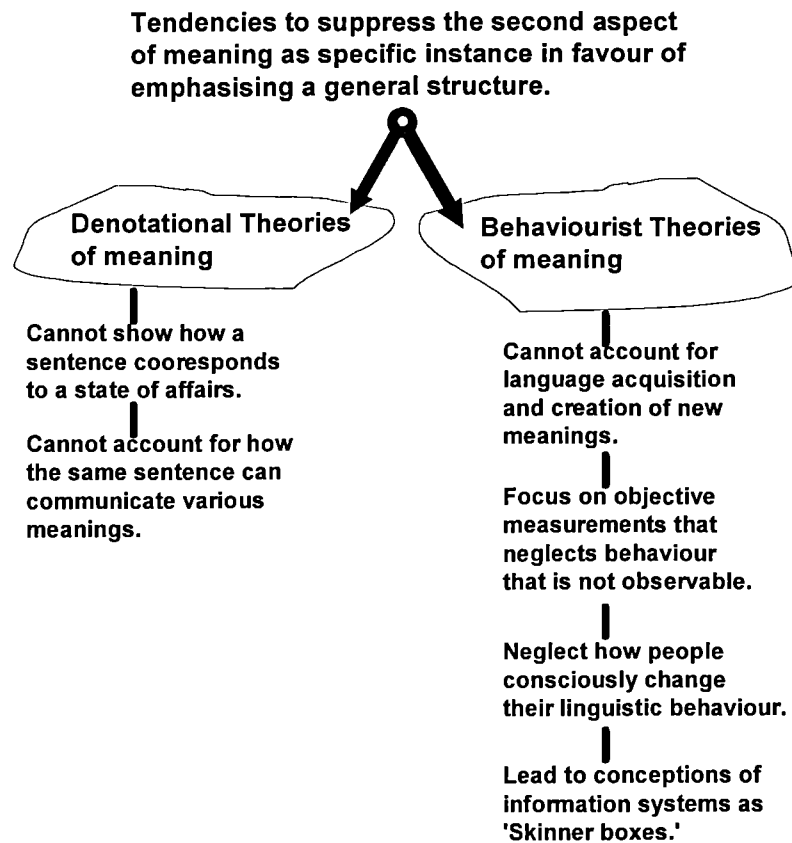
The above criticisms suggest tendencies of behaviourist theories to suppress the second aspect of meaning as a specific instance in favour of emphasising a general structure.

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<sup>7</sup> Skinner boxes are named after their inventor, the behaviourist psychologist, B.F. Skinner. In experimental designs using Skinner boxes, an animal is placed in a box that requires a certain response to bring a reward. For example, a rat presses a lever, or a pigeon pecks a lighted disc to receive food (Gleitman, 1983, p. 81).

For example, the first criticism of the way behaviourist theories fail to account for language acquisition makes them inappropriate for understanding information as inward-forming, as *changes* in people that arise as they interact with data (Boland, 1987). Behaviourist theories therefore tend to suppress meaning as a specific instance, as something new such as language acquisition in favour of focusing on general structures. This is further evidenced by the second criticism of such theories. Their focus on objective measurements also makes them inappropriate to considering information as inward-forming.

To return to Chapter 2 of this thesis, for example, Boland (1987) argues that meaning remains elusive since it is *not* amenable to direct empirical investigation. Moreover, the third criticism of the way behaviourist theories neglect *changes* in language also suggests a tendency to suppress meaning as a specific instance of inward-forming. The view that information systems are 'Skinner boxes' with the 'same' stimulus evoking the 'same' response regardless of context also focuses on meaning as a general structure that is the same from person to person. Klein and Lyytinen's (1985) criticisms of these two theories of meaning are summarised in the diagram below:



**Figure 4.1. Criticisms of theories of meaning in data modelling (adapted from Klein and Lyytinen, 1985).**

**4.3.2 Reconsidering criticisms of linking hard and soft methodologies**

To return to the significant research discussed in Chapter 2 of this thesis, an example of the way these two contrary aspects of meaning have a tendency to suppress each other occurs in Shannon and Weaver's (1949) information theory. This was criticised by Checkland (1981) for focusing on the formation of a signal thereby neglecting what different signals may mean to individuals in specific instances. Likewise hard methodologies were criticised for treating information as structured data. Their consequent focus on meaning as 'fact' suppresses the second aspect of meaning as an

'act', as an inward-forming that arises in response to an individual's interaction with data (Boland, 1987).

Similarly, to return to Chapter 3 of this thesis in *Theme 1: Criticisms of Hard Methodologies*, there are various objections to tendencies for hard methodologies to suppress the second, more individual aspect of meaning as intention in a specific instance. For example, hard methodologies emphasise objectivity and assume a single neutral reality that does not vary with an individual's perception. SSM, for instance, derives from a critique of this tendency to suppress subjective meaning as well as a recognition that the way we perceive reality is linked to more general structures such as a *Weltanschauung*, or Worldview (Checkland, 1981).

Likewise, tendencies for hard methodologies to suppress the second aspect of meaning inform criticisms concerning the inappropriateness of their problem-solving focus to understanding social situations and problems that are ill-defined. Lewis (1994, p. 30), for example, is critical of the way hard methodologies weigh up and rank objectives, but tend to proceed by 'ignoring the problem of objectives being subjective attributions.'

This tendency to suppress the second aspect of meaning is also associated with criticisms of the way hard methodologies do not encourage participation (e.g., Stowell and West, 1994). It gives similar cause for concern in discussions of alternative paradigms, and to the various roles open to systems analysts, depending on the specific

situations they are presented with as well as the types of organisations in which they have to work (e.g., Hirschheim and Klein, 1989; Avison and Wood-Harper, 1990).<sup>8</sup>

Soft methodologies represent criticisms of this tendency to suppress the second aspect of meaning. However, in returning to Chapter 3 of this thesis, *Theme 2: Criticisms of Soft Methodologies*, may also be understood in terms of a tendency to suppress the first aspect of meaning as a general structure. For instance, while hard methodologies neglect social implications such as the way technology is used by people in organisational contexts, SSM does not offer much advice on how to implement a solution (e.g., Lewis, 1994). Insofar as it neglects these formally structured aspects of information systems, the first aspect of meaning is potentially marginalised in SSM. Likewise, criticisms that SSM lacks material impact are linked to the way it suppresses the first aspect of meaning as a general structure in favour of subjective accounts (e.g., Mingers, 1984; Vidgen, 1993).

Consequently, a limitation of SSM is that resulting systems tend not to reflect interpretive values such as subjective meaning since traditionally hard methodologies continue to dominate information systems design (Vidgen, 1993). As suggested especially by criticisms of grafting methodologies in *Theme 4: Criticisms of existing ways of linking* in Chapter 3 of this thesis, SSM's focus on the second more subjective aspects of meaning are subsequently undermined in the interests of technical

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<sup>8</sup> In the field of sociology, the book edited by Gareth Morgan (1983) entitled, *Beyond Method*, might be understood as a collection of essays critical of tendencies to suppress the second aspect of meaning in favour of developing a general structure, i.e., an institutionalised research method.

development that requires a single consensus-based model (Stowell and West, 1994). Indeed, objections due to the philosophical incompatibility of hard and soft methodologies may be understood as criticisms of tendencies to suppress either of these aspects of meaning in favour of the other (e.g., Doyle and Wood, 1991a, 1991b).

For example, criticisms of the way hard methodologies emphasise observer independent truth and a corresponding model that can be judged 'correct,' can be seen as objections to the way the second aspect of meaning is suppressed by the first in giving priority to a general model. This also applies to objections to different uses of the concept, 'system' in which hard methodologies emphasise general models to such an extent that they become mistaken for general structures existing in reality. Similarly, criticisms of the way the benefits in using SSM are lost when analysis is seen as a 'front-end' to design are linked to the first aspect of meaning suppressing the second. Stowell and West (1994) for instance, explain how a client's personal interests are taken over by those of the technical specialist interested in using structured methods to develop a general model.

Additionally, while discussion in the previous chapter was limited to interests in and criticisms of linking hard and soft methodologies, tendencies for soft methodologies to suppress the first aspect of meaning are evident in criticisms of SSM in relation to other developments such as Critical Systems Thinking (CST). Mingers (1984), for example, criticises SSM for its subjectivity and for its tendency to playdown the influence of social structures in favour of subjective meaning.

This section considered tendencies for either aspect of meaning's two meanings to suppress the other in information systems research. The next section considers significant prior research concerned with linking hard and soft methodologies in light of the way *both* aspects of meaning manifest themselves in binary oppositions.

#### 4.4 How Both Aspects of Meaning Manifest in Binary Oppositions

The tension that arises from these two contrary aspects of meaning manifests itself in issues giving rise to debates in information systems, and while this may take many guises, it often occurs in the form of binary oppositions through which both aspects of meaning reassert themselves.

To return to the opposition between social and technical discussed in Chapter 3 of this thesis under *Theme 2: Criticisms of Soft Methodologies*, Bloomfield (1992) argues that literature emphasising the social aspects of development has two limitations. First, boundaries between social cannot be distinguished in absolute terms because the technical aspects of practice are influenced by social considerations. As has been suggested by the discussion so far, the second aspect of meaning is often associated with our concepts of social insofar as this emphasises how people attribute meaning in specific organisational contexts, while the first, general aspect of meaning is often associated with our concepts of technical insofar as these represent an abstracted formal model. However, if we look closer at these concepts of social and technical, we see that these two different aspects of meaning are simultaneously manifest in both. This is evidenced by Bloomfield's (1992) second limitation: emphasising the influence of

technology on social structures has the effect of marginalising the ways in which technology *already* makes assumptions about society.

Linguistic evidence for the way both meanings are manifest in such oppositions includes the way we increasingly hyphenate or merge the two terms: *socio-technical* and *sociotechnical*. We see further examples of this in the ubiquitous phrases that characterise debates in information systems: theory vs. practice, hard vs. soft, formal vs. informal, objective vs. subjective. Gammack (1995, p. 159) for example, discusses such oppositions in considering a 'schism, or at least a tension' in information systems literature. Likewise, Zuboff's (1988) distinction between 'automating and informing' offers further evidence for the way these two contrary aspects of meaning reassert themselves in binary oppositions. Here, the first term focuses on meaning as a general structure, while the second emphasises the way people are informed by data in specific instances of information systems use.

In returning to *Theme 3: Types of Linking*, discussed in Chapter 3 of this thesis, both forms assert themselves in various proposals for grafting and embedding hard and soft methodologies. Consider Prior's (1991) justification, for example, in linking CMs and DFDs: DFDs are conceptual reflections of particular points of view. Hence, the second aspect of meaning reflected by CMs is simultaneously manifest in the resulting general structure. In reconsidering Miles' (1992) argument that instead of translating CMs into DFDs, we should develop new constructs to embed within the general framework provided by SSM, these two aspects of meaning arise.



That is, in SSM the first aspect of meaning is manifest, not just in the sense that SSM is itself a general structure or 'framework' differentiated as Modes 1 and 2 (Checkland and Scholes, 1990, pp. 280-4) , but also in general structures within these two modes, such as the CATWOE (Smyth and Checkland, 1976) that derives root definitions, thereby ensuring that they are 'well-formulated' (Checkland and Scholes, 1990, p. 35). An implication of this is that embedding might be considered as a special type of graft, one in which the second aspect of meaning drives the structure of the first.

In returning to Burrell and Morgan's (1979) paradigms, these two tendencies manifest themselves in the form of two axes: objective vs. subjective and regulation vs. change. While the first terms in these pairings emphasise a general structure that is repeatably observable, the second terms focus on individual variations and change. Moreover, their claim of paradigmatic incommensurability may be understood as a tendency for the first aspect of meaning to suppress the second, insofar as the general theory they present would be prescriptive, i.e., it would try to make practice derive directly from general principles of paradigms being mutually exclusive.

Yet we see this second aspect reasserting itself in Hirschheim and Klein's (1989) adaptation of Burrell and Morgan (1979): in delineating potential roles for a systems analyst, they argue that in particular instances of practice the paradigms may be *complementary*. Similarly, Beynon-Davies (1992) criticises Klein and Hirschheim's (1987) framework of objective and subjective data modelling activities because it presents a binary opposition that assumes the theory of data modelling is *identical* to its practice. In contrast to this, Beynon-Davies (1992, p. 216) argues that the task of

applying these techniques depends on interpretation. Once more these two contrary aspects of meaning simultaneously manifest themselves in Beynon-Davies' (1992) proposal that we see an entity-relationship diagram as a semiotic system that occurs in both formal and informal domains.<sup>9</sup>

Likewise, Goguen's (1992) analysis of 'dry and wet' cultures may be understood as a tendency of these two aspects of meaning to manifest themselves in binary oppositions. For example, Goguen (1992, p. 2) describes how 'dry' cultures 'take the precision of formal mathematical logic as their ideal.' Dry culture therefore emphasises meaning as a general structure that can be formalised precisely in mathematical models such as those required for safety critical systems. Conversely, 'wet' culture emphasises the way social and political factors affect the success of information systems. As such, information systems must also be able to meet users' 'day-to-day needs' (Goguen, 1992, p. 3). While 'wet' culture emphasises meaning as a specific instance, Goguen (1992) argues that the two aspects represented by 'dry' and 'wet' cultures are *both* required and that they are *complementary*.

These two contrary aspects of meaning may also help to explain a similar pattern reiterated in debates about the nature of SSM. With reference to Burrell and Morgan's (1979) paradigms, Checkland (1981, pp. 280-1) places SSM in the subjective/regulative quadrant with hermeneutics and phenomenology, but he also says that it could be in the subjective/radical quadrant since analysts are capable of enacting incremental or radical

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<sup>9</sup> The term, *semiotic*, refers to signs, especially to written signs, such as the words used in this footnote (*Concise Oxford English Dictionary*, 1988).

change in practice. With regard to this, Jackson (1982) claims that the methodology is incapable of achieving radical change.

Insofar as Jackson (1982, p. 24) asserts that the theory of SSM makes its regulative tendency 'an intrinsic defect of the methodology itself' (my emphasis) Jackson takes theory literally as given. In this sense, Jackson's (1982) claim has parallels with Burrell and Morgan's (1979) view of paradigms being mutually exclusive. Jackson's (1982) view of a methodology's 'intrinsic' defects also has parallels with theories of meaning (e.g., formal mathematics) that Stamper (1987) and Mingers (1993, p. 18) critique because these assume that the 'propositions are meaningful in *themselves*' (my emphasis). Such theories are limited insofar as they neglect how people attribute meaning to signs.

Nonetheless, we see this second aspect of meaning as a specific instance reasserting itself in Checkland's (1982) insistence that in *practice* individual analysts are free to choose.<sup>10</sup> Likewise, in reconsidering *Theme 5: Possibilities for future development*, discussed in Chapter 3 of this thesis, Mathiassen and Nielsen (1989, p. 87) observe that from a *theoretical* perspective SSM is subjective and dialectics is objective. While Mathiassen and Nielsen (1989, p. 87) state that this would suggest that a 'marriage' between the two would not work, they simultaneously write that,

This theoretical observation is, however, in contrast to our experience.

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<sup>10</sup> Ironically, SSM approaches may at times reiterate this tendency to suppress the second aspect of meaning in developing a formal structure. Howell (1992, p. 97), for example, criticises such SSM-based approaches for focusing on the *logic* of activities: 'IS [information systems] in fact derive from the reason for doing data manipulation, that is, on behalf of the agent, not the logic of the activities.'

These two aspects of meaning both as general structure and as specific instance are also evidenced in Madsen's (1989) discussion of 'structured domains and breakdowns' which she develops by drawing on Heidegger (1962, 1968, 1971) and Winograd and Flores (1986). Using a library domain as an example, Madsen (1989) explains that some activities such as the processing of invoices can be handled in a well structured way. Such activities are referred to as structured domains that can be computerised. Conversely, other activities such as selecting books are less formaliseable. Even with an information system, borrowers ask questions outside the scope of the structure that has been formalised. This results in a breakdown of the information system in use:

The first time each of these questions is posed, the librarians face a breakdown, but based on the recurrent structure of breakdowns the librarians have made a '*cheat file*.'

(Madsen, 1989, p. 43, italics her emphasis)

Here also in a recurrent *structure of breakdowns* both aspects of meaning are asserted. This is similar to Nissen et al.'s (1991) conception of traditions in research as changing structures. Consider, for example, the title of their book: *Information Systems Research: Contemporary Approaches and Emergent Traditions* (underlining, my emphasis).

These contrary aspects of meaning's two meanings manifest generally in the classification problems discussed above. However, to return to Checkland's (1981) conception of SSM, both aspects of meaning are simultaneously asserted. While SSM is subjective and will therefore vary in each instance of application,

The social theory implicit in soft systems methodology, however, would lie in the left-hand quadrants with hermeneutics and phenomenology, although the position would be not too far

left of the centre line because the methodology will over a period of time yield a picture of common structurings which characterise the social collectivities within which it works.

(Checkland, 1981, pp. 280-1, my emphasis)

This returns to Boland's (1987, p. 363) observation concerning the meaning of information raised in Chapter 2 of this thesis: meaning is not just what is asserted generally in a structure; it is also a process of 'inward-forming' that derives from the way we interact *with* structures.

In this section the significant prior research set out in Chapter 3 of this thesis has been reconsidered in terms of the tension deriving from two contrary aspects of meaning as follows:

- tension deriving from two contrary aspects of meaning,
- tendencies for two contrary aspects of meaning to suppress each other, and
- how both aspects of meaning manifest in binary oppositions.

Below, in considering a way of investigating the research question of learning how to work critically with a tradition of methodology that is beginning to address information as meaning, it is argued that methodologies need to work explicitly with meaning's two meanings.

## 4.5 Methodologies that Explicitly Work with Meaning's Two

### Meanings

Tendencies to suppress the contrary identities of meaning as a general structure and a specific instance may atrophy our critical responses. For example, repressing the second aspect of meaning has led to what Checkland and Scholes (1990, p. 17) describe as the 'Achilles Heel' of hard methodologies insofar as they cannot cope with situations in which means and ends are themselves problematic. Similarly, by not addressing how an analysis might be implemented, SSM atrophies the potential for multiple points of view to be represented in a material forms, such as computerised information systems.

The above research suggests how hard and soft traditions of methodology have had tendencies to suppress either of these aspects of meaning in favour of the other. In learning how to work critically with such traditions, developments in methodology might proceed by explicitly trying to implement both contrary aspects of meaning at once. Sahay et al. (1994) for example, conclude that most technological perspectives focus on the 'material operating properties of information technology.' However, because subjective interpretations affect the success or failure of systems, they suggest that we should study the social aspects of technology as well as its 'objective characteristics' (Sahay et al., 1994, p. 256).

In relation to this, Stamper's (1987) work on semantics addresses these two aspects of meaning insofar as he considers how formal structures in databases are related to real

world situations to help people make decisions.<sup>11</sup> However, since decision-making entails a lack of consensus on meaning due to the different views held by individuals, he argues that the meaning of data changes relative to users. Following Stamper (1987), Mingers (1993, p. 25) proposes a framework of levels of meaning in considering how ‘meaning is *generated from* information’ (his emphasis). As summarised below, this also reflects meaning as a general structure and a specific instance:

- Meaning 1 - Understanding -- This is the first level in which someone understands the ‘*primary* meaning’ of a sign as a competent speaker of a language in which members share a particular form of life.
- Meaning 2 - Connotation -- In this level a complexity of associated meanings are understood.
- Meaning 3 -- Intention -- In this level individual meaning and its implications for action in the situation are realised.

(Mingers, 1993, p. 23)

The first level focuses on meaning as a general structure, i.e., a primary meaning shared by members speaking a common language. The second relates this to a larger structure of associated meanings, while the third focuses on individual meaning in a specific instance to formulate an action.

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<sup>11</sup> Stamper (1987, p. 45) defines semantics as follows: ‘semantics deals with the issue of meaning, the relationship between signs and what they purport to represent.’

This parallels Klein and Hirschheim's (1987, p. 10) framework of three types of data modelling. The first type describes how entity-based approaches focus on developing general objective structures insofar as they view data as corresponding to the facts that exist 'out there' as given. While the second eclectic frame-based approaches relate general structures of data through associated processes that make up 'knowledge frames' that can be objective or subjective interpretations of data (Klein and Hirschheim, 1987, p. 11).<sup>12</sup> The third rule-based approaches focus on individual meaning insofar as they are implemented by modelling grammars that follow socially determined rules to help different people understand what is communicated (Klein and Hirschheim, 1987, p. 10).

To return to how methodologies are beginning to address a conception of information as meaning, SSM's Modes 1 and 2, can also be considered as potential ways for explicitly working with two contrary aspects of meaning at once. That is, Checkland and Scholes (1990, p. 281) describe Mode 1 as the 'formal stage-by-stage' application' which would represent the first aspect of meaning as general structure. However, while Checkland and Scholes (1990, p. 281) describe Mode 2 as the 'internal mental use' of the model, they argue that this extreme version of Mode 2 is of little interest:

What we need are redefined Constitutive Rules covering typical uses of SSM which would now, at least for reasonable sophisticated users, be a mix of Mode 1 and Mode 2.

(my emphasis)

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<sup>12</sup> This suggests that Beynon-Davies' (1992) criticism of Klein and Hirschheim's (1987) framework may have been too severe. While he argues that they present a *binary* opposition that assumes the theory of data modelling is identical to its practice, this neglects that there are three approaches that the authors sometimes describe as being both subjective *and* objective in practice.



To return to criticisms of SSM for being subjective, Mingers (1992a) argues that we should try to develop theories about the nature of information and meaning and the relations between the two. To this end, he uses the term, 'intersubjective' in contrast to subjective. This reflects his view that language and meaning are not individually subjective because they derive from common experiences between groups of people (Mingers, 1993, pp. 19-20).

This section argued that we need methodologies to work explicitly with meaning's two meanings. To summarise the argument set out in this chapter so far, an organising framework of meaning's two meanings was discussed in relation to criticisms associated with linking hard and soft methodologies. This argues that meaning is both

1. a general structure and
2. a specific instance.

It was then argued that the criticisms set out by significant prior research in Chapter 3 of this thesis shared this conception of meaning, and that the differences between them arise as they grapple with the tension that derives from addressing two contrary aspects of meaning at once. An outcome of this analysis is discussed below.

#### **4.6 Main Outcome: A Conception of a Paradigm as Network**

The above criticisms can be said to converge on an interest in self-reflection on boundaries of inquiry between hard and soft methodologies. The main outcome of the above analysis is that recent developments in working critically with a tradition of

methodology are neither isolated nor arcane since they put into practice a similar conception of meaning.

In relating this to Brooks' (1987) comment concerning essence and accidents in software engineering, the source of disagreement between the various positions outlined above arises not so much over the nature of meaning as it does over the different strategies for *representing* meaning in a discipline that has become critical of its methodologies. The tension deriving from the potentially contrary aspects of meaning's two meanings has a double implication for the research question set out in Chapter 2 of this thesis. In learning how to work critically with a tradition of methodology, we address two conceptions of methodology:

1. A methodology is a collective act that can be understood as a *general structure* by anyone knowing its language and associated activities.
2. A methodology is a system of rules and codes within which each *specific instance* of interpreting a methodology occurs.

These two different aspects of methodology mean that no two readings of it are the same. This is evidenced, for example, in Burrell's (1983) review of Checkland's (1981) book, *Systems Theory, Systems Practice*. That is, Burrell (1983) argues that each instance of a methodology's use is not only an attempt to interpret a particular problem situation, but is also a process of interpreting the methodology itself. Similarly, Atkinson (1986) argues that Checkland's (1981) account of SSM is an ideal type; as

such, Atkinson (1986) considers this description as a genus covering species of such methodologies.

This conception of meaning's two meanings leads to a view of methodology as a network. This is evidenced by a proliferation of frameworks that derive from a recognition that there is no single methodology suitable for all situations (e.g., Olle et al., 1982; Wood-Harper and Fitzgerald, 1982; Madison, 1983; Olle et al., 1983).

Moreover, the tension suggested by the various critical responses to linking hard and soft methodologies discussed in this and the previous chapter has the following implications for the second notion of methodology listed above.

1. The critical positions set out in Chapter 3 of this thesis, even insofar as they question a methodology's authors, suggest that the research community recognises the singularity of each new instance of using a methodology.
2. The criticisms discussed in Chapter 3 of this thesis suggest that the research community is not willing to tolerate the notion that 'anything goes.'<sup>13</sup>

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<sup>13</sup> This may also apply to Kuhn's (1970) conception of paradigm as evidenced by the range of critical positions set out by the research community associated with him in reaction to his work, specifically insofar as it has implications for scientific *relativism*, e.g., refer to Lakatos and Musgrave (1970).

As such, no individual instance of understanding enjoys independent authority, as evidenced, for example, with SSM's Constitutive Rules that help to inform debate about its use (Checkland and Scholes, 1990, pp. 284-90).

The outcome of this analysis is a conception of a paradigm as network derived from a theoretical matrix of critical themes grappling with a similar conception of meaning's two meanings. In working critically with a tradition of methodology, this conception may be especially appropriate for a discipline of information systems, if one takes seriously, for example, Vickers' (1968, p. 171) explanation of information as 'an *incomplete* concept' (my emphasis). He describes this as follows:

Whether it informs and, if so, what meaning it conveys, depends on the organisation of participants in the network in which it is used; and this organisation is in turn developed by participation in the network.

(Vickers, 1968, p. 171)

This conception of a paradigm as network differs from Burrell and Morgan's (1979) view of paradigms as being mutually exclusive. Willmott (1993 p. 681), for example, states that Burrell and Morgan's (1979) mutual exclusivity of paradigms leads to a 'new dogma,' and in criticising their research, he argues that we should work towards 'breaking the paradigm mentality.'<sup>14</sup>

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<sup>14</sup> In this thesis further evidence in support of criticisms of Burrell and Morgan's (1979) conception of paradigm is suggested by the Trojan horse phenomenon discussed in Chapter 7 and the notion of metaphorical entailments discussed in Chapter 9. In both these cases, points of view are not 'pure.' Rather, in deriving a point of view something may be unwittingly 'smuggled in' that undermines the main position asserted since existing traditions of 'language games' (Wittgenstein, 1974) are drawn upon that we do not entirely control.

In relating this to Kuhn's (1970) argument concerning the structure of scientific revolutions, his *1969 Postscript* is referred to below. Here, Kuhn (1970, p. 182) expands his concept of paradigm, re-describing it as a 'disciplinary matrix':

'disciplinary' because it refers to the common possession of the practitioners of a particular discipline; 'matrix' because it is composed of ordered elements of various sorts, each requiring further specification.

(his emphasis)

Disciplinary matrix still refers to the objects of a group's commitment to certain beliefs. However, it avoids the notion that they are to be discussed as 'all one piece' while still maintaining that they 'form a whole and function together' (Kuhn, 1970, p. 182). To return to Chapter 2 of this thesis, Kuhn's (1970) criticism of viewing beliefs as 'all one piece' is similar to Schön's (1963, p. 5) criticism of the dominance of an underlying model of concepts that conceives of them as 'mental stencils' superimposed on experience. Viewing beliefs as 'all one piece' and concepts as 'mental stencils' may be understood as examples of the first aspect of meaning as general structure suppressing meaning as a specific instance insofar as it would stamp a predetermined structure on our experiences. Indeed, Kuhn's (1970, pp. 52-65) description of the way 'normal science' proceeds by suppressing anomalies may be a further example of meaning as a general structure suppressing meaning as a specific instance. However, this second aspect of meaning as a specific instance reasserts itself in Kuhn's (1970, p. 184) *1969 Postscript to The Structure of Scientific Revolutions* as follows:

Rewriting the book now I would describe such commitments [to metaphysical paradigms] as beliefs in particular models, and I would expand the category models to include also the relatively heuristic variety....

(my emphasis)

Kuhn (1970, p. 184) explains that the strength of group's commitments may vary from heuristic to ontological models, and evidence for this is suggested in information systems concerning the use of the concept, *system*, discussed in Chapter 3 of this thesis as an epistemological and as an ontological model in soft and hard systems methodologies respectively. Nonetheless, Kuhn (1970, p. 184) argues that all models have similar functions:

They supply the group with preferred or permissible analogies and metaphors.

This is supported by Avison et al.'s (1992, p. 139) conclusion that methodologies,

should not be treated as a series of strict rules that must be adhered to in all situations, but as a framework containing tools and techniques which can be drawn upon and used when required.

Notice, however, the possibility that a framework may also work as a mental stencil imposing itself on our experiences. The outcome of a conception of a paradigm as network has an implication for new developments in methodologies: their newness may lie not so much in the ideas they propound, but in their attempt to implement the tension that derives from considering two contrary aspects of meaning at once.<sup>15</sup>

## 4.7 Summary and Conclusion

This chapter related significant prior research to the area of concern set out in this thesis by developing an organising framework of meaning's two meanings. This considered two aspects of meaning as 1) general structure and 2) specific instance. This was

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<sup>15</sup> For a critical review of how theories of organisations may be understood in terms of these two contrary aspects of meaning, readers are referred to Watson, (1995b).

discussed in relation to significant prior research set out in Chapter 3 of this thesis as follows:

- tension deriving from two contrary aspects of meaning,
- tendencies for two contrary aspects of meaning to suppress each other,
- how both aspects of meaning manifest in binary oppositions, and
- methodologies that explicitly work with meaning's two meanings.

The main outcome of this was a conception of paradigm as network insofar as significant prior research shares a similar conception of meaning, and the tension between various critical positions derives from the way they work with two contrary aspects of meaning.

In considering this in relation to Multiview Methodology's (MVM) synthesis of hard and soft methodologies, the next chapter discusses traditions of research in information systems in relation to learning how to work critically with meaning's two meanings.

# 5.

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## **RESEARCH APPROACHES IN INFORMATION SYSTEMS**

### 5.1 Introduction

The previous chapter related critical themes associated with concerns in linking hard and soft methodologies to the area of concern in this thesis. Using an organising framework of meaning's two meanings, it was argued that the various positions share a similar conception of meaning both as 1) a general structure and 2) a specific instance. This led to a conception of a paradigm as network, and an implication of this was the need for information systems development methodologies to work explicitly with meaning's two meanings.

This chapter considers research approaches in information systems as follows:



- criticisms of research approaches adapted from the natural sciences,
- the need for human centred research approaches, and
- research traditions and meaning's two meanings.

## 5.2 Criticisms of Research Approaches Adapted from the Natural Sciences

To return to Chapter 2 of this thesis, traditionally information systems were conceived of as technical systems with potentially some social implications. While recognising that computers are made and used by people, the traditional focus on technical aspects has resulted in research approaches being adapted from the natural sciences to study the development and use of information systems (Checkland, 1981; Lyytinen and Klein, 1985; Nissen, 1985; Galliers and Land, 1987; Swanson, 1987).

While there is a wide range of research approaches in information systems, in American traditions approaches adopted from the natural sciences continue to dominate (Galliers and Land, 1987). Insofar as the working group described in Mumford et al. (1985) is an early attempt to work critically with this dominant tradition, such research is drawn on in developing a humanistic perspective on research that conceives of information systems as *social* phenomena that use technology. To this end, discussion is structured as follows:

- a conception of research in the natural sciences,
- limitations in addressing complex social phenomena,
- limited view of reality,

- limited view of a researcher's role,
- limited view of knowledge, and
- focus on rigour over relevance.

### 5.2.1 *A conception of research in the natural sciences*

The term, *natural sciences*, refers to the study of natural phenomena; this contrasts with the term, *social sciences*, which refers to the study of human phenomena. Vitalari (1985, p. 249) describes basic characteristics that conceptualise research in the natural sciences as follows:

1. Researchers can obtain objective, value-free facts about reality that are independent of the observer.
2. The hypothetical deductive method gives a unified approach to scientific research.
3. The search for causal relationships is a primary concern.<sup>1</sup>
4. Empiricism and measurement are fundamental for scientific discovery.<sup>2</sup>

This conception of research results in a focus on developing general laws, and in considering the hypothetical deductive method used in the natural sciences, Checkland

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<sup>1</sup> Causality refers to the way we think that a cause is prior to an effect. For example, if we feel pain, we look for a cause. If we see something such as a pin, we reverse the way we structure our experience of pain. We change our old causal link of pain...pin to make a new causal sequence, pin ...pain (Culler, 1983, p. 86). For an interesting summary of the way Nietzsche (1966) argues that causal sequences are not given but arise through operations like the chronological reversal given above, readers are referred to Culler (1983, pp. 86-89).

<sup>2</sup> Empiricism refers to the view that all knowledge derives from experience of the senses; consequently, the mind does not have a set of a priori concepts prior to experience (Dancy and Sosa, 1993). For a detailed consideration of how this relates to a rationalist tradition in computer science, readers are referred to Winograd and Flores (1986).

(1981, p. 51) describes ‘reductionism, repeatability and refutation’ as its three distinguishing features:

We may *reduce* the complexity of the real world in experiments whose results are validated by their *repeatability*, and we may build knowledge by the *refutation* of hypotheses.

Galliers and Land (1987) argue how most research in information systems derives from a conception of research more suited to the natural sciences insofar as it focuses on experimental designs that may be academically acceptable but that often lead to inapplicable results.<sup>3</sup> As evidence for this, they refer to Vogel and Wetherbe’s (1984) study which suggests that as much as eighty-five percent of published research on information systems in the United States is derived from approaches adapted from the natural sciences.

Despite the continued dominance of such research approaches, inapplicable results with unclear implications for managers are potentially serious limitations in a practical field such as information systems (Galliers, 1993). In summarising an introduction to the debate about possible research approaches in the International Federation for Information Processing (IFIP) Working Group 8.2, Fitzgerald et al. (1985) explain that the concept of research in information systems is *not* the same as that in the natural sciences since the field of information systems is concerned with social phenomena. This is discussed below in terms of limitations of methods in the natural sciences when applied to studies of social phenomena in information systems.

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<sup>3</sup> For critical discussions on the strengths and weaknesses of experimental designs readers are referred to Benbesat (1989), Mason and Cox (1989), and Zmud et al. (1989).

### ***5.2.2 Limitations in addressing complex social phenomena***

While the scientific method is useful for investigating general laws in nature, Checkland (1981, p. 13) criticises it for being ‘apparently impotent’ when addressing ‘complexity in general and social phenomena in particular.’ To return to Checkland’s (1991, p. 397) explanation in Chapter 2 of this thesis, researchers intervening in social situations work interactively with other people who can self-consciously *change* the phenomena researchers are investigating in ways that had not been anticipated.

With reference to the concern for causal relationships in research approaches adapted from the natural sciences, the stimulus-response approach is limited and sometimes misleading due to the instability of social systems (Vitalari, 1985). As considered in the previous chapter with regard to Klein and Lyytinen’s (1985) criticisms of behaviourist theories of meaning, the stimulus-response approach assumes that people respond to a stimulus in a finite number of ways. Because human behaviour is often indeterminate, the situations in which information systems researchers work are not analogous to laboratory conditions in which natural scientists work (Checkland, 1981; Galliers and Land, 1987).

As such, Klein and Lyytinen (1985) discuss the ‘poverty of scientism in information systems.’ They criticise the ‘current orthodoxy’ for adopting approaches from the natural sciences to discover general laws of human nature, and they argue that such attempts are undermined by ‘paradigmatic anomalies.’ Klein and Lyytinen (1985, pp. 141-2) explain that these approaches lead to ‘misinformation systems’ since they ignore subjective and intersubjective aspects of meaning and knowledge in social contexts.

Vitalari (1985) explains how this is supported by Gergen's (1982) argument that scientists develop predictable patterns from populations that are homogenous and stable. This makes historical generalisations problematic in researching social phenomena insofar as people are *not* homogenous, and their subjective and intersubjective understandings of phenomena are linked to *diverse* cultural traditions.

### ***5.2.3 Limited view of reality***

Research approaches based in the natural sciences assume that reality is singular insofar as it is “*given* in terms of things or affairs, which exist ‘out there’ independently from us” (Floyd, 1992a, p. 16). This is reflected in rationalist traditions of software development in which design is conceived of as a neutral *matching* of the things or affairs that constitute reality to the design without the designer's perception influencing what is observed (Kent, 1978; Vitalari, 1985; Winograd and Flores, 1986; Klein and Hirschheim, 1987; Dahlbom, 1992; Floyd, 1992b; Klein and Lyytinen, 1992).

This was suggested in Chapter 3 of this thesis concerning the way hard methodologies assume a singular, static view of reality (e.g., Checkland, 1981; Klein and Hirschheim, 1987; Lewis, 1992). This is supported by Nielsen's (1990, p. 43) survey of approaches to appreciate information systems methodologies, in which he criticises most for being ‘static and general in the sense that the fundamental question is assessed detached from a particular situation’ (my emphasis).

This view is limited in addressing social phenomena insofar as it neglects the way that reality is actively ‘constructed’ by different stakeholders who invent descriptions to support their perceptions (Floyd, 1992a). In this view reality is linked to a certain

perception or world view (Checkland, 1981), as discussed in Chapter 3 of this thesis with regard to soft methodologies that represent multiple perceptions of a situation.

#### ***5.2.4 Limited view of a researcher's role***

In adopting approaches from the natural sciences, researchers in information systems have also conceived of their roles as detached observers acting as technical experts (Hirschheim and Klein, 1989). Limitations of this role were considered in Chapter 3 of this thesis concerning Hirschheim and Klein's (1989) four roles for systems analysts. In the role of technical expert, for example, researchers are often limited to supporting the views of power holders (Jackson, 1982; Lyytinen and Klein, 1985; Banbury, 1987; Ehn, 1988; Lewis, 1994).

To return to Chapter 2 of this thesis, Checkland (1991, p. 397) draws on Jönsson (1991) in considering how a researcher's role as a detached external observer has to be modified in researching social phenomena since deriving information from data is a 'uniquely human act.' Given this, it is misleading to claim that researchers -- being people -- do *not* affect inquiry. In this view, action research is argued to be an appropriate way to study social systems since researchers explicitly immerse themselves in situations, and they work in collaboration with other people through a deliberate process of reflective learning.

#### ***5.2.5 Limited view of knowledge***

Klein and Lyytinen (1985, p. 136) criticise the scientific method because it defines a singular conception of what constitutes 'the only valid ideal of knowledge.' They explain that the method is itself derived from a synthesis of 'formal methods of

reasoning and empiricist methods of data collection' that constitute knowledge as follows:

Experimental and observational data collection methods provide the inputs without which formalised theory is empty and the methods of formalised reasoning provide the guidance without which data collection is blind.

(Klein and Lyytinen, 1985, p. 136)

Nissen (1985) argues that some knowledge cannot be acquired using traditional methods adapted from the natural sciences. This is because such knowledge is not amenable to general law categories, and it cannot be tested by repeatable experiments designed by other 'outside observers.' Drawing on Ryan (1970), Nissen (1985) also argues that social systems are characterised by rule-following behaviour rather than causal laws; consequently, rules can be self-consciously broken in ways that natural laws cannot.

In expressing this concern over a limited view of knowledge, many information systems researchers have drawn on Habermas (1970, 1972, 1974) to argue that knowledge is constituted by different interests (e.g., Lyytinen and Klein, 1985; Nissen, 1985; Jackson, 1992; Jackson, 1993; Hirschheim and Klein, 1994). In this view, most traditional research approaches in information systems derive from a technical knowledge interest, the purpose being explanation, prediction and control.

However, this restricts attention to the ways technical knowledge influences how problems are understood and defined. For example, focusing on technical knowledge interests neglects the way information systems development depends on communicative action using *ordinary* language for achieving meaning (Lyytinen, 1985; Lyytinen and Klein, 1985). While considering the advantages of acquiring systematic knowledge,

such research criticises the way this is done without reflection on whose interests are being served by such knowledge (Nissen, 1985).

### ***5.2.6 Focus on rigour over relevance***

Argyris and Schön (1991) discuss the dilemma of rigour or relevance as follows: if researchers move towards the rigour demanded by methods that have been adapted from the natural sciences, then they risk becoming irrelevant to practitioners' demands for *usable* knowledge. However, if they emphasise researching questions that are relevant to practitioners, then they risk falling short of current disciplinary standards of rigour. To return to Galliers and Land (1987), this is evidenced by the way much traditional research in information systems focuses on devising an elegant research method rather than asking whether this is an appropriate way of investigating a chosen topic. Keen (1991, p. 46), for instance, is critical over this conception of rigour:

Far from seeing laboratory experiments, surveys and analytic models as 'rigorous,' many – perhaps even most – of the audience of senior managers interested in these topics distrust them.

In criticising approaches from the natural sciences being adapted to research in information systems, Nissen (1985) argues that they neglect potential for human innovation since this would be viewed as a *disruption* to the general laws towards which such research aims.

Additionally, imposing general laws on people to 'smooth' the process of development neglects the emancipatory potential of information systems as well as their potential to support multiple points of view (Nissen, 1985; Ehn, 1988; Newman, 1989; Dahlbom and Mathiassen, 1993; Mingers, 1993). Evidence for this in methodology is suggested



by the way researchers have often followed linear prescriptive models (e.g., SSADM) rather than viewing methodology as a way of finding out what different stakeholders perceive to be relevant in each situation (e.g., SSM).

Although research approaches derived from the natural sciences strive to be objective and free from bias, Klein and Lyytinen (1985, p. 140) argue that this may endanger freedom of inquiry in two ways:

1. Methods adapted from the natural sciences restrict how we conceive of a problem, and they neglect other forms of reflective inquiry, so resulting information systems are often implemented without regard to what different people value in a situation.
2. At institutional levels the dominance of methods adapted from the natural sciences leads to educational practices that train specialists lacking a regard for critical reflection on the limitations of their knowledge.

Vitalari (1985, pp. 250-252) argues that post-positivist research is relevant to information systems because positivist assumptions influence choice of research design, method, and measures.<sup>4</sup> In relation to Feyerabend's (1975) arguments concerning the limitations of scientific research methods, Vitalari (1985) explains that implicit in such discussions are the need for methods that allow for learning and feedback as well as alterations during the course of research.

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<sup>4</sup> Positivism is a form of scientific empiricism that rejects forms of inquiry not derived from experimental investigation and observation. For a detailed consideration of scientific philosophy in the twentieth century readers are referred to Gillies (1993). In the next chapter how a conception of being 'post' affects inquiry is considered with reference to poststructuralism.

Criticisms of adopting research approaches from the natural sciences to information systems were set out above. These suggest how conceptual implications of research approaches derived from the natural sciences have affected the course of inquiry in information systems. These lead to research approaches that are rigorous in meeting criteria according to the concept of research set out in natural sciences (e.g., establishing causal relationships through variables using experimental designs with the intention of deriving generalisable laws that can be repeatably tested).

However, these often focus on questions that practitioners in information systems regard as irrelevant (e.g., practitioners do not work in laboratory conditions that allow them to control and manipulate a finite number of variables, so they often do not identify with results derived from such research).<sup>5</sup>

Limitations of research approaches derived from the natural sciences were considered above. With regard to such limitations, *human* centred approaches to information systems are discussed below.

### 5.3 The Need for Human Centred Research Approaches

The above criticisms derive from a recognition that information technologies are made and used by people of various backgrounds and interests in organisations. Klein and Lyytinen (1985) identify objectivity and respect for the facts as strengths associated

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<sup>5</sup> For an alternative perspective that argues for the importance of laboratory experimentation in information systems research with critical reference to Galliers and Land (1987), readers are referred to Jarvenpaa (1988) which also includes their response to her.

with research approaches derived from the natural sciences. However, these are unlikely to be achieved in information systems research because our understanding of situations are affected by subjective and intersubjective perspectives that help us to give meaning to observed events (Galliers, 1985; Kling, 1987).

Nissen (1985) argues that information technology takes control over people's working lives, but in the interests of formulating general laws, their values are often not taken seriously. To this end, human centred research approaches encouraging the participation of those who will be affected by information systems have arisen (e.g., Mumford., 1983; Mumford et al., 1985; Wood-Harper, 1985; Boland and Hirschheim, 1987; Klein and Kumar, 1989; Nissen et al., 1991).

Characteristics of such approaches are discussed below as follows:

- shift in purpose of research to include self-understanding,
- research approaches adapted from the humanities, and
- pluralistic approaches to methodologies.

### ***5.3.1 Shift in purpose of research to include self-understanding***

Nissen (1985, p. 45) explains that traditionally a main purpose of natural sciences was producing objective knowledge of the world wherein the term, *objective*, was understood as intersubjective and provisionally agreed by a *closed* community of scientists. Conversely, a main purpose of research in information systems includes self-understanding for various people from different backgrounds through an appreciation of

their different knowledge interests (Langefors, 1977; Nissen, 1985; Banbury, 1987; Flood and Jackson, 1991a, 1991b; Kaplan, 1991).

In addressing the criticism that some types of knowledge cannot be acquired using research approaches from the natural sciences, human centred approaches include not only technical knowledge, but also practical and emancipatory interests (e.g., Checkland, 1981; Land and Hirschheim, 1983; Lyytinen and Klein, 1985; Boland and Hirschheim, 1987; Lyytinen, 1988; Davies and Wood-Harper, 1989). Human centred approaches therefore address a more *open* concept of community.

In defining ontology<sup>6</sup> in this sort of information systems research, Lyytinen and Klein (1985) emphasise that information systems reflect knowledge-based *rules* that are socially and historically conditioned; consequently, researchers should not remove themselves from debate. Likewise, in defining epistemology<sup>7</sup> Lyytinen and Klein (1985) say that truth does not correspond with an objective reality. Instead, it is defined through discourse, and it is limited to the uncertainty and fallibility of human knowledge.

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<sup>6</sup> Ontology refers to the nature of being. Ontological commitment is a way for determining which things must be if a theory is true, i.e., a theory is committed to the existence of x, y, and z for it to be true (Dancy and Sosa, 1993). For example, if I believe in atomic theory, I am ontologically committed to the existence of atoms for my theory of splitting atoms to be true.

<sup>7</sup> Epistemology refers to theories of knowledge, especially to critical reflection on validity, methods, and scope (Urmson and Rée, 1992).

### *5.3.2 Research approaches adapted from the humanities*

In addressing the criticism that some knowledge cannot be acquired using scientific methods, researchers have identified various approaches from humanistic traditions that are relevant to information systems. For example, the shift in purpose of research and types of knowledge acquired means that methods adapted from the natural sciences need to be critically evaluated and ‘supplemented by methods fetched from hermeneutics’ (Nissen, 1985, p. 46).<sup>8</sup>

Klein and Lyytinen (1985), for example, draw on Burrell and Morgan’s (1979) four sociological paradigms to argue for research approaches that include phenomenological and interpretive traditions.<sup>9</sup> Similarly, in discussing phenomenology, Boland (1985) draws on Gadamer (1975) to argue that prejudice is a positive, not a negative phenomenon. Because it is how we experience the world, it cannot be made to disappear. As such, hermeneutics is not some esoteric process relevant only to those interested in translating ancient texts since interpretation is a fundamental process that confronts us in organisations as we encounter meanings that have already been made and that are being made through our actions (Boland, 1985, 1991; Meyers, 1993, 1994; Lee, 1994).

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<sup>8</sup> As described in Chapter 2 of this thesis, hermeneutics refers to the philosophy of interpretation.

<sup>9</sup> Phenomenology was defined in Chapter 2 of this thesis, the main assumption being that knowledge derives from the phenomena that constitute our experience (e.g., Husserl, 1936; Boland, 1985).

While reduction, repeatability, and refutation characterise the natural sciences (Checkland, 1981), the *hermeneutic circle* characterises many of these humanistic forms of inquiry. This is an iterative process of using the parts to understand the whole and the whole to understand the parts thereby changing the researcher's understanding in the process (Davis et al., 1990). In making successive passes through the circle, researchers modify their understanding of phenomena until they reach a new meaning with which they interpret the area of inquiry (Davis et al., 1990, pp. 13-16).<sup>10</sup> Since the process is in principle never ending, one issue is how to assess the quality of such research. With regard to this, Davis et al. (1990, p. 14) write:

A 'good' interpretation resolves any apparent anomaly or irrationality. A 'good' interpretation, however, need not be (and, in fact, cannot be) final and conclusive because there may be many competing interpretations.

This reflects what Markus and Robey (1988, p. 588) describe as an emergent perspective in information systems research insofar as it suggests that the 'uses and consequences of information technology emerge unpredictably from complex social interactions.' Social meaning is central to this perspective insofar as it explains conflicting research results through different meanings that the 'same' technology develops in different social settings (Markus and Robey, 1988, p. 595).

### ***5.3.3 Pluralistic approaches to methodologies***

Traditionally, information systems development methodologies have focused on technical matters. However, Fitzgerald et al. (1985, p. 4) explain that the focus of

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<sup>10</sup> For an example of this in practice, readers are referred to Appendix 1, diary entry, Thursday: 21 January 1993.

information systems and their relationships to organisations is not the same as conceiving of information systems as merely technical phenomena. They discuss how the IFIP Working Group 8.2 has interests in both social and technical matters, and as such they argue that,

the fact that we have a foot in both camps means that we cannot simply apply methods which are applicable only to the technical end of the spectrum

(Fitzgerald et al., 1985, p. 4, my emphasis)

Given this situation, they argue that a 'pluralism of methods' is appropriate in information systems research (Fitzgerald et al., 1985, p. 4). For example, Hirschheim (1985, pp. 32-3) argues that methodological pluralism reflects the post-positivist belief that knowledge is not something unquestionable:

...asserting instead that knowledge claims are simply those accepted by the community. They possess the power to convince the community that they are in fact an improvement on our previous understanding. Post-positivism is more a belief about knowledge, it is not a particular school of thought with any agreed set of propositions, or tenets although perhaps that is something the IS (information systems) community might wish to pursue.

A commitment to the open-ended possibilities of knowledge is reflected generally in approaches that integrate the relationship between theory and practice through cycles of learning in action research (e.g., Checkland, 1991; Jönsson, 1991; Mansell, 1991; Baskerville and Wood-Harper, 1992). This concern is also reflected in pluralistic approaches to information systems development methodologies. In critical systems thinking, for example, pluralism is an explicit commitment (Jackson, 1992).

Evidence for this is reflected in methodologies such as MVM (Multiview Methodology) and TSI (Total Systems Intervention) that explicitly combine traditions of other already

established methodologies (Wood-Harper et al., 1985; Flood and Jackson, 1991b). Like SSM, such methodologies may sometimes require studies of the ‘same’ information system by different perspectives due to their commitment to pluralism and their openness to generating new ideas.

To return to Lyytinen and Klein’s (1985) and Nissen’s (1985) argument that social systems are characterised by rule-following behaviour rather than causal laws, this was suggested in the previous chapter insofar as a methodology’s meaning was considered to have two senses: it is both a *collective act* and a system of rules and codes within which each *specific instance* of interpreting a methodology occurs.

This section considered themes associated with human centred research approaches in information systems. Traditions of research deriving from the natural sciences and the humanities are related to meaning’s two meanings below.

## 5.4 Research Traditions and Meaning’s Two Meanings

In relating this discussion to the previous chapter, traditions of research in information systems can be understood in terms of the tension derived from meaning’s two meanings. This is evidenced by Hirschheim’s (1985, p. 17) history of information systems epistemology which he conceptualises as follows:

1. positivism,
2. anti-positivism,
3. re-entering of positivism through logical positivism,



4. contemporary critics, and
5. post-positivism.

In returning to the criticisms discussed above, Hirschheim (1985, p. 17) explains that there has been an 'uneasy tension' in applying positivism to the social sciences. In relating this tension to meaning's two meanings, phases in research seem to alternate between emphasising one aspect of meaning in favour of the other. For example, positivism favours objective observation and general laws, so it emphasises meaning as a general structure (Hirschheim, 1985, pp. 22-23). However, anti-positivism derives from a concern for extending the notion of empiricism to include not just what is generally observable, but also '...another type of perception; that of recognising meanings...' (Hirschheim, 1985, p. 24).

Conversely, logical positivism represents a return to meaning as general laws in an attempt to give a unifying basis for science (Hirschheim, 1985, p. 29), while contemporary criticism addresses the way that knowledge is bound to one's perspective and is therefore linked to a specific historical situation (Hirschheim, 1985, p. 30). In asserting the second aspect of meaning, this focuses on the way that the meaning of words is determined by contexts that are intersubjectively constituted rather than objectively given (e.g., Wittgenstein, 1974).

Hirschheim (1985, pp. 32-3) describes post-positivism as a 'new conception of science,' and in returning to pluralistic approaches to methodology discussed above, this can be seen as a self-conscious effort to work with the tension associated with meaning's two meanings insofar as it asserts that 'there is no one correct method of science but many

methods' (Hirschheim, 1985, p. 33). Drawing on Kuhn (1970), Hirschheim (1985, p. 33) argues that the 'correct' method depends on matters such as the topic studied as well as the type of knowledge desired.

This last concern for pluralism focusing on different types of knowledge can be understood as the second aspect of meaning as specific instance reasserting itself in light of a dominant structure of meaning. That is, research approaches adapted from the natural sciences with their focus on objective, repeatable 'technical' knowledge, represent tendencies to suppress the second aspect of meaning as something we understand in a specific historical context through our own world views and particular knowledge interests (Habermas, 1972). This is reflected by the way proponents of methods adapted from the natural sciences in information systems often do *not* accept a plurality of methods as suggested by criticisms concerning their focus on rigour over relevance.

Moreover, this focus on meaning as a general structure represented by the scientific method has become institutionalised. For example, Fitzgerald et al. (1985, p. 6) explain that while in Europe and Canada pluralism is 'sometimes tolerated,' in the United States the scientific method continues to be dominant as evidenced by a study of doctoral schools (Fitzgerald et al., 1985, p. 6). In the United Kingdom, they cite the Alvey Project as representing the scientific approach and defining these as 'the only acceptable research paths' (Fitzgerald et al., 1985, p. 6, my emphasis).<sup>11</sup> This parallels Vidgen's

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<sup>11</sup> In returning to Checkland's (1981) specification of what is meant by a methodology, notice that he explains how this is *not* a method, i.e., a path or a way of doing something. Rather, methodology is a set of principles that are reduced to methods in each situation. As such, his

(1993) criticism of soft methodologies raised in Chapter 3 of this thesis: just as soft methodologies continue to lack material impact because they are often considered too remote from technical design, here also a plurality of approaches to research in information systems continue to lack material impact partially because they are often not well supported by funding structures.

This section related traditions of research approaches to meaning's two meanings. A summary and conclusion are set out below.

## 5.5 Summary and Conclusion

This chapter discussed research approaches in information systems. Criticisms of research approaches adapted from the natural sciences were set out. To this end, it was argued that research in information systems is different from that in the natural sciences. The natural sciences focus on detached observation as a way of deriving generalisable laws about nature through reductionism, repeatability, and refutation (Checkland, 1981, p. 51).

However, research in information systems is concerned primarily with social phenomena. This suggests that researchers should be actively involved since their understandings of situations are affected by subjective and intersubjective perspectives that help them give meaning to observed events. From this basis the need for research

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definition reflects meaning's two meanings, while the above view of only one acceptable research path represents a tendency to suppress the second aspect of meaning as a specific instance.

approaches derived from the humanities was considered. This represents a shift in the purpose of research to include self-understanding and a pluralistic approach to methodologies that recognises how knowledge is linked to different interests.

Research traditions from the natural sciences and the humanities were then related to meaning's two meanings, and methodological pluralism was considered to be an example of the second aspect of meaning as a specific instance asserting itself in light of dominant structures of meaning that have resulted from adopting research approaches from the natural sciences.

The next chapter draws on a taxonomy of approaches to define a descriptive/interpretive research approach that is appropriate for an apprentice researcher interested in learning how to work critically with a tradition of information systems development methodologies.

# 6.

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## **DEFINING A DESCRIPTIVE/INTERPRETIVE RESEARCH APPROACH**

### 6.1 Introduction

The previous chapter discussed research approaches in information systems. Limitations were given concerning traditional approaches adapted from the natural sciences. From this basis the need for research approaches deriving from the humanities was considered. Following this, research approaches deriving from the natural sciences and the humanities were related to meaning's two meanings.

This chapter draws on Galliers' (1991a) taxonomy to define a descriptive/interpretive research approach that is appropriate for an apprentice researcher to learn how to work critically with a tradition of information systems development methodologies. The chapter is set out as follows:

- a role of an apprentice researcher,
- a taxonomy for choosing research approaches, and
- a poststructuralist textual analysis.

## 6.2 A Role of an Apprentice Researcher

To return to Chapter 3 of this thesis, Hirschheim and Klein (1989) discuss potential roles open to researchers. Gummesson (1991, pp. 31-50) also discusses the importance of establishing roles in research. Likewise, this is considered by Checkland (1991) with reference to action research. While such discussions focus on roles for professional researchers, this section discusses what is entailed in the role of an apprentice.

In learning how to work in a tradition with which they are as yet unfamiliar, the situations apprentices face may have some parallels with professional researchers working in organisations with which they are also unfamiliar. Apprentices are additionally constrained by the material resources available to them as well as access to various people in organisations.<sup>1</sup> While professionals might also face such difficulties, apprentice researchers are further constrained by their lack of experience in interpreting situations that they have never encountered before.<sup>2</sup>

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<sup>1</sup> Davis (1992, p. 235) for example, explains how an apprentice has the lowest value to an organisation.

<sup>2</sup> In Chapter 11 of this thesis this is discussed insofar as previous experience influences the choice of research topic as well as the research approach.

The role of an apprentice researcher described in this thesis was conceived of as learning how to work in a *human* centred tradition of research in information systems. This was influenced by prior experiences in the humanities as was evidenced in the previous chapter insofar as criticisms of research approaches adapted from the natural sciences were given from a perspective that information systems are *social* phenomena that use technology drawing on Mumford et al. (1985). This suggests how apprentices lacking experience are placed in a situation of having to draw on prior experience of an 'old' area to learn about a 'new' area.

Jenkins (1985) argues that a critical step in the research process is the definition of a research topic. This was considered in Chapter 2 of this thesis concerning a conception of information as meaning and its potential implications for information systems development methodologies through four areas of investigation. A second step is that there are many potentially suitable approaches available and that one should choose an approach appropriate to the research topic (Jenkins, 1985; Galliers, 1991a). The resulting decision is a selection of an approach that will help the researcher learn about the stated research areas.

Below, Galliers' (1991a) taxonomy is drawn on to define a research approach suitable to studying methodology given the role of an apprentice researcher with previous experience in the humanities.

### 6.3 A Taxonomy for Choosing Research Approaches

Galliers' (1991a) taxonomy was used to consider possible ways of learning how to work critically with a tradition of methodology. Potential approaches included the following:

- field experiments,
- case studies,
- surveys,
- simulation and game/role playing,
- action research,
- subjective/argumentative, and
- descriptive/interpretive research.

In the taxonomy, discussion reflects on the likely suitability of each approach in the context of the particular research topic under investigation. Galliers' (1991a) taxonomy is shown in the table below:



	Modes for Traditional Empirical Approaches (Observations)				Modes for Newer Approaches (Interpretations)		
Object	Field Experiment	Case Study	Survey	Simulation and Game/role playing	Action Research	Subjective/argumentative	Descriptive/interpretive (inc. Reviews)
Society	Possibly	Possibly	Yes	Possibly	Possibly	Yes	Yes
Organisation/group	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual	Yes	Possibly	Possibly	Yes	Possibly	Yes	Yes
Technology	Yes	No	Possibly	Yes	No	Possibly	Possibly
Methodology	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Theory Building	No	Yes	Yes	Yes	Yes	Yes	Yes
Theory Testing	Yes	Possibly	Possibly	Possibly	Possibly	No	Possibly
Theory Extension	Possibly	Possibly	Possibly	No	Possibly	No	Possibly

**Table 6.1. Galliers' (1991a) revised taxonomy of research approaches (adapted from Galliers, 1991a).**

Given prior experience in the humanities, empirical approaches such as field experiments, case studies, surveys, and simulation and game/role playing were considered less appropriate to studying methodologies that are beginning to address a conception of information as meaning.<sup>3</sup> Reasons for this are set out below.

<sup>3</sup> In adapting Galliers' (1991a) taxonomy to research approaches appropriate to investigating *methodology*, the following approaches included in his initial taxonomy have been excluded from the diagram in this thesis: theorem proof, laboratory experiment, and forecasting and futures research. This is because the taxonomy did not consider them appropriate to methodology. After Galliers (1991a, p. 329) the term, *approach*, is used as a way 'of going about one's research;' this is more general than the term, *method*, which are ways to systematise observation.

### **6.3.1 Field experiments**

Field experiments allow the researcher to isolate and to control a small number of variables which may then be studied intensively. However, the complex situations in which methodology is interpreted questions the validity of attempting to isolate change within an experimental situation because this assumes a simplified *snapshot* view with a clear beginning and an ending (Pettigrew, 1985; Vitalari, 1985). Also, in returning to Vitalari's (1985) argument concerning social phenomena being rule governed, this questions the appropriateness of developing an explanation based on models of abstracted causality (Galliers and Land, 1987). Moreover, as was suggested in Chapter 4 of this thesis, meaning is not only a general structure; it is also a specific instance. Consequently, a researcher cannot predict exactly how a methodology will be interpreted, and this casts doubt on the appropriateness of setting up controlled experiments since one cannot know in advance which variables to control, to manipulate or to exclude (Baskerville and Wood-Harper, 1992). Additionally, from a practical point of view this approach is limited in the context of a problem of meaning raised by Boland (1987) since some of the more elusive aspects of information as an inward-forming process are not directly observable.

### **6.3.2 Case studies**

These have the advantage of deriving a holistic view that is potentially appropriate in learning how to work critically with a humanistic tradition of methodology that addresses a conception of information as meaning. Also, this approach has the advantage of exploring rule governed behaviour such as social relationships over time. This is especially true in longitudinal case studies, which allow for in-depth exploration

of time dependent phenomena like learning, adaptation, and evolution (Pettigrew, 1989). However, the assumptions of case studies often require researchers to remain detached from the object of investigation, claiming that the approach derives from observable ‘facts’ that are not open to interpretation (Galliers, 1991a, p. 334).<sup>4</sup> This role of researcher as a detached observer makes case studies less appropriate to the research topic because changes introduced by methodologies require intervention (Galliers and Land, 1987; Baskerville and Wood-Harper, 1992). Moreover, in emphasising objective detachment, results would tend to neglect the second aspect of meaning, particularly with regard to the researcher’s own process of inward-forming.

### 6.3.3 Surveys

Surveys have the advantage of allowing researchers to study more variables than is possible in experimental approaches, and this has the potential of describing real world situations from various perspectives. However, there are several disadvantages that make this approach inappropriate for learning how to work critically with a tradition of methodology on its own. For example, as Gummesson (1991, pp. 25-52) argues, the questions researchers ask when undertaking surveys may result in theoretical answers that are quite likely to differ from practice.

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<sup>4</sup> Evidence for this is suggested by the *Communications of the ACM*. This journal gives information for authors concerning the selection of manuscripts as follows: ‘Case studies should take a rigorously objective perspective on the systems they describe, and they should be evaluative and descriptive’ (*Communications of the ACM*, 33, 1, p. 11, my emphasis). While the preferred reading is objective, this is potentially disrupted by the notion of a perspective that evaluates while it describes. Preferred readings and disruptions to preferred readings will be discussed later in this chapter.

Additionally, to return to Chapter 4 of this thesis, results would be likely to suppress the second aspect of meaning as specific instance in favour of developing a general structure. For example, results are themselves structured through the form of the survey, but additionally, responses might be subjected to quantitative analyses that focus on 'nonrandom variation.' This implies that frequency indicates importance, so the more a phenomenon occurs, the 'more likely it is nonrandom and thus important' (Lacity and Janson, 1994, p. 142). Also, given that the scope of the research was limited to MVM, the community's small size would not have drawn on a strength of survey research, which is to sample data from large populations (Kling, 1991).

#### ***6.3.4 Simulation and game/role playing***

Simulation and game/role playing have the advantage of studying situations that might otherwise be beyond the bounds of analysis. For example, in learning how to work critically with a tradition of methodology, this approach might give an apprentice practice in action research in a simulated professional situation. However, Galliers (1991a) cites limitations that include self-fulfilling prophecies and the unpredictability of environmental factors, so for reasons similar to those applying to field experiments, this was considered less appropriate. Moreover, in considering Mumford's (1985) advice concerning the selection of an approach with regard to whether one is working alone or in a team, this research was undertaken alone; consequently, such approaches were considered less appropriate since they are generally undertaken as group activities.

### 6.3.5 Action research

Gummesson (1991, pp. 99-103) argues that knowledge is restricted if research is limited to theory; as such, action research has the advantage of linking theory with practice. Additionally, the researcher's role as a change agent may create substantial opportunities for access opening up useful research possibilities. Action research also recognises that researchers cannot be separated from social debate, so it attempts to make their biases explicit and to record failed as well as successful interventions (Lyytinen and Klein, 1985; Jönsson, 1991). Action research therefore has the potential advantage of considering both aspects of meaning as discussed in Chapter 4 of this thesis.

However, action research has two disadvantages within the constraints of the research described in this thesis:

1. While the research might make some contribution to more successful interventions using methodology in future, it was not likely that there would be sufficient time to test the outcomes of this investigation with subsequent action research.
2. Because action research entails not just observing but actually *intervening* in a situation, its success depends on the researcher's extensive training, skills and experience. It was therefore not considered to be a suitable approach for an apprentice undertaking research for the first time.

### 6.3.6 *Subjective/argumentative*

Galliers (1991a, p. 336) writes with reference to Vogel and Wetherbe (1984) that subjective/argumentative research is a 'free-flowing process' based more on opinion than observation. While adherents to approaches adapted from the natural sciences would question whether this approach was genuinely research, Galliers (1991a, p. 336) explains that in the right hands the resulting creative process may contribute something towards building theories that can subsequently be tested using more formal methods. Additionally, he explains that it is more suitable to researchers working alone, and its strengths lie in creating new ideas and insights, while its weaknesses are associated with the process of research being unstructured and subjective (Galliers, 1991a, p. 336).

In considering the purpose of contributing something towards *building* theories of methodology that address information as meaning, this might seem a suitable approach, especially given the situation of working alone. However, in learning how to work critically with a *tradition* of methodology, the approach might tend to emphasise the second aspect of meaning as a specific instance (i.e., my own process of inward-forming) while suppressing a methodology's meaning as a general structure (i.e., a research tradition). Moreover, given the situation of being an *apprentice* undertaking research for the first time, subjective creativity was unproven, so the approach was considered to carry a degree of risk that made it less appropriate in relation to the following approach.

### 6.3.7 *Descriptive/interpretive*

Within the context of Galliers' (1991a) taxonomy and the significant prior research discussed in Chapters 3-4 of this thesis, descriptive/interpretative research was considered to be the most appropriate for learning how to work critically with a tradition of methodology as an apprentice researcher with experience in the humanities. For example, a descriptive/interpretive approach has the potential for addressing both aspects of meaning. Even in its name both aspects are asserted: *descriptive* recognises meaning as a general structure, while *interpretive* recognises meaning as a specific instance as a process of inward-forming that arises as we interact with structured data.<sup>5</sup> Also, as Galliers (1991a, p. 338) explains, a descriptive/interpretive approach has the advantage of extending theory by contributing to cumulative knowledge within an intended research community. This is also supported by Keen's (1991) view that a historical perspective based in hermeneutics is potentially important insofar as it reflects a researcher's learning and potentially helps to inform others about a field's cumulative tradition.

This section discussed why a descriptive/interpretive approach was chosen as an appropriate way for an apprentice researcher with previous experience in the humanities to learn how to investigate meaning's two meanings in information systems.<sup>6</sup>

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<sup>5</sup> Kuhn's (1970, p. 194) distinction between perception as an involuntary process due to the structure of our nervous systems and interpretation as 'a deliberative process by which we choose among alternatives as we do not in perception itself' might also be understood in terms of meaning as structure and specific instance.

<sup>6</sup> Reflections on Galliers' (1991a) taxonomy as well as limitations associated with this approach are discussed in Chapters 11-12 of this thesis. Appendix II describes how Boehm's

The specifics of a descriptive/interpretive research approach using a poststructuralist textual analysis are set out below.

## 6.4 A Poststructuralist Textual Analysis

The previous section drew on Galliers' (1991a) taxonomy in defining a descriptive/interpretive research approach as an appropriate way of researching methodology given the role of an apprentice researcher learning how to work in a humanistic tradition in information systems. This section draws further on previous experience to consider specifics of a poststructuralist textual analysis. This is discussed as follows:

- why textual analysis is appropriate in learning how to research meaning,
- why poststructuralism is appropriate in learning how to work critically with a tradition,
- basic characteristics of deconstruction, and
- summary of deconstructive approaches to reading.

### *6.4.1 Why textual analysis is appropriate in learning how to research meaning*

Hirschheim (1985, p. 32) argues after Lessnoff (1974) and Winch (1958) that researching social situations 'involves such mental phenomena as thinking, meaning, purposive action, and categorisation' (my emphasis). While Boland (1987) considers how such processes of inward-forming are elusive since they are difficult to observe, Vickers (1968, p. 147) explains that appreciative behaviour is

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(1989) spiral model was used to manage the project up to submission of a proposal at the end of the first year.



unobservable in the sense in which scientists observe the behaviour of stars and rats but attested by and studiable through the whole volume of human communication, not least the communications on which scientists invite us to rely when they formulate theories about stars and rats.

(my emphasis)

In emphasising the importance of textbooks, Kuhn (1970, p. 137) explains that,

both the layman's and the practitioner's knowledge of science is based on textbooks and a few other types of literature derived from them.

While Kuhn's (1970) own method is based on a textual analysis of scientific theories, evidence for the importance of texts in information systems with regard to theories of methodology was suggested in attending an M.Sc. course on advanced systems analysis; here texts describing case studies were given to students as a means of practising theories of systems analysis.

This use of texts in learning how to read and act in social situations has parallels with Polanyi's (1962) description of how the language of science is intertwined with its methodology insofar as language does not just describe what scientists do; it also helps them to formulate their actions. In this respect, Polanyi (1962) argues that when students learn the language, they also learn to understand the subject (quoted in Locke, 1992, pp. 32-3). Skills in learning a language may be especially important in a discipline such as information systems insofar as professional practice is often characterised by such activities as defining a universe of discourse, setting out terms of reference, and making data dictionaries. In considering Schön (1993) and Goldkuhl (1987), an understanding of professional language in action may help apprentices learn how to make sense of situations by 'setting' problems that they then try to 'solve.'

This suggests that textual analysis is an appropriate way of learning how to research meaning in methodology, as evidenced by Wood-Harper's (1985) and Jönsson's (1991) views that the favoured metaphor for the study of methodology in information systems is the interpretation of texts. However, Boland (1989) criticises the temptation to regard language and metaphor as tools.<sup>7</sup> That is, they are not objects that we can step out of and walk away from like we can with a taxi, and they are not things we can put down like we might do with a hammer. Instead, Boland (1989) argues that language and metaphor are a human condition. Textual analysis was therefore considered an appropriate way for an apprentice to *begin* learning how to work with that condition.

While the texts describing a methodology are not complete representations of *what really happened*, they are potentially important in learning how to reflect critically on a tradition of methodology for at least two reasons:

1. Although a methodology recommends a certain range of activities, the resulting theory is not like the script of a play because methodologies do not simply *reproduce* a previous pattern of activities (Watson and Wood-Harper, 1994b). Instead, the general structure suggested by these activities is a basis for specific instances of *critical inquiry* in situations that authors may not even have anticipated. To return to Chapter 4 of this thesis, if methodology influences how practitioners set problems that they then solve, an understanding of conceptual implications may

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<sup>7</sup> This is considered further in Chapter 9 of this thesis with regard to the metaphor of MVM's five perspectives as tools.

contribute towards a better understanding of two senses of methodology both as a collective act and as a specific instance of interpretation.<sup>8</sup>

2. Like scientific theories, methodology manuals are written with the intention that readers can learn how to ‘apply’ the methodology from the authors’ accounts. This is evidenced, for example, in the following quotation:

After reading SSM in Action interested persons should be well able to use the approach in a way comfortable for them in relation to situations about which they are concerned.

(Checkland and Scholes, 1990, p. 10, my emphasis)

This comment parallels Kuhn’s (1970, pp. 188-9) description of the way shared examples help students to see how a new problem is *like* a problem they have already encountered. With reference to this, Kuhn (1970, pp. 190-91) explains that recognising a ‘similarity relationship’ is the main skill students acquire in working through exemplary problems and that this is ‘thereafter embodied in a way of viewing physical situations rather than in rules or laws’ (my emphasis). This ‘tacit knowledge’ (Polanyi, 1962) in which learning the meaning of words is intertwined with examples of how they function in use also has similarities with Checkland and Scholes’ (1990, pp. 281-2) SSM Mode 2, which describes *internal* mental uses of the methodology to make sense of an experience.

In relation to meaning’s two meanings, Galliers’ (1991a) criticism of descriptive/interpretive approaches for being subjective could be understood as a

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<sup>8</sup> This is developed in further detail in Chapter 10 of this thesis when reflecting on a methodology’s meaning in relation to theory and practice.

tendency in such approaches to suppress the first aspect of meaning as a general structure. In an attempt to address Galliers' (1991a) criticism of descriptive/interpretive approaches, the research in this thesis therefore focused on a textual analysis of *published* manuals describing MVM's theory and practice rather than interviews with its authors since published manuals are in a form amenable to further empirical investigations.<sup>9</sup> Moreover, in drawing on a strength of descriptive/interpretive approaches to reflect on a field's cumulative tradition, these published methodology manuals have affected the cumulative tradition as evidenced by citations and criticisms of the manuals in the literature (e.g., Lyytinen, 1987; Jackson, 1992; Mingers, 1992b, 1995).

Concerning problems of building and applying theories, Nissen (1985, p. 47) explains that primary research data are *concepts* used by people in the field of study; while conceptualising these is in a sense subjective, such concepts are also intersubjectively shared by people as they use language to interact in social reality. This supports Lyytinen and Klein's (1985) view concerning ontology being constituted by rules that are historically and socially conditioned as well as their view of epistemology that conceives of truth as discourse rather than a correspondence to an objective reality. This is likewise evidenced in Beath and Orlikowski's (1994, p. 373) view that a

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<sup>9</sup> Although there are computerised tools for conducting a textual analysis (e.g., Tesch, 1990), these were not considered appropriate in light of Sandström's (1991, p. 170) concerns that there is a danger when choosing a technique merely for reasons that there is a tool at hand. For example, he criticises using the cognitive mapping tool, COPE (COgnitive Policy Evaluation), because one might not know if the findings have been interpreted by the maker of the tool or by the researcher.

methodology's texts reflect institutional contexts such as assumptions concerning norms about 'how and where work gets done.'

In learning how to address meaning's two meanings, an argument for a *poststructuralist* approach to textual analysis is given below.

#### ***6.4.2 Why poststructuralism is appropriate in learning how to work critically with a tradition***

Poster (1989, 1990) considers poststructuralism in relation to database technology. In operations research, Taket and White (1993) propose a poststructuralist agenda to criticise binary oppositions such as 'hard' and 'soft' in methodologies, and they consider the asymmetrical power relations that result due to the way soft approaches are marginalised by a process of 'feminisation.'

Beath and Orlikowski (1994) use a poststructuralist deconstruction in their critical assessment of James Martin's (1989, 1990a, 1990b) Information Engineering to argue that it contains contradictory assumptions about the role of users and analysts during systems development. Likewise, this thesis uses a poststructuralist approach to textual analysis to develop a deconstructive perspective derived from the work of Jacques Derrida (1973, 1977a, 1977b, 1982, 1986).

Deconstruction is a poststructuralist theory, and as such, the term *post* does not mean that deconstruction replaces structuralism as a chronologically more recent theory; rather, it depends upon structuralism as a prior system of analysis. That is, while structuralism considers language as a system, poststructuralism is critical of the way this tends to assume that the codes making up the system have a long-standing stability since

this presents a static view of meaning, which neglects its more *dynamic* aspects (Culler, 1975).

Dahlbom and Mathiassen (1993, pp. 238-43) explain how structuralism began as a theory of language which was then generalised into theories of systems of signs. Lévi-Strauss (1976), for example, turned structuralism into a general theory for studying social phenomena (Dahlbom and Mathiassen, 1993, p. 240). The influence of structuralism, was evidenced, for example, in Burrell and Morgan (1979) and Hirschheim and Klein's (1989) discussion of paradigms set out in Chapter 3 of this thesis. Given that structuralism is often interested in the stability of organisations (Dahlbom and Mathiassen, 1993, p. 242), poststructuralism was considered appropriate as an example of how to work critically with a tradition of methodology that has focused on formal structured data over the dynamic organisational contexts that surround computerised information systems.<sup>10</sup>

Using examples from information systems, some basic characteristics of deconstruction are described below.

### ***6.4.3 Basic characteristics of deconstruction***

This section sets out some basic characteristics of deconstruction as follows:

- preferred readings,
- disruptions to preferred readings,

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<sup>10</sup> For an interesting discussion of this in relation to systems theory, readers are referred to Johnson (1993).

- limitations of binary oppositions, and
- *différance* and supplement.

#### **6.4.3.1 Preferred readings**

Deconstruction is a way of questioning *linguistic systems* to consider how both the texts and our common practices of reading them are founded in particular assumptions about language (Culler, 1983, Norris, 1991). As such, deconstruction is concerned not so much with following the intentions of authors as it is with developing *conceptual implications* of what authors have written (Beath and Orlikowski, 1994).

This is appropriate to methodology insofar as focusing on recovering an author's intentions may result in a misleading view. As discussed previously in this chapter, although a methodology recommends a certain range of activities, the resulting theory is not like the script of a play since methodologies do not simply *reproduce* a previous pattern of activities. Rather, the general structure suggested by these activities is a basis for specific instances of critical *inquiry* in situations that authors may not even have anticipated. This is evidenced, for example, by SSM's explicit focus on exploring the *different* views of problem situations that derive from *each stakeholder's* values and beliefs (Checkland, 1981).

In developing conceptual implications for subsequent critical inquiry, deconstruction therefore begins by considering how texts themselves apparently offer *preferred readings* (Beath and Orlikowski, 1994). The word, 'apparently' in the previous sentence is important: deconstruction considers that a critical reading of any text begins by identifying a particular discourse in it. In relation to this, a methodology's stated theory

can be understood as its preferred reading. For example, Checkland (1981) locates SSM mainly in Burrell and Morgan's (1979) interpretive but also in their radical humanist paradigm. In practice, the process by which systems analysts arrive at identifying preferred readings includes their abilities with the linguistic codes they use to manipulate the meaning of texts. An example of this in SSM is the construction of root definitions in defining the purpose of a human activity system. These draw on all verbs in the English language using the familiar CATWOE criteria to identify the minimum number of activities required to achieve each system's purpose (Checkland and Scholes, 1990, pp. 288-290).<sup>11</sup>

Because such codes are linked to cultural structures and values, the assumptions and ideologies that analysts bring to the situation affect how they interpret meaning. This link to wider cultural contexts has an implication for the theory and practice of methodology: language and cultural ideology are larger than the methodology itself, so this must find accommodation in existing linguistic and cultural codes that may be contradictory. Evidence for this arises in SSM, for instance, with the emergence of a second cultural stream of inquiry that 'overlaps' with the initial logical stream (Checkland and Scholes, 1990, pp. 44-53).

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<sup>11</sup> Jenkins (1993, p. 647) discusses how the use of English in systems development 'risks imposing a Western, capitalist, scientific Weltanschauung of the analyst upon the other participants in the situation in which they are not discussing the problem situation in their mother tongue.'



#### ***6.4.3.2 Disruptions to preferred readings***

This link to wider cultural contexts means that the discourse of a methodology is unlikely to be unitary and unambiguous. Evidence for this is suggested by the way we speak generally of there being a *gap* between a methodology's theory and practice. This lack of unity becomes further specified at the level of theory in methodologies such as SSM with its Modes 1 and 2 (Checkland and Scholes, 1990). It becomes even more marked in Multiview Methodology (MVM) and Total Systems Intervention (TSI) insofar as these are constituted by a range of other well-established methodologies (Flood and Jackson, 1991b; Bell and Wood-Harper, 1992).

A consequence of using existing linguistic codes is that texts describing a methodology's theory contain disruptive elements, points of rupture or gaps which when perceived and carefully examined, admit other marginal or non-preferred readings, ones that call into question the apparently obvious or familiar meaning found. In prescriptive methodologies, practice is considered as a disruptive effect if it deviates from theory. In such cases, practice is also considered a negative disruptive effect insofar as the methodology's theory is intended to guarantee its successful use, e.g., Structured Systems Analysis and Design Methodology (SSADM) (CCTA, 1991).

However, disruptions of preferred readings also emerge in relation to non-prescriptive methodologies. These often centre on how a methodology's stated theory differs from its practice, thereby focusing on a methodology's 'proper' use. Jackson (1989), for example, argues that the democratic principles advocated by Beer's (1985) Viable Systems Model (VSM) are often undermined in authoritarian contexts. Against

Checkland's (1981) preferred reading, he also argues that SSM is not representative of Burrell and Morgan's (1979) radical humanist paradigm since it is 'essentially regulative' (Jackson, 1982, p. 28).

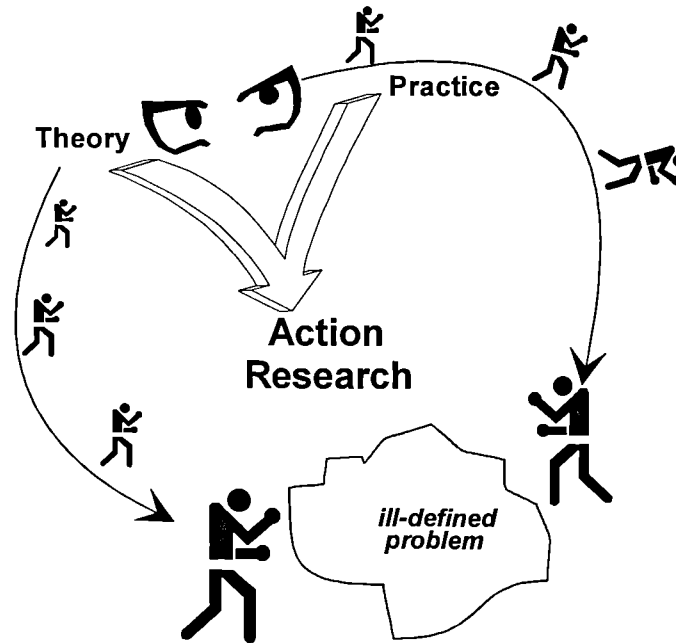
A deconstructive reading thus investigates texts to find the points at which their constitutive rules and codes 'undo' themselves. However it is important to emphasise that deconstruction is not merely a negative endeavour since points of rupture can be viewed as opportunities for learning and for change (Willmott, 1993).

#### ***6.4.3.3 Limitations of binary oppositions***

From a deconstructive perspective, binary oppositions are not valueless or neutral. Rather, the apparent 'naturalness' by which the first term is chosen implies a hierarchy wherein the first term is given priority over the second. To return to Taket and White (1993), for example, the pairing of 'hard' and 'soft' tends to reflect the way analysts have traditionally given priority to technical matters, while neglecting social aspects of development. Hierarchy thus involves a power relationship. Insofar as one of the two terms (usually the first) holds the superior position, hierarchies are based on a conflict of interests.

Even so, recognition of such oppositions is not sufficient. Consequently, deconstruction seeks the term by which such oppositions may be if not reconciled then at least understood in a relation of tension (Ray, 1984). Sometimes this leads to the emergence of a third term that entails interests represented by each of the terms in opposition. The emergence of the concept, *action research*, may be understood as a third term for addressing such tensions between theory and practice not only insofar as it relates

theory to practice and practice to theory in a cycle of learning, but also in the way that this is described as a way to ‘tackle’ difficult and ‘ill-defined problems’ (e.g., refer to Checkland, 1981, p. 153). This is shown in the figure below:



**Figure 6.1. Action research is a third term that addresses the tension between the theory and practice opposition.**

Nonetheless, the priorities given to theory in this opposition continue to be reflected in the way one term controls another; hence, even in action research we usually speak of putting theory into practice, not the reverse (Watson et al., 1995).

#### ***6.4.3.4 Différance and supplement***

Derrida (1977a) seeks to address such tensions through his theory of *différance* and supplement. *Différance* refers to the way that concepts such as formal and informal are not only different from each other, but that such differences also imply a deferral from one concept to the other in the sense both of a submission and of a postponement

(Culler, 1983). For example, while informal aspects are often subordinated by formal or technological concerns, the meaning of a resulting formalised system is postponed or incomplete without the informal and often dynamic organisational contexts in which it is subsequently embedded in use.<sup>12</sup>

*Supplement* refers to the way an element is added to or is considered secondary to another more complete structure or system. To extend the above example, the way informal aspects of information systems have often been considered of secondary importance in relation to formal or technical matters is an instance of supplement at work. But even here in our treatment of formal systems, an example of supplement occurs in the way we view daily activities of data entry as being secondary to the general structure of a database in the sense that these elements can be added to or removed from formal systems without substantially affecting their structure.

Nonetheless, as Derrida (1977a, pp. 141-64) argues, if a structure can be added to it is not complete, and if the supplement can be added, it cannot be merely secondary.<sup>13</sup>

This section has set out some basic characteristics of a poststructuralist approach to textual analysis using examples from information systems. For detailed considerations using examples from philosophy and literature, readers are referred to Culler (1983) and Norris (1991).

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<sup>12</sup> In the final chapter of this thesis, a technology is discussed as an area for further research that potentially reflects the dynamic contexts of information systems embedded in use.

<sup>13</sup> Implications of this are developed in Chapter 7 of this thesis with reference to Lyytinen's (1987) treatment of contexts.

The next section summarises deconstructive approaches to reading.

#### ***6.4.4 Summary of deconstructive approaches to reading***

Johnson (1980) describes deconstruction as ‘the careful teasing out of warring forces of signification within the text’ (quoted in Culler, 1983, p. 213). The following methods have been adapted from Culler (1983) since these might be helpful in raising critical issues about meaning in relation to information systems development methodologies:

- **Consider ways a methodology differs from itself** -- Whatever may define the identity of a particular methodology, are there ways in which it differs from itself?
- **Attend to conflicts within methodologies that are reproduced as conflicts between them** -- Critical disputes can often be identified as displaced re-enactments of conflicts already admitted within a methodology. In this way we can learn to question the assumptions and decisions that transform a complex pattern of internal differences into alternative perspectives.
- **Think about how descriptions of another methodology can be read as a self-description** -- When a methodology describes how another methodology works, can this be read as a description of its own methods? This often indicates the return in a disguised form of a procedure that it criticises in others.
- **Watch out for asymmetrical oppositions in value-laden hierarchies** -- Often in hierarchies the first term is more highly valued than the second. For example, in

considering theory and practice, is the second term treated as the marginal version of the first? Does this prove to be the condition or possibility of the first?

- **Observe what methodologies marginalise** -- This could help to identify exclusions on which hierarchies such as theory and practice depend and by which they may be disrupted.
- **Examine points of condensation** -- Is there a single term, such as, 'system,' that integrates different lines or sets of values?

This section has set out a summary of deconstructive approaches to reading. The next section summarises the research described in this chapter as well as the previous chapters discussed in Part I of this thesis.

## 6.5 Summary and Conclusion

Part I of this thesis has focused on a *theoretical matrix of critical themes*. This began by identifying an area of concern of information as meaning. Traditionally hard methodologies have tended to conflate meaning with structured data. This neglects processes of inward-forming that occur as we interact with data when information systems become embedded in use (Boland, 1987). Soft methodologies are beginning to address this by conceiving of information as data plus the meaning we attribute to them (Checkland, 1981).

In learning how to work critically with a tradition of methodology, Chapter 3 set out themes giving rise to concerns in linking hard and soft methodologies. Chapter 4 related these to the research described in this thesis through a concept of the tension deriving

from meaning's two meanings as both a general structure and a specific instance. This led to an outcome of a paradigm as network. In this view, while a methodology has its own constitutive structure, this is itself part of a larger structure of meaning.

In learning how to work critically with a tradition, Chapter 5 discussed criticisms of research approaches in information systems derived from the natural sciences. From this basis, the need for research approaches derived from the humanities was considered. Following this, traditions of research approaches derived from the natural sciences and the humanities were related to meaning's two meanings.

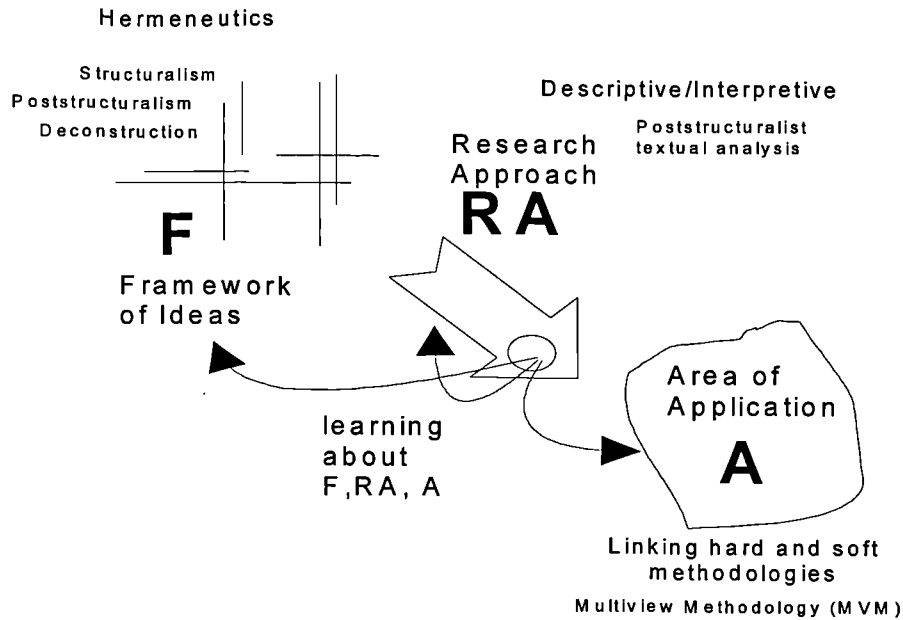
This chapter drew on Galliers' (1991a) taxonomy of research approaches to define a descriptive/interpretive research approach using a poststructuralist textual analysis as an appropriate way of learning how to work critically with a tradition of information systems development methodologies. Generally, this represents a hermeneutic perspective, although it draws on specific developments in that tradition, e.g., structuralism, poststructuralism, and deconstruction.<sup>14</sup>

Basic premises of deconstructive ways of reading were set out as follows: preferred readings, disruptions to preferred readings, limitations of binary oppositions, and *différance* and supplement. As discussed in Chapter 2 of this thesis, Checkland (1991) explains how researchers need to declare in advance their linked set of ideas (F) and a

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<sup>14</sup> In distinguishing between modern and postmodern, Sarup (1993) describes deconstruction as a postmodern approach. While there is a certain family resemblance insofar as deconstructive and postmodern approaches are both critical of traditions, such dichotomies tend to simplify both traditions. For a considered discussion of the ways deconstruction *differs* from postmodernism, readers are referred to Norris, 1992.

research approach (RA) used to investigate an area of application (A).<sup>15</sup> This is summarised in the figure below:



**Figure 6.2. A linked framework of ideas (F) and a research approach (RA) used to investigate an area of application (A) (adapted from Checkland, 1991).**

For further explanation concerning a deconstructive understanding of the relationship between speech and writing, readers are referred to Appendix III of this thesis.

This chapter concludes *Part I: A Theoretical Matrix of Critical Themes*. Part II of this thesis considers problems with a critical strategy in practice. This begins in Chapter 7 with a critique of Multiview Methodology's (MVM) theory.

<sup>15</sup> Checkland's (1991) 'M' standing for methodology has been adapted to 'RA' standing for research approach in this chapter to avoid confusion with the area of application, which is information systems development methodologies.



**Part II:**

**Problems with a Critical Strategy in**

**Practice**

# 7.

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## **A CRITIQUE OF MULTIVIEW METHODOLOGY'S THEORY**

### 7.1 Introduction

The previous chapter defined a descriptive/interpretive approach using a post structuralist textual analysis for working critically with a tradition of methodology. Part II of this thesis considers some difficulties with a critical strategy in practice. As discussed in Chapter 2 of this thesis Multiview Methodology (MVM) was the focus of this research in considering information as meaning. In linking a range of existing methodologies, MVM was considered to be a suitable area for investigating methodologies that combine a traditional interest in structured data with a focus on how people attribute meaning to data.

This chapter critiques MVM's theory as follows:

- identifying the authors' preferred readings,
- critique of conceptual implications in MVM's theory, and
- a main outcome -- the Trojan horse phenomenon.

The Trojan horse phenomenon describes tendencies to reiterate the limitations criticised in others since in making cases against someone we use some of our 'opponent's' language and assumptions to contrast them with our own point of view.

## 7.2 Identifying a Preferred Reading

This section sets out MVM as it is described in three published methodology manuals to identify its authors' preferred readings as follows:

- a more complete solution using the 'best' available methods,
- a contingency approach, and
- a rapid approach.

These are used as a basis for the critique that follows in subsequent sections of this chapter.

### *7.2.1 MVM in 1985 -- a more complete solution using the 'best' available methods*

MVM as it is described in the Wood-Harper et al. (1985, p. 3) text is concerned with developing formal, primarily computerised information systems. The authors recognise

that computerised information systems are changing quickly. Given this, Wood-Harper et al. (1985, p. 4) suggest that analysts face two options:

They can either become familiar with a particular product range, which would result in specialised technical knowledge or

they can consider the whole process of development to derive 'a more intelligent and flexible approach which copes with changes in the market as they occur.'

They take this second option, and they criticise many design methodologies insofar as they are prescriptive 'not only of what must be done but of the order in which it has to be done (Wood-Harper et al., 1985, p. 12). From the premise that an information system has social as well as technical implications, they consider their approach to be 'a more complete solution' drawing on the 'best available methods' (Wood-Harper et al., 1985, p. 13, p. 16).

MVM combines five social and technical views on information systems development, which make up five stages as follows:

1. **Analysis of Human Activities** -- This focuses on the organisation to create a statement of what the information system will do (Wood-Harper et al., 1985, p. x). It incorporates Checkland's (1981) analysis of human activity systems from Soft Systems Methodology (SSM) up to the production of a conceptual model (CM) (Wood-Harper et al., 1985, pp. 43-69).
2. **Information Modelling** -- This stage is carried out independently of the technical specification. It draws on traditional hard structured methods (e.g., Gane and Sarson,

1979) to analyse entities and functions of the system described in Stage 1 (Wood-Harper et al., 1985, pp. 83-120).

3. **Analysis and Design of the Socio-technical System** -- This stage draws on Mumford's (1983) socio-technical approach. Here, those who will be using the system are encouraged to participate in its analysis and design. The justification for this is the view that people have a right to control what they do, and participation will increase acceptance of the system (Wood-Harper et al., 1985, pp. x-xi). A range of systems that reflect social and technical alternatives are considered, and the most suitable one is chosen according to a 'cost/benefit' equation (Wood-Harper et al., 1985, pp. 129-143).
4. **Design of the Human-Computer Interface** -- This focuses on the interface requirements according to information needs and the backgrounds and experiences of those who will be using the system (Wood-Harper et al., 1985, pp. 153-164).
5. **Design of the Technical Subsystems** -- This stage considers specific technical requirements, such as computer specification, databases, control, and maintenance (Wood-Harper et al., 1985, pp. 199-230).

One case study is embedded in the discussion of MVM's theory to illustrate its principles and to reflect the authors' belief that practice is just as important as theory (Wood-Harper et al., 1985, p. 13).

### ***7.2.2 MVM in 1990 – a contingency approach***

The basic MVM framework described in Avison and Wood-Harper (1990) is the same as the Wood-Harper et al. (1985) version outlined above insofar as it focuses on formal aspects through the same five socio-technical perspectives. There are also aspects of the preferred reading for the 1985 version carried over to the 1990 version insofar as *Chapter 1: Information Systems Development*, begins by describing MVM as ‘a more complete solution’ (Avison and Wood-Harper, 1990, p. 3). The authors reiterate the two options open to systems analysts as described above. However, this time, in choosing the second flexible approach to cope with changes in the market as they occur, their reasoning is more specific. That is, they explain that different ‘solutions’ will be appropriate to different organisations, to different departments within organisations, and to different users and user groups; they also explain that different approaches will be appropriate to different analysts (Avison and Wood-Harper, 1990, p. 6).

Given an increased appreciation of the differences between interventions, they consider MVM as an ‘exploration’ in information systems development, and their preferred reading is a contingency approach (Avison and Wood-Harper, 1990, p. 13). Their basis for this centres on methodology choice. They refer to Davis’ (1982) work on contingency and explain that the methodology chosen depends on the situation in which it is used as well as the level of uncertainty (Avison and Wood-Harper, 1990, p. 13).

The authors explain that an implication of this is that organisations should avoid standardising on a single methodology since there will be situations in which the methodology is inappropriate (Avison and Wood-Harper, 1990, p. 13). Rather,

organisations will 'have a number of different information systems development methodologies from which they choose one' (Avison and Wood-Harper, 1990, p. 13). They agree that the strength of a 'tool kit approach' is its flexibility. However, they refer to Iivari's (1987) contingency framework which 'emphasises contingent approaches *within* the methodology rather than *between* methodologies' as the approach taken in their text (Avison and Wood-Harper, 1990, p. 13, their emphasis). They describe MVM as a 'blended' methodology that draws from several 'major methodologies already in use or proposed' to give a flexible framework as an 'alternative to choosing between different methodologies' (Avison and Wood-Harper, 1990, p. 13).

They explain how MVM is different from methodologies like SSADM (see Downs et al., 1988) in which 'steps are prescribed in great detail and are expected to be followed rigorously in all situations' (Avison and Wood-Harper, 1990, p. 13). In contrast to this, the authors explain that they have 'deliberately avoided being prescriptive' (Avison and Wood-Harper, 1990, p. 14). They also explain that MVM has been developed in a tradition of action research in which there is 'a close interaction between theory and practice' (Avison and Wood-Harper, 1990, p. 16). In reflecting on the relationship between theory and practice in their final chapter, the authors outline four roles of a systems analyst in a way that bears a strong resemblance to Hirschheim and Klein's (1989) adaptation of Burrell and Morgan's (1979) four sociological paradigms discussed in Chapter 3 of this thesis.

In-between the chapters that explain MVM's theory, the authors describe six action research case studies.

### 7.2.3 *MVM in 1992 – a rapid approach*

The MVM framework in the Bell and Wood-Harper (1992) text also uses the five views initially set out in Wood-Harper et al. (1985) as well as the four roles of a systems analyst considered at the end of Avison and Wood-Harper (1990). Bell and Wood-Harper (1992, p. xi) focus on 'rapid change and minimal time.' Unlike the previous two texts that focus primarily on systems analysts, the emphasis here is on 'non-specialists,' i.e., users who will be doing systems analysis prior to installing an information system (Bell and Wood-Harper, 1992, p. xiii).

Time is described as a 'major constraint' (Bell and Wood-Harper, 1992, p. 44). The first stage consists of an analysis of human activity involving an iterative loop, and from this stage, three possible paths are described according to how much time is available:

1. Path 1 uses the complete methodology, which they estimate can be completed in six weeks or thirty working days (Bell and Wood-Harper, 1992, p. 44).
2. Path 2 uses four stages which removes the human-computer interface stage and can be completed in twenty-five days (Bell and Wood-Harper, 1992, p. 44).
3. Path 3 uses three stages, thereby removing the human-computer interface and information modelling stages. This can be completed in eighteen days. However, the authors explain that there will be no clear path to data base structures which are the core of most information systems (Bell and Wood-Harper, 1992, p. 44).

Like the previous texts, the authors explain that choice is not a question of selecting the 'right' methodology. Rather, they see it as selecting the '*right combination of*



*methodological tools for the particular situation* in which you are working' (Bell and Wood-Harper, 1992, p. 19, their emphasis). Also like the previous texts, the authors stress the "need to draw together 'clean' theory and what is often 'dirty' practice in one view" (Bell and Wood-Harper, 1992, p. xi, their emphasis). To this end, they use an action research approach (Bell and Wood-Harper, 1992, pp. 19-20).

Unlike the previous two texts, however, there are not case studies to support the theory. Rather, the authors use examples that are 'amalgams' drawn from the authors' field, theory, and teaching experience (Bell and Wood-Harper, 1992, p. xi). In emphasising this, they explain that, 'They do not present any one single situation. Any resemblance to any *real* organisation is coincidental' (Bell and Wood-Harper, 1992, p. xi). Their examples derive from experiences in third world countries where computer awareness and computer systems development is in its early stages (Bell and Wood-Harper, 1992, p. xviii).

This section set out preferred readings in the three main texts describing versions of MVM. The next section critiques MVM's theory.

### 7.3 A Critique of MVM's Theory

To return to Chapter 4 of this thesis, MVM may be understood as an attempt to work with the tension that derives from meaning's two meanings both as general structure and specific instance. This is evidenced, for example, in the authors' readings of MVM as a general framework that they adapt contingently to each situation. Nonetheless, there are tendencies to suppress either aspect of meaning in MVM's theory. For example, due to

MVM's explicit focus on formal and specifically computerised information systems, there is a tendency to suppress the second aspect of meaning as specific instance in favour of developing a general structure. Consider, for example, the following quotation:

Our first task is to attempt to make a generalised model of the existing situation in order to create an information system. By formulating generalisations about current practices in organisations we can develop models of reality that we can then test for adequacy in hypothetical situations....

(Bell and Wood-Harper, 1992, p. 25, my emphasis)

This focus on hypothetical situations might also undermine the authors' preferred reading of MVM in action research, which requires interventions in *real* situations.

Criticisms of this conception of MVM's theory are discussed below as follows:

- linear development,
- differences between points of view are supplementary,
- displaces the problem of choosing between methodologies, and
- reiterates derivative view of practice.

### ***7.3.1 Linear development***

Miles (1988, p. 55) criticises grafting approaches because they remain rooted in a 'linear framework.' In relating this to MVM, development often reflects a general structure of sequential ordering between stages. To return to Chapter 3 of this thesis, for example, Doyle and Wood (undated) criticise MVM's 1985 treatment of a range of views on information systems development in terms of a 'sequential engineering life cycle.' Contrary to the preferred reading of MVM set out in Wood-Harper et al. (1985) as a

'flexible framework,' the order of the stages is simultaneously prescriptive. As such, the authors summarise MVM's stages as follows:

The order is important moving from the **general to the specific**, from the **conceptual to hard fact**, and from **issue to task**.

(Wood-Harper, et al., 1985, p. 27, bold font their emphasis; underlining my emphasis)

Their focus on the linear ordering of stages derives from the way that outputs from earlier stages become inputs to later stages or major outputs from the methodology (Wood-Harper et al., 1985, p. 27).

To return to a theme raised in Chapter 3 of this thesis concerning criticisms of hard methodologies for their means/end problem-solving focus, MVM in the Wood-Harper et al. (1985) text may likewise be said to view problem solving as a stable structure focusing on making choices between an already established end. Checkland (1981, pp. 138-48) questions this insofar as SSM is derived from situations in which means and ends are not given or stable; rather, they are themselves problematic. While, this is reflected in changes with the Avison and Wood-Harper (1990) text insofar as there is more iteration and prototypical development, the overall end of developing a formal computerised system, continues to direct most of the activities. Consequently, iteration and prototyping continue to be embedded within a linear means/end relationship because the end (i.e., developing a computerised information system) is generally not in question.

As such, Wood-Harper et al. (1985, p. 12) suppress the second aspect of meaning as a specific instance by reiterating the limitation about ordering that they simultaneously criticise with regard to prescriptive methodologies. In addressing this, Avison and

Wood-Harper (1990, p. 13) criticise SSADM for prescribing the order of its stages. Moreover, the rapid approach described in the Bell and Wood-Harper (1992) text tends to emphasise the second aspect of meaning insofar as the methodology's structure is related to specific instances, i.e., *how much time do I have?* However, the Bell and Wood-Harper (1992) text may also be said to reiterate this previous limitation of sequentially ordering stages. That is, while the first stage analysing human activity systems in Bell and Wood-Harper (1992, p. 44) includes iteration, following this, the authors emphasise sequential development:

The tools have then to be applied in a sequential and logical manner in order to arrive at an understanding of the problem...

(Bell and Wood-Harper, 1992, p. 17, my emphasis)

This focus may contribute towards differences in points of view being regarded as supplementary in favour of imposing the MVM framework as a 'mental stencil' on experience (Schön, 1963).

This is discussed below.

### ***7.3.2 Differences between points of view are supplementary***

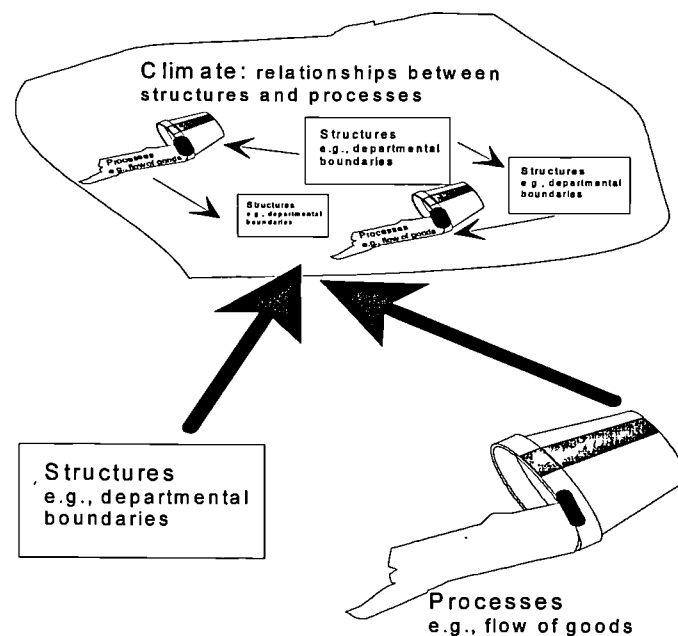
To return to Chapter 6 of this thesis, a supplement is an element that is added to or is considered secondary to another more complete system. Before considering how differences in points of view may sometimes be regarded as supplementary, a more detailed description of MVM's *Stage 1- Analysis of Human Activity* is set out.

MVM's *Stage 1- Analysis of Human Activity* is a

search for a particular view (or views) that will form the basis for describing the systems requirements that will be carried forward to further stages.

(Avison and Wood-Harper, 1990, p. 24)

This is derived from a debate about the 'main purpose of the organisation' (Avison and Wood-Harper, 1990, p. 24, their emphasis). A 'rich picture' showing 'structures' and 'processes' and their relations, which is the 'climate of the situation' is drawn up (Avison and Wood-Harper, 1990, p. 45). Structure refers to aspects like departmental boundaries and types of activity, while processes refer to 'fast-changing aspects of the situation' (Avison and Wood-Harper, 1990, p. 45). The relationship between structures, processes, and the climate of the situation is shown in the figure below:



**Figure 7.1. The relationship between structures, processes, and climate.**

From this 'problem themes' are drawn out to identify two aspects of the human activity system:

'primary tasks' which are the 'tasks that the organisation was created to perform, or which it must perform if it is to survive' and

'topics or matters which are a concern' or which may be 'the subject of dispute.'

(Avison and Wood-Harper, 1990, p. 47)

Following this, 'relevant systems' are named to 'relieve' problem themes (Avison and Wood-Harper, 1990, p. 26). A 'root definition' derived from a particular view of the situation using a checklist called, 'CATWOE' (which is discussed further below), is then formulated to 'capture' the human activity system's 'essential nature' (Avison and Wood-Harper, 1990, p. 54). Then a 'conceptual model' is constructed by drawing on the minimum number of verbs required to achieve the activity defined in the root definition' (Avison and Wood-Harper, 1990, pp. 61-69).

While MVM does consider multiple points of view, this is potentially undermined by the way it focuses on resolving differences between views to achieve consensus. Consider the following statement, for example:

The simplicity of the final rich picture is achieved by pruning the answers so that there is as much agreement as possible and so that the final rich picture really does represent the important people, activities and issues of the problem situation.

(Avison and Wood-Harper, 1990, p. 50, my emphasis)

This may have some parallels then with Newman's (1989, p. 132) criticism of the way analysts often view resistance as negative, meaning that in practice a 'rule-of-thumb is to suppress or eradicate it.' Differences in points of view are also potentially supplements to the primary task model as suggested by the following two statements:

Primary tasks are central to the creation of information systems, because the information system is normally set up to achieve or support that primary task. The next stages of the Multiview methodology concentrate on the primary tasks.

(Avison and Wood-Harper, 1990, p. 47, my emphasis)

The picture should yield both the primary tasks of the situation and the issues which surround those tasks.

(Avison and Wood-Harper, 1990, p. 51, my emphasis)

While trying to resolve these differences, the authors nonetheless draw attention to the way that behaviour arising from these supplemental issues can cause the information

system to fail (Avison and Wood-Harper, 1990, pp. 47-8; Bell and Wood-Harper, 1992, p. 7). This has two implications:

1. It suggests that issues are not supplementary to the primary task; rather, since they may affect the outcome of the intervention they are often very important.
2. The authors' admission of the way issues often cause the system to fail disrupts their preferred reading of the importance of achieving consensus; instead of resolving differences, marginalising issues may therefore just displace or delay conflicts.

This parallels Newman's (1989, pp. 133-34) criticism of the way analysts often promote integrated systems without reference to the organisation's form; this may often result in a centralised strategy that does not fit an organisation's decentralised structure. Also, to return to Mingers and Taylor's (1992) suggestion that critical methodologies with an explicit recognition of power need to be developed in SSM, existing networks of power and the activities to which individuals are committed are already explicit in the CATWOE criteria that make up a root definition. That is, the CATWOE mnemonic stands for Customer, Actor, Transformation, Weltanschauung, Owner, and Environment (Checkland and Scholes, 1990, p. 35).<sup>1</sup> The change activity to which all participants are more or less committed is thus stated in the 'T' standing for Transformation.

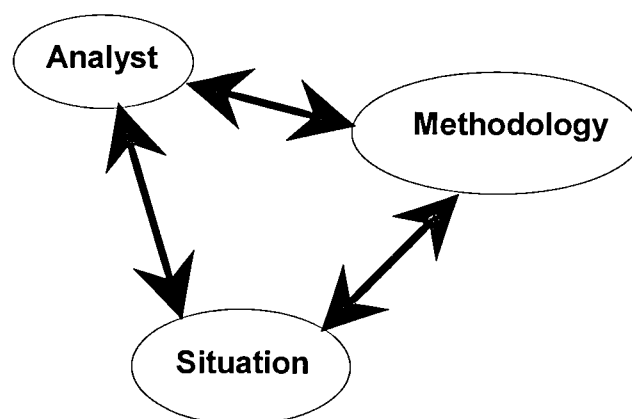
However, there is an implied hierarchy of power in the network relationship between Actor, Customer, and Owner through which degrees of commitment can be traced to the

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<sup>1</sup> Avison and Wood-Harper (1990) have changed the term *Customer* to *Client*. However, the basic structure from Checkland and Scholes (1990) remains the same.

activity or Transformation. Within this hierarchy the Owner is in a dominant position insofar as the Actor and the Customer are both ultimately responsible to the Owner. Moreover, owners are described as ‘those who could stop T’ (Checkland and Scholes, 1990, p. 35). In this way, the Owner is the fulcrum of power from which the Customer’s and Actor’s transformation activities are generated. The Owner is therefore also highly influential in establishing the background of expectations, the Weltanschauung (world view) and the Environment, in which the information system is situated. With a single CATWOE defining a single activity, the status quo is likely to be maintained since the relationship between Owner, Customer, and Actor is a singular view based on the above hierarchical relationship.

This tendency to consider differences in points of view as supplementary may also be reiterated more generally in the way MVM’s authors describe systems analysis and design as a ‘three-way relationship between the analyst, the methodology and the situation (Avison and Wood-Harper, 1990, p. 21). This is shown in the figure below:



**Figure 7.2. Three-way relationship between analyst, methodology, and situation (adapted from Avison and Wood-Harper, 1990, p. 21).**



While the diagram emphasises interaction between these three aspects, the authors' assertion that MVM 'attempts to take account of the different points of view of all the people involved in using a computer system' (Avison and Wood-Harper, 1990, p. 10) is undermined insofar as the *analyst* is the only stakeholder whose point of view is represented. MVM might therefore represent different stakeholders' views perhaps by including a more explicit analysis of different, even inconsistent points of view (e.g., Galliers, 1987).

While MVM's authors state that the manipulation of power 'transcends the rationale of any methodology' (Avison and Wood-Harper, 1990, p. 266), the above examples do suggest how the rationale of MVM may support power structures generally through its depiction of this three-way relationship and through its focus on achieving consensus and specifically through structures such as primary task models and CATWOEs.<sup>2</sup>

Additionally, Mitroff and Linstone (1993) describe five types of inquiry systems with consensus based systems being among the simplest forms of inquiry due to the way they eliminate variations in points of view. As a way of addressing this, they suggest unbounded systems thinking with three points of view: technical, organisational, and personal. This is similar to Habermas' (1972) description of three ways knowledge is linked to human interests: technical, interested in instrumental means/end problem solving; communicative, interested in mutual understanding; and emancipatory, interested in free and open communication. Habermas' (1972) theory has been

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<sup>2</sup> For a criticism of the way organisational issues are considered to be outside of the concerns of analysts, readers are referred to Newman (1989, pp. 135-8).

suggested as a basis for a theory of information systems (e.g., Lyytinen and Klein, 1985; Flood and Jackson, 1991a), and while MVM does distinguish between social and technical perspectives, it could address how these are associated with different forms of inquiry systems and knowledge interests.

### *7.3.3 Displaces the problem of choosing between methodologies*

Avison and Wood-Harper (1990, p. 20) explain that a methodology is

more than just a set of methods for tackling the different problems involved. It also implies that there is a sound theoretical basis, in other words, that the analyst understands **why** a particular method is used in a particular situation.

(their emphasis)

They then argue that the 'chase for the perfect methodology is illusory' since different methodologies reflect different views of what the world is like (Avison and Wood-Harper, 1990, p. 20). However, aside from the assertion that the range of views they have chosen to include in MVM is more 'complete' in human and technical terms (Avison and Wood-Harper, 1990, p. 3), and that MVM is an 'alternative' to choosing between methodologies, there is no reason as to why this particular combination has been chosen. Also, while each stage has 'its own appropriate view of the problem' there is no explanation of why each stage is appropriate or who judges it to be so (Avison and Wood-Harper, 1990, p. 21, my emphasis).

Considering this in relation to Flood's (1989) description of six scenarios for the future of systems thinking, MVM's initial combination might be understood as 'imperialism by annexation' in which one approach incorporates the best elements from other approaches. Subsequent revisions (e.g., Avison and Wood-Harper, 1990; Bell and Wood-Harper, 1992) might be understood as 'imperialism by subsumption' in which

one favoured approach gives the 'what' and other approaches give the 'how' according to the contingent needs of the situation.

Moreover, in combining 'important aspects of some of the major methodologies' (Avison and Wood-Harper, 1990, p. 20), the authors merely displace the problem of choice, transforming it from choosing *between* to choosing *within* a methodology. To return to the Bell and Wood-Harper (1992) text, the authors explain that choice is not a question of selecting the 'right' methodology. Rather, it is selecting the '*right combination of methodological tools for the particular situation* in which you are working' (Bell and Wood-Harper, 1992, p. 19, their emphasis). Nonetheless, this assertion may be undermined insofar as the authors have already selected the 'right' methodology (i.e., MVM) which they use in all situations. Moreover, aside from the Bell and Wood-Harper (1992) text stating time limitations as the reason for moving through various paths within this single framework, the authors do not explain how or why one moves contingently from one stage to another.

With respect to the Bell and Wood-Harper (1992) text, even if one had enough time to complete all five of MVM's stages, Mingers (1992b), for instance, states that further work is needed in moving from Stage 1 which uses SSM up to its conceptual models (CMs) to Stage 2 that uses functional and entity analysis since how the resulting system was decided upon and how the functions and entities correspond to CMs remains unclear. This is especially so even in relation to the Bell and Wood-Harper (1992) text since Path 3 for example, cuts out the information modelling stage entirely due to time limitations. This would imply that *Stage 2 -- Information Modelling* is supplemental to

*Stage 1 -- Analysis of Human Activity, Stage 3 -- Analysis and Design of Socio-Technical Aspects, and Stage 5 -- Design of the Technical Aspects.* This is somewhat surprising since as discussed in Chapter 3 of this thesis, the strength of hard methodologies is their ability to structure and manipulate data.

#### ***7.3.4 Reiterates derivative view of practice***

The authors' preferred reading of MVM is that it is based in a tradition of action research in which theory and practice are equally important and mutually informing (Avison and Wood-Harper, 1990, p. 180). However, this reading is sometimes undermined. Chapter 2 in this thesis raised limitations imposed by a derivative view of practice, and this is a potential implication of Avison and Wood-Harper's (1990) discussion of ideal/real forms of MVM. For example, consider the following quotation:

In a practical discipline one must always distinguish between the 'ideal methodology' as taught in the text books, and the realities of any situation which cause departure from the ideal in order to allow for the exigencies of the real world.

(Avison and Wood-Harper, 1991, p.101, their emphasis)

One might argue that the term, 'ideal' is neutral, meaning simply that the theory exists in the form of an idea. However, consider the sentence that follows the quotation above:

The applications expose the difference between what one would like to find in an ideal world and what is in the real world.

(Avison and Wood-Harper, 1991, p.101, my emphasis)

As such, there are at least moments when this ideal is meant in the sense of something that is 'perfect' or that which one seeks to attain, even if the quest is admittedly 'somewhat illusory' as suggested by the following quotations:

Actually the chase for the perfect methodology is somewhat illusory.

(Wood-Harper et al., 1985, p. 15)

The chase for the perfect methodology is somewhat illusory, because different methodologies represent different views of the world.

(Avison and Wood-Harper, 1990, p. 20)

As we have seen, the chase for the perfect methodology is somewhat illusory because different methodologies represent different views of the world.

(Avison and Wood-Harper, 1995, p. 103)

To return to Chapter 2 of this thesis, these examples might suggest the influence of the 'mental stencil' model described by Schön (1963, p. 5) insofar as MVM is thought of as a general concept that is then superimposed on experience, i.e., it is adapted or adopted in 'imperfect' situations. This is suggested by the following quotation.

An adapt and adopt approach used in imperfect conditions is better than no approach to planning at all, and it is with this in mind that the following (i.e., MVM) is offered.

(Bell and Wood-Harper, 1992, p. xiii, my emphasis)

In returning to the triangle of systems analyst, methodology, and *situation* discussed above, this is further evidenced by the way the authors neglect to emphasise how practice is characterised by a spectrum of different types of situations that are themselves dynamic, i.e., stakeholders' perceptions of situations change throughout the course of *each* intervention (Lyytinen, 1987). This static quality can be traced to earlier work on frameworks for choosing appropriate methodologies from which MVM is derived. Nielsen (1990, p. 52) for example, criticises Episkopou and Wood-Harper's (1986) framework for choosing methodologies because 'they have not established a reasonable relationship between the situational factors and the features of methodologies.'

In addressing this, the authors could, for example, draw on Galliers and Sutherland's (1991) revised stages of growth model to raise questions that would help formulate a

strategy in each situation that was appropriate to the organisation's business needs. Galliers and Sutherland (1991) builds on Gibson and Nolan's (1974) work and considers situations holistically in relation to an organisation's 'maturity' in dealing with information technology as well as management and planning areas that require attention.<sup>3</sup>

This section has developed a critique of MVM's theory. It should be emphasised that the criticisms set out above refer to the three *published* methodology manuals describing MVM's theory. As such, the analysis has not included more personal works such as the authors' Ph.D. theses. Wood-Harper's (1989), preferred reading, for example, differs from that given with regard to the three manuals considered in this chapter insofar as he sees MVM as moving from a combination of 'best' approaches to contingent to critical.

However, the textual analysis in this thesis was limited to these published accounts since they are in the public domain, and therefore they have had more influence on the field's cumulative tradition. The Avison and Wood-Harper (1990) text, for example, is well-cited in the literature (e.g., Lyytinen, 1987; Jackson, 1992; Mingers, 1992b, 1995).

The next section considers the main outcome of this analysis.

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<sup>3</sup> This model also reflects meaning's two meanings discussed in Chapter 4 of this thesis. This is evidenced, for example, in *Stage 3 -- Centralised Dictatorship* in which meaning as a general structure imposes a 'top-down' strategy that suppresses the 'ad hoc' nature of Stage 1 and the 'blind rush' into systems in Stage 2. However, as the organisation 'matures' in *Stage 4 -- Democratic dialectic and co-operation* and *Stage 5 -- Entrepreneurial opportunity*, we see evidence of managers' increasing abilities to work creatively with the tension between meaning's two meanings both as a general structure *and* as a specific instance, e.g., they develop strategies that look for 'integration and co-ordination' and that scan the environment for opportunities of competitive advantage respectively.

## 7.4 Main Outcome: The Trojan Horse Phenomenon

An issue in relation to theory and practice centres on the different views we have in information systems development. In the texts considered, MVM, for example, includes five views on development. The critique developed in this chapter suggests that in making an argument we do not proceed in isolation since we depend on some of the language and assumptions of others, if only to contrast them with our own point of view. Given this situation, a point of view often entails contrary themes within it that potentially undermine the main position it asserts. Perhaps unwittingly, a point of view may tend to reiterate some of the limitations it criticises in others.

For example, Lyytinen's (1987) taxonomic perspective considers theoretical concepts and recommendations for further research to change the way we currently go about information systems development (ISD). His focus on contexts derives from a concern over the 'recurrent reasons for IS (information system) failure,' and he links this to dynamic situations and to 'changes in language and organisational contexts' (Lyytinen, 1987, p. 35).

However, his exploratory analysis continues to address a paradoxical situation: a taxonomy of contexts. This situation is paradoxical because with contexts as its starting point, a taxonomy is bound to leave something out. Lyytinen's (1987) tentative solution is therefore exemplary. He proposes a 'preliminary taxonomy,' and in relation to meaning's two meanings discussed in Chapter 4 of this thesis, the word, *preliminary* is potentially important insofar as it calls attention to the way Lyytinen's argument contains a disruption that questions the categories or general principles that would

preclude him from proposing any *final* taxonomy. Hence, Lyytinen creates not just a taxonomy, but a 'taxonomic perspective.' This is potentially critical, because it works with existing categories, attends to their limitations, and so re-creates new insights and unanticipated points of view.

That is, unlike the view so often taken by analysts that everyone perceives the organisation in the same way, Lyytinen (1987, p. 6) explains that people have different perceptions. Moreover, he describes the 'object systems' that derive from these perceptions as phenomena seen by the development group that identify a 'target of change' (Lyytinen, 1987, p. 6). Nonetheless, towards the end of his analysis, Lyytinen (1987, p. 34) writes,

The proposed framework suggests that only those methodologies which fall in the same taxonomic class should be compared, i.e. STS-methodologies (socio-technical) cannot be compared with technical design-oriented methodologies because they differ in terms of their covered contexts.

(my emphasis)

However, this results in an emergent context running counter to Lyytinen's preferred reading. Consequently, his denial paradoxically makes a comparison *between* social and technical methodologies possible. Moreover, the comparison occurs even *within* one of the types. In STS-methodologies the social and the technical are already implicated in a comparison that Lyytinen simultaneously denies (Watson and Wood-Harper, 1994a). Moreover, our field already has an established tradition that does indeed compare social and technical perspectives (e.g., Mumford, 1983, Wood-Harper et al. 1985).

These tendencies are referred to as the Trojan horse phenomenon. An example of this in MVM's theory is the way it criticises other methodologies for prescribing ordered



stages which it then does itself by sequentially ordering stages in Wood-Harper et al. (1985) and in Bell and Wood-Harper (1992).<sup>4</sup>

A further example of the Trojan horse phenomenon is the way multiple points of view are undermined in the interests of resolving differences to achieve a single consensus-based primary task model as well as they way descriptions of MVM in use are derived from an analyst's point of view in all three MVM texts.

An outcome of this analysis is that differences between points of view are often special cases of differences already admitted within individual points of view. This was evidenced by the way MVM's preferred reading undermined itself, for example, in the way it displaces the problem of methodology choice from between to within a methodology which is itself already explicitly made up of other major methodologies.

This has the following implication for methodologies: individual methodologies are not 'pure' insofar as they entail wider contexts and other points of view with which they may or may not agree. For example, the debate between Checkland (1982) and Jackson (1982) about whether SSM is regulative or radical is embedded in a network of issues associated with Burrell and Morgan's (1979) typology, and these are additionally associated with Habermas' (1972) views of distorted communication. In relation to such debates, the Trojan horse phenomenon suggests that we may unwittingly 'smuggle in' contrary points of view despite our best efforts, perhaps even if we are fortunate enough to find ourselves debating in an 'ideal speech situation' (Watson, 1995a). This supports

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<sup>4</sup> This is further reflected in MVM's practice through the linear structure of its case studies as will be discussed in the next chapter.

Schechter's (1991, p. 224) view that systems thinking is 'often trapped in a tight conceptual web of its own making.'

## 7.5 Summary and Conclusion

This chapter focused on MVM's combination of a range of hard and soft methodologies. A poststructuralist textual analysis was used to identify the authors' preferred readings of MVM as 'best' from an existing range, contingent, and rapid. Next, some conceptual implications of MVM's theory were critiqued as follows:

- linear development,
- differences between points of view are supplementary,
- displaces the problem of choosing between methodologies,
- and reiterates derivative view of practice.

The main outcome of this is the Trojan horse phenomenon which refers to tendencies to reiterate the limitations criticised in others. An implication of this is that methodologies are not 'pure' points of view since they may consciously or unconsciously entail wider contexts.

The next chapter critiques MVM's practice as it is described in the authors' action research case studies.

# 8.

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## **A CRITIQUE OF MULTIVIEW METHODOLOGY'S PRACTICE**

### 8.1 Introduction

The previous chapter used a poststructuralist perspective to critique conceptual implications in MVM's theory. This focused on disruptions to its authors' preferred readings. The main outcome was the Trojan horse phenomenon. This describes tendencies to reiterate limitations criticised in others. This occurs because in drawing on the resources of a tradition that is simultaneously criticised, one uses some of the tradition's language, activities, and assumptions in making a case.

This chapter critiques the authors' preferred readings in terms of MVM's practice as follows:

- a critique of MVM's practice as it is described in case studies, and
- main outcome -- constraints of traditional print media.

It should be emphasised that the following is based on a *textual analysis* of MVM's practice as the authors describe it in their case studies since opportunities for action research with the authors in the role of an apprentice did not arise during the course of this research. While the selection of MVM was intertwined with this possibility, readers should bear in mind how the authors' descriptions may have been constrained by the intended audience of apprentice systems analysts who were familiar with the sequential linear life cycle criticised by Doyle and Wood (undated) in the previous chapter. Given this, descriptions of the authors' action research case studies do not necessarily reflect iterative 'dirty' aspects of practice.

## 8.2 A Critique of MVM's Practice as Described in its Action

### Research Case Studies

This section considers MVM's practice as it is described in the authors' action research case studies. The discussion is structured as follows:

- There are a limited number of case studies describing MVM's applications.
- The case studies could include more details.
- Applications are described in a linear structure that is largely the same from case to case.
- Descriptions neglect processes of appreciation.

- Multiple points of view are not well-represented.
- There are limited ways for reflecting on experiences of using the methodology.

### ***8.2.1 There are a limited number of case studies describing MVM's applications***

As discussed above, MVM is based in a tradition of action research in which practice is just as important as theory. Given this, the three texts contain several case studies describing MVM's applications. In the Wood-Harper et al. (1985) text there is one case study that supports the theory. In the Avison and Wood-Harper (1990) text, this case study reappears as *Case Study 2 -- The Polytechnic Distance Learning Unit*. In addition to this, the Avison and Wood-Harper (1990) text describes five new case studies. In the Bell and Wood-Harper (1992) text case studies are not included. However, the authors give exemplars that are amalgams drawn from their field, theory, and teaching experience. For this reason, in learning how to work critically with a cumulative tradition of methodology, the critique of MVM's practice in this chapter centres on the Avison and Wood-Harper (1990) text since it also contains the case study published earlier in the Wood-Harper et al. (1985) text.

In discussing writing about organisation studies, Van Maanen (1989) argues that researchers should attend to narrative conventions, for example, by studying the work of authors who have been influential in their fields. To this end, comparisons are also made with the Checkland and Scholes' (1990) text describing SSM in action for three reasons:

1. Both texts were published in the same year, so their accounts are contemporary.
2. Both texts derive from action research.

### 3. MVM incorporates SSM's Human Activity Systems in its Stage -- 1.

Learning derived from such comparisons might therefore lead to practical developments in describing MVM's applications.

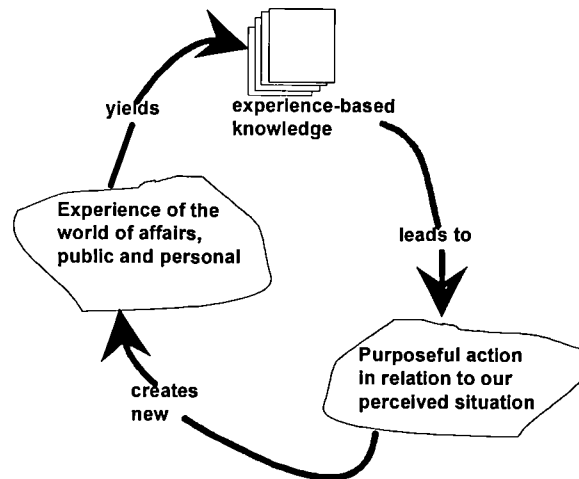
#### ***8.2.2 The case studies could include more detail***

The case studies in the Avison and Wood-Harper (1990) text lack detail in comparison to MVM's theory. While case studies in the Avison and Wood-Harper (1990) text make up only about a quarter of the text, in the Checkland and Scholes (1990) text describing SSM, case studies make up about two-thirds of the text. Additionally, Checkland and Scholes (1990) explain why studies were selected. For example, one study was included because it was the first time the authors worked together, and a series of later studies were included since they lead to changes in the way both authors view SSM (Checkland and Scholes, 1990, p. 59). Furthermore, Checkland and Scholes (1990, p. 206) outline the sequence and duration of the studies on which they worked together. Such details are often left up to readers to infer in the Avison and Wood-Harper (1990) case studies.

Checkland and Scholes (1990) also spend more time supporting the relationships shown in diagrams with textual explanations. In the Avison and Wood-Harper text, much of this is left up to the reader. For example, Avison and Wood-Harper's (1990, pp. 121-25) *Case Study 3 -- The Freight Import Agency*, consists of five pages, three and a half of which are diagrams.<sup>1</sup> Additionally, Checkland and Scholes (1990) often build up basic concepts shown in diagrams with further elaboration. For example, in the diagrams below they set out a basic concept of an 'experience-action cycle.'

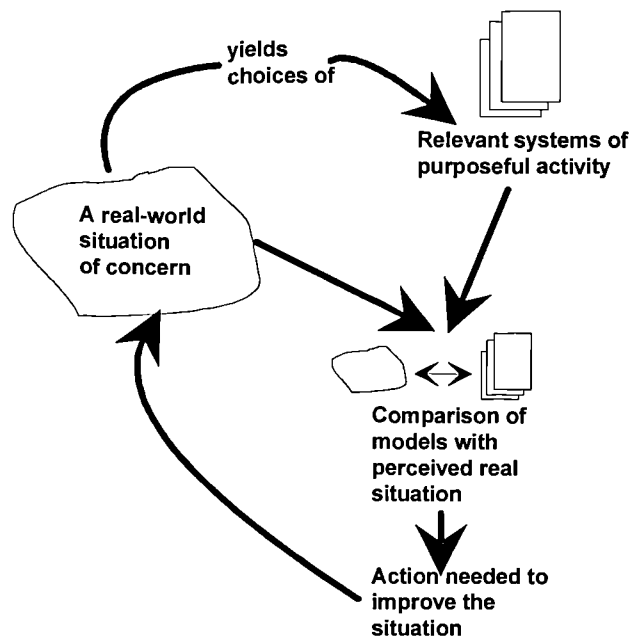
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<sup>1</sup> Readers may refer to a copy of this case study which is included in Appendix IV.



**Figure 8.1 The experience-action cycle**  
(adapted from Checkland and Scholes, 1990, p. 3).

Checkland and Scholes (1990, p. 7) then elaborate the basic concept set out above in terms of ‘the basic shape of SSM.’<sup>2</sup> This is shown in the figure below:



**Figure 8.2. The basic shape of Soft Systems Methodology**  
(adapted from Checkland and Scholes, 1990, p. 7).

<sup>2</sup> For an additional experiential learning cycle drawing explicitly on psychological theories about learning, readers are referred to Kolb (1984).

In MVM, the authors often explicitly leave readers to do this. For example, in *Case Study 3 -- The Freight Import Agency*, the authors write,

It would be a useful larger exercise for you to develop this case by developing the models provided and thereby constructing the missing aspects, such as the function/event matrix, a description of the entities and relationships, the lists of attributes, the entity-life cycle, through to the process of testing the system.

(Avison and Wood-Harper, 1990, p. 121)

Since there are already sections in the Avison and Wood-Harper (1990) text in which readers can do exercises (e.g., refer to p. 143, of the chapter that follows this case study), some readers might infer that there are more *missing* than described aspects of MVM's application in this case study. Conversely, other readers might view this as an opportunity to learn about methodology by critiquing the authors' description, especially since the authors write,

Obviously you will have to make assumptions. Some of these may have to be made because of flaws in the models provided!

(Avison and Wood-Harper, 1990, p. 121)

### **8.2.3 *Linear structure that is largely the same from case to case***

As discussed in the previous chapter, following through stages sequentially was a criticism of MVM's theory. The Avison and Wood-Harper (1990, p. 265) text emphasises more iteration, and the authors explain that,

None of the cases have exactly followed the methodology as espoused in (their) Chapter 2.

However, this finding is undermined by the linear structure used in describing the cases. Also, the structure of the case studies in the Avison and Wood-Harper (1990) text is largely the same. For example, in *Case Study 3 -- The Freight Import Agency*, the authors explain,



Because the information modelling phase of the DLU (Distance Learning Unit) case study was discussed in great detail in Chapters 8 and 9, we have only outlined these stages in case study 3.

(Avison and Wood-Harper, 1990, p. 121, my emphasis)

Similarly, in *Case Study 4 -- The Computer Consulting Company*, they write,

We will look at the background of the company and go through the early stages only briefly, using draft and outline models to avoid too much repetition with work discussed in previous cases.'

(Avison and Wood-Harper, 1990, p. 144, my emphasis)

While in individual works, cases are often more 'richly' described, (e.g., Wood-Harper, 1989), in the published co-authored accounts such comments potentially undermine the authors' preferred reading that none of the cases has exactly followed their description of MVM's theory. Since the stages do not need re-telling, this may give some readers the impression that they are much the same in each application, and as such the authors' descriptions may suggest some evidence of the influence of Schön's (1963) mental stencil way of thinking about concepts as discussed in Chapter 2 of this thesis.

This is what Checkland and Scholes (1990, p. 298) would describe as the 'routine use of SSM' insofar as an application follows stages set out in the methodology's theory, and it suggests a tendency in MVM's published methodology manuals to suppress the second aspect of meaning as specific instance in favour of meaning as a general structure. That is, even the way Avison and Wood-Harper (1990) describe MVM's applications follows the same general structure of sequential stages. This occurs at two levels:

1. in individual case studies that move from stages 1- 5, and

2. in the text as a whole insofar as each case study proceeds a stage in MVM's theory, and examples from it are used to illustrate that particular stage in a linear way moving from stages 1-5.<sup>3</sup>

In following a linear structure, the authors give readers little sense either of the way MVM varied from case to case or of the iterations involved in practical development. Checkland and Scholes (1990, p. 161, pp. 228-9), for example, frequently draw attention to the way SSM's stage by stage description breaks down resulting in 'rapid iterations' or 'internalised' uses of SSM in which the authors are not aware of their conscious use of the methodology. While Avison and Wood-Harper (1990) explain that the order of MVM is not important, the studies could be enriched with more specific examples to support their assertions.

Part of this may be due to limitations of print technology insofar as it imposes a sequential ordering on events. However, the authors could show more changes between drafts of rich pictures and other diagramming techniques to reflect iterations as well as learning. In Checkland and Scholes (1990, pp. 61-79), for example, readers are given a sense of iteration through the authors' description of a series of four methodological cycles in one case study. Additionally, within accounts of SSM's uses, Checkland and Scholes (1990, pp. 9-10) include inset tinted paragraphs to describe 'meta-level' commentary on each case, usually focusing on parts of the methodology.

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<sup>3</sup> In such descriptions, a lot of meaning may therefore be constrained by the intended audience of apprentice systems analysts. The way a methodology's meaning escapes an intended audience as well as its authors' intentions is discussed in Chapter 10 of this thesis with reference to Ricoeur (1991a).

#### ***8.2.4 Descriptions neglect processes of appreciation***

Avison and Wood-Harper (1990, p. 149) explain that,

We found that in each case, the nature of the organisation affected the emphasis placed on various stages.

In *Case 1 -- The Professional Association*, they explain that the structure of the organisation made participation difficult, and that 'conflict and political issues were very evident in this study' (Avison and Wood-Harper, 1990, p. 38). However, they do not discuss specifics as to how MVM was or was not able to cope with such matters. They conclude by saying that conventional methodologies do not address politics, and they say that ideas deriving from this case have been directed at 'political problems' (Avison and Wood-Harper, 1990, p. 39). However, they do not describe how this has resulted in specific changes to MVM's theory. Checkland and Scholes, (1990, p. 278), for instance, explain how their study of a community medicine department in a health authority was partly responsible for developing Analysis Two of Social Systems and Analysis Three of Political Systems in SSM's theory.<sup>4</sup>

In Avison and Wood-Harper's (1990, pp. 244-5) *Case Study 6 -- The Academic Department* in which groups of undergraduate students use MVM, the authors explain that,

Some groups followed different methodologies, but many chose Multiview as the basis of their approach.

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<sup>4</sup> Lecture notes received on the M.Sc. advanced systems analysis course indicate that Multiview -- 2 now incorporates analyses 1-3 from SSM. Appendix IV includes a copy of this handout as well as a diagram from Checkland and Scholes (1990) showing how SSM's two streams of analysis have been adapted to MVM.

However, there is little detail given about how MVM helped or hindered the students to appreciate the situation. In an instance in which Avison and Wood-Harper (1990, p. 244) describe how a group adapted the diagrams in MVM's *Stage 2 -- Information Modelling* they explain how the students used 'structure diagrams.' The authors explain that these are a 'more sophisticated functional model diagram technique than that described in the (MVM) text' because these show how sub-processes are connected and what data passes between them, while MVM's basic function diagrams only show 'that there is a link' between processes (Avison and Wood-Harper, 1990, p. 244). Nonetheless, even in this case study, there is little analysis concerning why various groups of students did or did not use MVM or what they thought were its strengths and weaknesses.

In relating this to Vickers' (1965) concept of appreciation as a two stranded rope of ideas and events interacting through time, while MVM authors tend to focus on events in their case studies, they often neglect how actors appreciated the relationship between events and ideas. This neglects Boland's (1987) process of 'inward-forming' as users make sense of the situation, which was discussed in Chapter 2 of this thesis. In contrast to this, Checkland and Scholes (1990, p. 67) discuss 'change in perceptions' that occur 'in the heads' of SSM users while undertaking an intervention.

#### ***8.2.5 Multiple points of view are not well represented***

The case studies are also told from a single point of view which potentially undermines MVM's theory of multiple perspectives. For example, in *Case Study -- 1 The Professional Institute*, they explain that,

The description here represents the personal views of the analysts involved, and in no way represents an 'objective' study.

(Avison and Wood-Harper, 1990, p. 36; referencing Wood-Harper, 1989)

This focus represents a disruption to their preferred reading of the case studies stated earlier in the text:

It is also important that the process of analysis and its results should be looked at from different viewpoints. What looks good to the analyst may not be so impressive to the user.

(Avison and Wood-Harper, 1990, p. 15)

So, although the case studies represent the analysts' point of view, they could be made richer to give the reader a stronger sense of the way the 'same' situation can be read differently by different people (e.g., Galliers, 1987)<sup>5</sup> Also, given that there are many analysts involved in each case study, apprentice researchers might learn about the complexities entailed in practice if the MVM authors described how different analysts perceived the 'same' situation. For example, in Checkland and Scholes (1990, pp. 83-7), *Chapter 3 -- An Application of Soft Systems Methodology in Industry*, the main case study includes an appendix that describes a more radical view of the situation than what was eventually presented to the senior management. The MVM authors do this to some extent with student computer scientists and accountants; for example, they explain that,

Each group perceived the 'same' problem content differently. This brought home to us that the methodology itself is not a sufficient guarantor of truth. Each group seemed to perceive a different reality. Further, we feel that there was a noticeable difference in the way that computer science and accounting students view the 'same' situation.'

(Avison and Wood-Harper, 1990, p. 150, their emphasis)

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<sup>5</sup> A critical discussion of Boland and Day's (1989) ethnographic case study of a systems analyst is included in Appendix I, research diary entry date Thursday-Friday 27-28 May 1993.

Nonetheless, the authors neither specify these differences between groups nor do they relate these to the way MVM is not a sufficient guarantor of truth. This differs, for example, from Wood-Harper's (1989) personal account. It also differs from the way Boland and Day (1989) use different categories to explain possible interpretations of the situation, and it differs from Galliers' (1992, 1995) use of a range of scenarios to reflect different anticipated business strategies.

In considering Whyte, Greenwood, and Lazes' (1991) case study of participatory action research, Argyris and Schön (1991, pp. 90-91) criticise them for telling the story only from the 'the interventionist's perspective,' and they argue that learning from their experience would require both an 'operational description' of what they did as well as 'a critical inquiry into the causal attribution of (their) achievements.' Such criticisms also apply to the case studies in MVM. Insofar as the whole book is written from the analysts' point of view, this potentially undercuts the importance of other stakeholders' perceptions since these stories are controlled by the analysts' interpretation. Here also, the authors could include transcripts of interviews to let readers make their own judgements and/or they could couch the analysis in terms of multiple points of view such as Mitroff and Linstone's (1993) individual, organisational, and technical perspectives.

For example, in *Case Study 2 -- The Distance Learning Unit*, the authors explain that the paintmakers are interested in solving an industrial problem of educating their trainees, while the Manpower Services Commission is interested in how training is administered and delivered (Avison and Wood-Harper, 1990, p. 73). However, rather

than considering the implications of these two stakeholders' views in depth, the authors write that,

neither of these 'definitions' are relevant for our purpose. Any light they shed is from the 'side'...our situation is one of handling the information processing aspects of the distance learning course.

(Avison and Wood-Harper, 1990, p. 73)

Given the copyright disputes over the system that subsequently developed, it would seem that both these definitions were probably quite important (i.e., refer to Avison and Wood-Harper, 1990, p. 72).

Likewise, in Avison and Wood-Harper's (1990, p. 55) chapter describing the construction of root definitions the authors explain that,

Only experience of such an exercise can reveal how different are the views of individuals about a situation in which they are working together.

However, they do not detail such difficulties in the case studies. For example, in *Case Study 2 -- The Distance Learning Unit*, they say they had particular difficulty but they give only one working root definition (Avison and Wood-Harper, 1990, p. 74). They also explain that rich pictures worked well, although they do not support this with specific examples of how and why (Avison and Wood-Harper, 1990, p. 80). Likewise, they explain that the 'uninitiated users did not always see the significance of the conceptual models' and that sometimes moving from one model to another one at a different level was difficult, yet they do not explain how or why (Avison and Wood-Harper, 1990, p. 80).

The text describing *Case Study 3 -- The Freight Import Agency* ends abruptly after three pages by stating that the Chairman was not pleased with the entity model although the

functional model was appealing, and he became involved in changing it himself (Avison and Wood-Harper, 1990, p. 123). However, the authors do not analyse how or why and what changes the Chairman makes in relation to the organisation. In contrast to this, Checkland and Scholes, 1990, p. 99) often explain why people had difficulties using models; for example, in a discussion of SSM's application in the National Health Service, the authors explain that people had difficulty with conceptual models due to the way the activities were numbered. While the authors had only numbered the activities arbitrarily so they could talk about them, other people in the intervention thought that the numbers were contingent, so they questioned the authors' ordering. Checkland and Scholes (1990, p. 99) conclude that one should try to label activities contingently, not arbitrarily, but they state that even so there is no correct way to number the activities since the models are not linear.

As was discussed in the critique of MVM's theory, there is some evidence of the way that the authors consider issues and differences in points of view as supplements to their primary concern. This is evidenced in the following quotation:

As we have said above, the analyst is only concerned with 'what is logically necessary.'

(Avison and Wood-Harper, 1990, p. 64)

A specific form of this tendency to exclude different stakeholders' explanations arises in *Case Study 6 -- The Academic Department*. For example, one of the authors' colleagues objects to the undergraduates building a departmental information system to fulfil information requirements for staff and students which the MVM authors explain as follows:



This colleague had developed his own system which worked and he did not want the application to be duplicated in the DIS (Departmental Information System).

(Avison and Wood-Harper, 1990, p. 136, my emphasis)

However, the above quote contrasts with the MVM authors' earlier discussion about participation in socio-technical design:

Keeping what is good about a working situation is very important and easily overlooked. We often concentrate on the problems only to find that the cure is worse than the disease.

(Avison and Wood-Harper, 1990, p. 136)

Rather than representing this colleague's objections in detail, we are told merely that,

This is not an unsatisfactory situation, unless he leaves the department.

(Avison and Wood-Harper, 1990, p. 243)

A different reading of this could be that the authors' activities represent a political attempt to challenge this colleague's working system. Such inferences are not necessarily unfounded especially since the MVM effort is linked to a course that 'has gained popularity over the years,' which one of the authors is developing and whose career therefore may benefit if the system is successfully implemented (Avison and Wood-Harper, 1990, p. 243). This reading also suggests the potentially coercive aspects of 'participation' as discussed by Jackson (1989) and Newman (1989). However, by not including the views of different stakeholders or transcripts of interviews, it is difficult for readers to consider alternative explanations with 'the kind of rigour appropriate to action research' (Argyris and Schön, 1991, p. 89).

### ***8.2.6 There are limited ways for reflecting on experiences of using the methodology***

As discussed previously, each case study in the Avison and Wood-Harper (1990) text proceeds chapters on MVM's theory, and examples from the case studies are further

used to illustrate stages of MVM's theory. However, sometimes this has the effect of decontextualising the examples from the specific intervention, especially insofar as authors do not 'repeat' previous descriptions of MVM's application in various stages. In the Checkland and Scholes (1990) text, theory is outlined first, and the case studies that follow reflect back on the theory. This gives the reader a clearer idea of the variations between applications of SSM. For example, Checkland and Scholes (1990, p. 142) reflect on the limits of their study in the application of SSM in the Civil Service insofar as

1. terms of reference were too narrow and
2. there was a focus on the product rather than the process of the study.

Also, in discussing SSM in establishing a 'Business Centre' Organisation, Checkland and Scholes (1990, p. 216) describe how the methodology was used in three different ways:

to help *plan* the project, to *do* parts of it, and to *structure the authors thinking* about it...  
(their emphasis)

Furthermore, Checkland and Scholes (1990) also 'revisit' experiences of using SSM in gathering and learning the lessons that make up their last chapter. For instance, they refer to criticisms raised in Schön's (1983) text, *The Reflective Practitioner*, such as the limitations of 'technical rationality' that views professional activity as 'instrumental problem solving' made rigorous with scientific theory and technique, and after Schön, they advocate 'reflection in action' (Schön, 1983, p. 21; quoted in Checkland and Scholes, 1990, p. 276).

Likewise, Boland and Day (1989, pp. 95-101) describe various 'structures of meaning' that help to make sense of a system designer's experiences as follows:

- the experience of moving through organisational space,
- the experience of interacting with others, and
- the experience of moral choice.

Such structures of meaning for reflecting on experience might help MVM's authors to describe not just how MVM varied with each application, but also how their understanding varies between and within studies. In Boland and Day's (1989, pp. 98-100) case study, for example, the structure of meaning for reflecting on how the analyst interacted with the system's users shows how her perception of user participation was two-sided. Boland and Day (1989, p. 99) explain that participation required the systems analyst to 'interpenetrate with the user' which they define as follows:

By this we mean the designer must get the user to think about the requirements of the system with the concepts used by the designer to think about them, or with concepts that are abstract enough to map to the designer's.

(my emphasis)

However, as evidenced by the language that emphasises the designer's *active* and the user's *passive* role, this led to the designer's realisation that interpenetration carried a risk of becoming intrusive. This is suggested by the following quotation:

To interpenetrate is exciting, but to intrude is unfair. In this study, the designer experienced this sense of unfairness on the part of the users when the exchange became lopsided and lost its balance. In designing *for* someone, the analyst would go to them with her technical problems, asking the user to think about the system in the designer's language. But the user cannot go to the designer with the technical problems in the same way. 'That's unfair! You are using *me* to complete *your* job.'

(Boland and Day, 1989, p. 99, their emphasis)

Likewise, as discussed in Chapter 2 of this thesis, Checkland and Scholes (1990, p. 283) use a model of 'consciously scholarly activity' for reflecting on intellectual work as follows:

- a framework of ideas,
- reflected in a methodology,
- through which an area of application is investigated.

As evidenced in Chapter 11 of this thesis, such a model is potentially useful in deriving lessons that have been learned in terms of each of these three areas. Something similar in MVM's case studies would be useful for structuring the authors' experiences. It might also help comparisons between uses of SSM and uses of MVM as well as other methodologies that combine a range of hard and soft methodologies (e.g., CCTA, 1989, 1991). This might help reflections on such graftings, particularly insofar as Checkland (1995, p. 14) views the CCTA's graft as 'a rather mechanical version of SSM.'

There are some ways for reflecting in MVM, for example at the end of *Case 4 -- The Computer Consulting Company* the authors comment that the computer scientist and accountancy students generally felt that group work was useful, but that some did not (Avison and Wood-Harper, 1990, p. 150). However, the authors do not detail this, and it is potentially important for apprentice researchers to learn from insofar as the authors continue to explain that work in groups was conservative, while individual work was more creative (Avison and Wood-Harper, 1990, p.150). Explaining different uses of the methodology like Checkland and Scholes (1990) do with SSM, and incorporating

structures of meaning like Boland and Day (1989) do in their phenomenological case study might help to draw out reflections on experiences of MVM in use.

Nonetheless, in comparison to developments in SSM, changes to the MVM framework have been limited. Checkland and Scholes (1990, pp. 280-84), for example, have developed a 'spectrum' of SSM in use between two modes. Mode 1 refers to a 'formal stage-by-stage' application and Mode 2 refers to internal mental uses of it (Checkland and Scholes, 1990, p. 281). In relating this to the case studies described in the Avison and Wood-Harper (1990) text, most would fall towards the Mode 1 end. However, *Case 5 -- The District Health Authority*, might be more of an 'internal' use of MVM insofar as they use a Körner (1982, 1984a, 1984b) analysis specific to the application area to analyse reports and develop a requirements analysis to meet legal needs (Avison and Wood-Harper, 1990, pp. 181-183). Additionally, Checkland and Scholes (1990, pp. 284-290) have developed a set of Constitutive Rules covering a 'mix of use in Mode 1 and Mode 2' to structure debates about SSM in use, which MVM is lacking in the three texts describing its versions.

Given that MVM is explicitly derived from a range of other existing methodologies, descriptions of its application also neglect how reflections on their experiences might be related back to developments in and criticisms of these *other* methodologies. For example, unlike Jackson (1982) the authors do not comment on whether SSM is intrinsically regulative due to its consensus approach. Likewise, they do not take sides with Checkland (1982) in arguing that SSM is potentially capable of achieving radical change. Such critical comparisons of their experiences with other researchers' points of

view might contribute towards such debates within and between traditions in the field. Given the Trojan horse phenomenon described in the previous chapter of this thesis, such comparisons might also help the authors (and other potential users) to reflect on what may have been unwittingly 'smuggled in' through MVM's synthesis of five perspectives on information systems development.

Many of the differences between Checkland and Scholes (1990) and Avison and Wood-Harper (1990) discussed above may be associated with the longer history of SSM through which it has accumulated a greater number of applications, i.e., twenty years of research and several hundred applications (Checkland and Scholes, 1990, pp. 1-2). As such, this critical comparison with Checkland and Scholes (1990) might potentially contribute towards subsequent developments in MVM. As was the case with criticisms in the previous chapter of this thesis, this analysis was limited to published methodology manuals. The authors' more personal works differ from the case studies discussed here. For example, Wood-Harper's (1989), analysis of MVM's case studies may be understood as 'richer' insofar as his analyses are longer and therefore include more detail than the published versions.

This section has critiqued MVM's practice as it is described in the authors' case studies. The next section considers how many of the criticisms in this section are associated with limitations of traditional print media.

### 8.3 Main Outcome: Constraints of Traditional Print Media

Many of the criticisms set out above are linked to constraints associated with traditional print media, and MVM's authors are currently researching how to address these using hypertext and hypermedia. Hypertext consists of blocks of texts joined with electronic links, and hypermedia refers to the addition of electronically linked media other than texts, e.g., video, sound, graphics, and animation (Woodhead, 1991).<sup>6</sup>

These developments can help us to reflect upon rather than exclude different aspects of a situation in analysis and design. For example, in printed media, details included in case studies are limited due to what is considered an acceptable length for a book as well as the associated costs of printing. Technologies such as CD-ROM and hypermedia open possibilities for greater detail to be included at little additional cost. This could help to enrich the details included in case studies.

Hypermedia could also address constraints associated with traditional printed media such as linear ordering and static descriptions since readers would be allowed to move through and between MVM's stages. This could help them to appreciate the iterative and dynamic aspects of methodology in use. Sound and videos could also enhance the richness of descriptions insofar as there are many aspects of interviewing that are not easily described with written transcripts, e.g., intonation of voice and non-verbal behaviour. Additionally, animation could be used to show changes in diagrams as well

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<sup>6</sup> The term, multimedia, is often used synonymously to describe what has been defined as hypermedia in this thesis after Woodhead (1991).

as potential relationships between data structures that are not well-represented in traditional print media because of its static quality.

By linking these different media electronically, readers could quickly change from one context to another which might encourage a richer analysis. They could also look at interview transcripts and videos with different stakeholders using hypermedia links to develop an appreciation of how people have different and changing views of the situation. While conventional computer systems encourage us to think of a single description from which we model a situation, hypermedia supports the inclusion and linking of different, even conflicting descriptions. Hypermedia could therefore also help readers to develop a deeper appreciation of the politics entailed in systems development.

In learning how to work critically with a tradition of methodology, hypermedia could help readers to evaluate the authors' interpretations in comparison with their own as well as different stakeholders' appreciations of the situation. In this way, hypermedia opens possibilities for addressing the tension between meaning's two meanings both as a general structure and as a specific instance. Bolter (1991) and Landow (1992), for example, consider the convergence of poststructuralist critical theory with hypertext and hypermedia. As such, poststructuralist critical theory may suggest the possibility of theorising hypermedia, while the latter provides a practical test ground.



## 8.4 Summary and Conclusion

This chapter has critiqued descriptions of MVM in use as represented in its action research case studies as follows:

- There are a limited number of case studies describing MVM's applications.
- The case studies could include more details.
- Applications are described in a linear structure that is largely the same from case to case.
- Descriptions neglect processes of appreciation.
- Multiple points of view are not well-represented.
- There are limited ways for reflecting on experiences of using the methodology.

The main outcome of this analysis centred on constraints associated with traditional print media.<sup>7</sup> These emphasise a linear and static description of methodology in use told from a single point of view. This neglects a methodology's iterative and dynamic aspects as well as different stakeholders' perceptions of the situation. Hypermedia was suggested as a way of addressing such limitations. (This is considered in the final chapter of this thesis when discussing an area for further research.)

The next chapter continues a poststructuralist textual analysis of MVM. In focusing on conceptual implications of MVM's synthesis of a range of existing methodologies, the analysis critiques three metaphors in the methodology.

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<sup>7</sup> Nonetheless, readers should also bear in mind how other authors (e.g., Checkland and Scholes, 1990) have had to cope with such limitations.

# 9.

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## **A CRITIQUE OF THREE METAPHORS IN MULTIVIEW METHODOLOGY**

### 9.1 Introduction

The previous two chapters of this thesis critiqued MVM's theory and practice. Outcomes were the Trojan horse phenomenon which refers to tendencies to reiterate the limitations criticised in others and the identification of constraints of traditional print media. These include the way print media emphasises a linear and static description of methodology in use described from a single point of view. Such constraints neglect a methodology's iterative and dynamic aspects as well as how different stakeholders' perceive the situation.

This chapter continues to focus on concepts of inquiry in MVM to critique implications of three metaphors that may have been 'smuggled in' unwittingly in its synthesis of five

perspectives on developing information systems. The discussion is structured as follows:

- metaphors in reality construction and goal enactment,
- the metaphor of progress in information systems development,
- the balance scale metaphor in decision making, and
- the metaphor of MVM's five perspectives as tools.

## 9.2 Metaphors in Reality Construction and Goal Enactment

There has been much research investigating the ways language structures our conceptions of reality (Ortony, 1993). With reference to organisational goals, Minzberg and Waters (1985) and Ansoff (1987) argue that these arise socially through stakeholders' interactions. In extending this, Mason (1991) explains how organisations discover and *enact* their purposes through processes of communication and action, and that language is critical in how stakeholders conceive of organisational goals. In relation to this, Mason (1991, p. 13) describes roles of metaphors as follows:

Metaphors – as nonliteral figures of speech in which a word or phrase denoting one concept is used in place of another, more literal, description – perform crucial roles in communication and therefore in this enactment process. These roles are particularly crucial when the enactment is taking place in a changing environment.

In a much earlier description Schön (1963) similarly emphasises how metaphors help us to formulate and change our thought. That is, Schön (1963) explains that metaphor works by treating something unfamiliar (A) as something familiar (B), thereby changing our understanding of *both* in the process. He also explains that since metaphors both

hide and highlight different aspects of a situation, the truths they present us with are only partial (Schön, 1963, p.50). In relation to this, Schön (1993) later discusses two traditions of metaphor. The first considers metaphor as an ornament or as an anomaly to be explained or even to be explained away (e.g., Beardsley, 1958). The second considers metaphor as pivotal in making sense of a situation (e.g., Lakoff and Johnson, 1980).

In information systems there is increasing evidence to suggest that metaphor may be pivotal in making sense of changing environments. For example, Morgan (1986) argues how important several metaphors are for understanding organisations, and Walsham (1991, 1993) extends this to information systems. Mason (1991) for instance, considers metaphors underlying discussions of strategic information systems planning and research. In developing Total Systems Intervention (TSI), Flood and Jackson (1991b) use a range of systems metaphors, and they suggest drawing on an organisation's dominant metaphor as a guide for methodology choice. Kendall and Kendall (1993, 1994) also consider dominant metaphors in a range of methodologies, advising that chances of system success may be increased by choosing a metaphor appropriate to an organisation.

Such research suggests how situations may be structured by conceptual systems that are at least partially defined by metaphorical thought. In returning to a conception of a paradigm as network discussed in Chapter 4 of this thesis, such research offers evidence in support of Kuhn's (1970, p. 184) argument that models function to supply groups with analogies and metaphors.

This chapter focuses on a critique of how three metaphors in MVM may affect processes through which stakeholders think and enact their goals in systems development.

### 9.3 The Metaphor of Progressive Development

As discussed above, we think metaphorically when we try to understand one aspect of experience in terms of another (Lakoff and Johnson, 1980). While, metaphor works when we recognise that (A) is or is like (B), the creative potential of metaphor arises through a degree of *difference* between (A) and (B) that we see as significant, but not total (Morgan, 1980).

This section considers what may have been ‘smuggled in’ with the metaphor of progress in MVM as follows:

- a journey metaphor that marks progress with linear development even though means and ends in information systems development are problematic,
- a tendency to suppress the second aspect of meaning as specific instance in favour of harmonising a single view, and
- an unwitting acceptance of potentially repressive power relations.

#### ***9.3.1 A journey metaphor that marks progress with linear development***

Boland (1989) discusses some problems that arise from a failure to consider the way metaphors affect inquiry. This often leads to an uncritical acceptance of the way concepts that guide our thinking are themselves metaphors. To return to Mason (1991),

methodologies that conceive of development as progress may be understood as enacting *modernist* values. These derive from the Enlightenment and emphasise the role of rationality in helping people perfect themselves and their society (e.g., Habermas, 1970, 1972, 1974). In information systems, Jackson's (1992) 'five pillars' for an integrated programme of critical systems thinking based on Habermas' theory may be understood as a network of fundamental beliefs that structure how developments should be enacted. Jackson (1991, p. 287) relates these five pillars to strands of systems thinking and argues that,

Hard and cybernetic approaches are found to be systemic modernist in orientation, soft systems thinking is revealed as an underdeveloped form of critical modernism and critical systems thinking shown to be a highly advanced form of modernism in which some systemic aspects are subordinated to critical presuppositions.

(my emphasis)

Insofar as Jackson's (1991) analysis reflects a positive belief in the value of progress, it may also be understood as an example of how the metaphor of progress may affect processes through which we think and enact goals in systems development. This also reflects Newman's (1989, p. 135, p. 139) finding concerning the 'missionary-like zeal' with which analysts often pursue systems development.

In criticising this tradition, *postmodernist* thinkers (e.g., Foucault, 1979) question the concept of progress. In operational research, Taket and White (1993, p. 868), for instance, criticise methodologies for drawing on Habermas (1970, 1972, 1974) as their theoretical basis since this results in enactments that emphasise 'a universal foundation and a metanarrative of progress.'

In relation to metaphor, a *metanarrative* may be understood as what Pepper (1942) earlier described as 'root metaphors;' these are 'world hypotheses' or fundamental

beliefs. According to Pepper (1942, p. 146), such beliefs are root metaphors, which correspond roughly to analytic and synthetic systems of thought.<sup>1</sup> Insofar as Jackson (1992) focuses on integration, his programme for critical systems thinking may be understood as deriving from a synthetic theory, and his use of the concept of progress may be understood as a way of enacting that goal.

However, Boland (1989, p. 279) criticises the metaphor of human progress for posing 'language-based traps.' Van Maanen (1989) likewise criticises the myth that the history of organisation research is progress. Bickerton and Siddiqi (1992) classify requirements engineering methods in terms of modern and postmodern approaches to encourage practitioners to develop an awareness of how their assumptions become embedded in the systems they create.

In addressing the roles of power in information systems, Flood (1990) draws on Foucault (1979) in proposing liberating systems thinking. With reference to operational research, Taket and White (1993) argue that while progress is a 'modern' idea that promises to be a liberating force achieved through rational thinking, this often hides more repressive aspects insofar as progress and rational thinking are often equated with what those in power would like to change to suit their own interests. Consequently,

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<sup>1</sup> For a practical example of this, readers are referred to Newland et al. (1987); they draw on Pepper's root metaphors to discuss different types of learning styles in architects with reference to composing a design team.

Taket and White (1993) propose a 'postmodern' agenda that does not favour any single 'metanarrative' such as a metaphor of progress.<sup>2</sup>

These criticisms are relevant to MVM insofar as the authors explain how the five perspectives on information systems reflect 'progressive development' (Wood-Harper et al., 1985, p. 17, my emphasis). As suggested by the critique of linear development discussed in Chapters 3 and 7 of this thesis, progress suggests a path to be followed so 'we assume that a continuous, connected, linear movement should mark our progress' (Boland, 1989, p. 279, my emphasis).

Boland (1989, p. 280) turns to Lakoff and Johnson's (1980, pp. 14- 24) explanation of progress being part of a web of experiential metaphors based on the way our bodies move through time and space. As such, progress is also a journey metaphor, and by metaphorical extension, we tend to associate thinking and arguing with a journey as evidenced by the following examples:

Do you *follow* my thought?  
He *strayed from the line* of argument.

(adapted from Lakoff and Johnson, 1980, p. 90, their emphasis)

Drawing on the notion of progress, information systems development is then seen like a journey, and as suggested above, development also proceeds by setting out arguments step by step structured through paths in MVM.

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<sup>2</sup> For a general introduction to modernism and postmodernism readers are referred to Sarup (1993). For an introduction to modernism and postmodernism with reference to organisational theory readers are referred to Cooper and Burrell (1988) and Burrell (1988).



However, this metaphor highlights some features of a situation while hiding others. For example, it emphasises change, but what is left unsaid is a clear idea of where the organisation is going (Boland, 1989, p. 280). To return to Checkland's (1981) criticism, this 'progressive' approach to problem-solving is inappropriate in soft situations insofar as means and ends are themselves unclear and open to debate. Boland (1989, p. 280) also argues that what is left unsaid in using the idea of progress as a journey in developing information systems is that it is a 'heroic journey.' Van Maanen (1989, p. 30) also makes this point with regard to the history of organisation research being celebrated as 'the steady progression of a field made possible by a stream of heroes.' This is explicit in SSM insofar as Checkland (1981, p. 261) explains that an investigator's 'appropriate emotional state' is a 'heroic mood.' Though encountering difficulties and struggles between different perspectives, if successful, the analyst then wins a 'special power or wisdom' (Boland, 1989, p. 281), e.g., the system is successfully incorporated into the organisation.

The next section considers how this is linked with a tendency to suppress the second aspect of meaning as a specific instance in favour of harmonising a single view.

### ***9.3.2 Harmonising a single view***

In returning to the Trojan horse phenomenon, the metaphor of progress becomes entangled with 'images of restoring a wholeness' (Boland, 1989, p. 280) they may have a tendency to suppress the second aspect of meaning as a specific instance. Perhaps, this desire to restore wholeness might be what motivates complementary approaches to methodology (e.g., Wood-Harper and Fitzgerald, 1982; Goguen, 1992; Jackson, 1992).

Consider, for example, how MVM promises to be ‘a more complete solution’ (Avison and Wood-Harper, 1990, p. 3, my emphasis). This is further supported by the following quotation:

It is the analyst’s job to assess the degree of differences between root definitions and to harmonise an overall view that all stakeholders can agree to.

(Bell and Wood-Harper, 1992, p. 68, my emphasis)

To return to meaning’s two meanings discussed in Chapter 4 of this thesis, harmonising might therefore result in a tendency to suppress the second aspects of meaning as a specific instance if it disrupts the analyst’s preferred reading of the situation, which is to ‘harmonise an overall view’ (Bell and Wood-Harper, 1992, p. 68, my emphasis).

Conversely, the second aspect of meaning as specific instance might also be asserted insofar as Boland (1989, p. 280) argues that progress promises more responsibility and democratic participation. Evidence for this is suggested not only in MVM’s *Stage 1 -- Analysis of Human Activity* insofar as it considers several ways of perceiving a situation, but it also occurs in the *Stage 3 -- Analysis and Design of the Socio-Technical Aspects* in which participation is an explicit goal in weighing up possible social and technical alternatives (Avison and Wood-Harper, 1990, p. 129).

However, a potentially different implication is considered below.

### ***9.3.3 Acceptance of power relations***

However, as Boland (1989) explains, there are some traps associated with the notion of progress. As has been argued by Foucault (1979), for instance, one trap is to buy unwittingly into a repressive relationship of knowledge and power (Boland, 1989, p. 280). This is evidenced, for example, in Lewis’ (1994, p. 29) criticism of hard

methodologies for adopting power holders' views. However, while SSM takes account of different stakeholders' views, there have also been criticisms of the methodology for having no mechanism for challenging the status quo and hence for bringing about radical change (e.g., Jackson, 1982; Mingers and Taylor, 1992). To facilitate this, Mingers and Taylor (1992, p. 329), for example, suggest that critical methodologies with an explicit recognition of power need to be developed. As discussed in Chapter 7 of this thesis, their criticism is relevant to MVM insofar as it uses human activity systems from SSM in its Stage 1 to achieve a consensus model prior to implementation.

Foucault (1979) draws attention to the darker aspects of power in arguing that theories of happy individuals and satisfying workplaces change efficient economic functioning into moral imperatives for judging our lives (Boland, 1989, p. 281). Some evidence for this in MVM may be suggested by *Stage 3 -- Analysis and Design of Socio-Technical Aspects* which draws on Mumford's (1983) ETHICS methodology, an acronym derived from Effective Technical and Human Implementation of Computer Systems. Consider, for example, the following quotation:

The philosophy behind this stage is that people have a basic right to control their own destinies and that, if they are allowed to participate in the analysis and design of the systems that they will be using, then the implementation, acceptance and operation of the system will be enhanced.

(Avison and Wood-Harper, 1990, p. 30, my emphasis)

While the above sentence begins by emphasising the positive 'people' aspects of participation, this is potentially disrupted by an economic incentive, i.e., that the system will be accepted and that it will thereby increase the organisation's earnings, especially insofar as the 'best' socio-technical alternative is selected according to a 'cost-benefit' equation (Bell and Wood-Harper, 1992, p. 121).

By incorporating general structures in its theory that tend to support existing power relations, MVM may at times disrupt its preferred reading of multiple perspectives. This was considered, for example, in the critique of MVM's theory carried out in Chapter 7 of this thesis insofar as differences in perspectives are potentially seen as being supplementary in MVM's *Stage 1- Analysis of Human Activity*. It was also considered in the critique of MVM's practice in Chapter 8 of this thesis insofar as singular explanations of MVM's applications derive from the analysts' point of view.

This section considered what may be 'smuggled in' with the metaphor of progress in MVM. The next section considers how the balance scale metaphor may affect decision making in MVM.

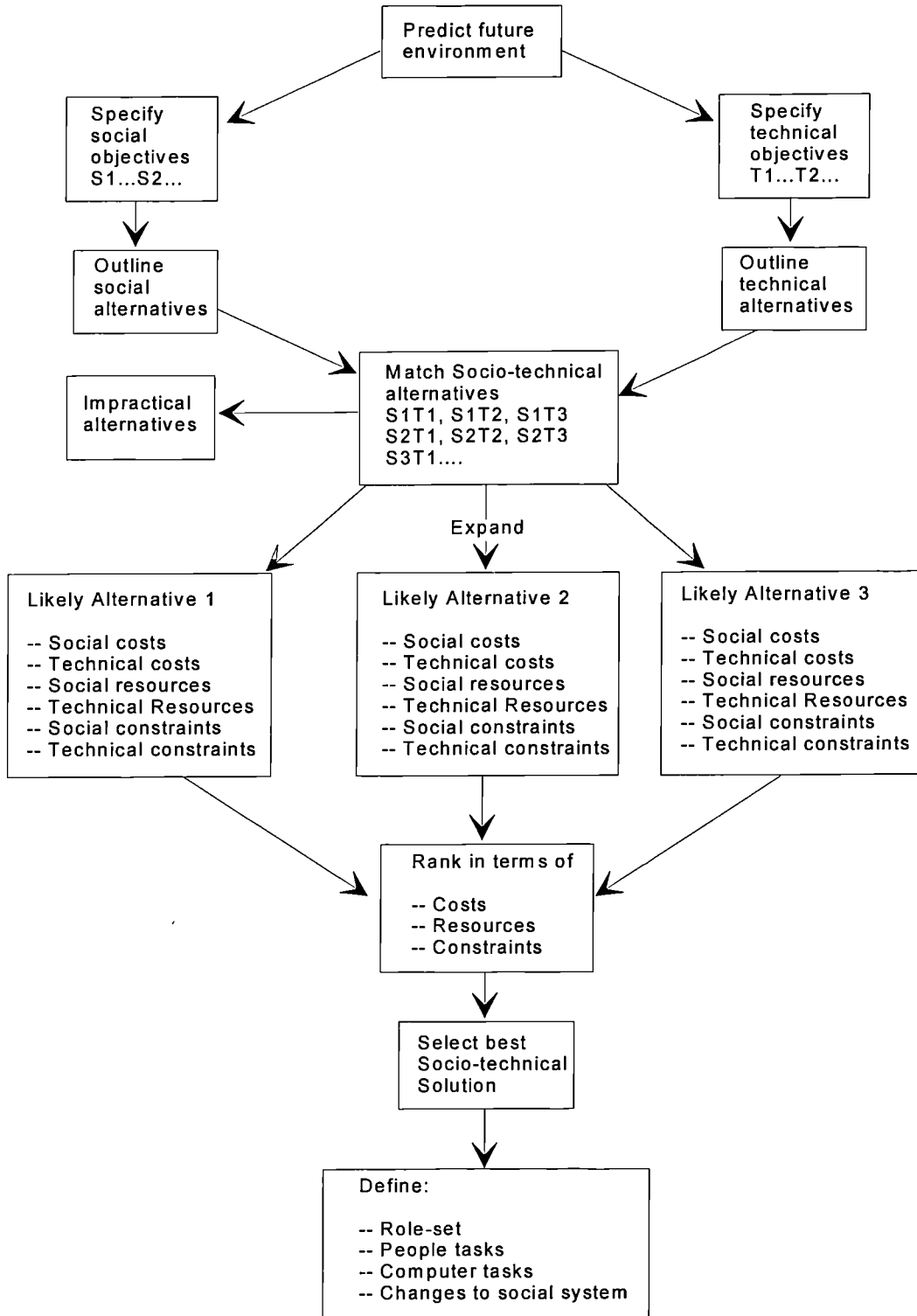
#### 9.4 The Balance Scale Metaphor and Decision Making in MVM's Socio-Technical Stage

As discussed in Chapters 6 of this thesis, binary pairings are not valueless or neutral oppositions. They often express a power relationship in which one term is given priority over another. Such oppositions may therefore be understood in terms of a relation of tension. A significant binary opposition occurs in MVM's *Stage 3 -- Analysis and Design of Socio-Technical Aspects*.

This section considers assumptions that may have been unwittingly 'smuggled in' with MVM's balance scale metaphor and decision making in its socio-technical stage as follows:

- Objects come to the weighing process ready to be weighed.
- In the course of weighing, objects do not change.
- On a balance scale, objects are weighed in twos.
- MVM may have a contradictory attitude towards participation.

In relating grafting approaches to methodology, Mingers (1992b) states that MVM's approach of linking a range of five different perspectives on information systems development into five stages has much to offer, and that one of MVM's strengths is its Stage 3 that draws on Mumford's (1983) work to analyse socio-technical systems. The socio-technical stage of MVM is summarised in the figure below:



**Figure 9.1. The Socio-technical stage in Multiview Methodology (adapted from Avison and Wood-Harper, 1990, p. 135).**

Avison and Wood-Harper's (1990, p. 133) preferred reading for why they use participation in MVM reflects tensions associated with two potentially contrary value systems:

- Ethical, because people have the moral right to a major input into the design process of their working situation. This allows users to protect their interests.
- Pragmatic, because detailed knowledge of the working system is possessed by the people who work within the system. Therefore, participation is the best way of acquiring this knowledge.
- Psychological, because people do not mind change if they know the reason.  
(my emphasis)

This suggests that the technical value system potentially threatens users' interests, especially insofar as their participation is justified not just as a 'moral right' but as a pragmatic way of 'acquiring' their knowledge in a situation that is going to change through technology that the systems analysts help to introduce.

While the authors view participation as a positive aspect of information systems development since it values job satisfaction (Avison and Wood-Harper, 1990, p. 129), the following quotation suggests a potential disruption to this preferred reading:

It is important, however, that the set of alternatives provided is not too limited and narrow but illustrates the wide range of opportunities that exist. Otherwise, users will have no real choice and the user is offered only lip-service to the decision making process.

(Avison and Wood-Harper, 1990, p. 134, my emphasis)

To return to Chapter 2 of this thesis, technology and social organisations affect thought not just directly by the changes in behaviour they cause, but also indirectly insofar as they present themselves as projective models for our theories (Schön, 1963, p. 197). In discussing theories of decision making, Schön (1963, p. 113) draws attention to language such as 'weighing alternatives' and 'balancing one against the other' to argue that these theories of deciding are derived from a displaced theory of weighing, and as

such, they work from a projective model of the balance scale. Schön (1963, p. 113, his emphasis) explains that in this view decisions involve a ‘comparison of *two* sides which are set off one against the other.’

This is similar to Winograd and Flores’ (1986) criticism of Herbert Simon’s (1976) approach to rational decision making as choosing among a range of prespecified alternatives. More specifically, evidence for the balance scale metaphor is suggested in MVM’s Stage 3 insofar as two sets of alternatives, the social and the technical, are compared. Further evidence for the balance scale metaphor is suggested, for example, by the title of Bell and Wood-Harper’s (1992, p. 105) chapter discussing this stage: *Technical Needs, Social Needs -- Getting the Balance Right* (my emphasis).

Schön (1963) analyses the balance scale as a projective model to consider several hidden and undefended assumptions, and his analysis is especially relevant to methodology since he argues that the notion of scale rather than debate can be understood as a projective model for a theory if,

the two ‘sides’ in question are treated as passive and unchanging rather than autonomous and active.

(Schön , 1963, p. 114, his emphasis)

Schön (1963, p. 117) argues that the balance scale as a projective model means that ‘deciding is a weighing of elements’ in which the heavier ‘gets translated into action or receives approval.’ Evidence for this occurs in MVM’s Stage 3 in a ‘slimming’ form. That is, alternatives are given weights of 1-9, with 1 being ‘very good’ and 9 being ‘very poor,’ and these are then ranked in terms of costs, resources, and constraints with



the lightest, i.e., 'the alternatives with the lowest totals' being selected as the most appropriate choices (Bell and Wood-Harper, 1992, pp. 115-116).

Further evidence for treating the two sides in question as passive and unchanging is suggested by Stowell and West's (1994) criticism of methodologies that use SSM as a 'front-end' because users participate up to a point, and then development becomes technology-driven. Likewise, as discussed in Chapter 6 of this thesis, Beath and Orlikowski (1994) deconstruct the IS-User relationship in James Martin's (1989, 1990a, 1990b) Information Engineering to argue that despite emphasising user involvement, users are given a relatively passive role during development. Lewis (1994, p. 79) similarly criticises traditional engineering approaches for their passive treatment of users, especially insofar as the term, 'user,' is

a linguistic indicator of the emphasis historically given to the engineering of the technical components of information-systems. Labelling human beings in this way makes sense only if one is concerned with engineering the technical components that will be later used by human beings; the term 'user,' in fact, defines human beings lying outside the boundary of the information-system and thus removes any need to give human issues serious consideration during development.

In considering evidence for the scale metaphor as a projective model, Schön (1963) explains that we would expect to find several assumptions associated with it. These are discussed below with reference to MVM's attitude towards IS users in weighing up social and technical alternatives.

#### ***9.4.1 Assumption 1: objects come to the weighing process ready to be weighed***

Schön (1963, p. 119) explains how objects are merely brought to scales; they do not have to be invented. In this sense 'they are assumed' and in deciding on them the emphasis is not so much on how they came to be as it is on how they compare with one

another (Schön , 1963, pp. 119-20). This is evidenced in Mumford's (1983, p. 57) ETHICS, for example, in the way that the social and technical analyses are often 'first considered separately and later merged.' This is also suggested generally by the structure of this stage of inquiry in MVM: the view that there are social and technical alternatives is taken as given; efforts are not directed at questioning these boundaries, but at deciding among them. This is suggested, by the following quotation. The first concerns MVM's assumptions about organisations, and the second concerns assumptions about socio-technical design goals:

Organisation as work system with two independent but interrelated subsystems, social and technical.  
Jointly satisfy the organisational technical requirements (efficiency goal) and the quality of work life (social goal).

(taken from Fok et al., 1987 and quoted in Avison and Wood-Harper, 1990, p. 130)

To return to Bloomfield's (1992) criticism raised in Chapter 3 of this thesis, such boundaries are problematic, and focusing on the dichotomy between social and technical neglects, for example, the social nature of the technical aspects of practice. This is suggested, for instance, by the following quotation which describes the socio-technical decision that results from weighing up the various alternatives:

At this stage the problem owner will have made a decision about what type of computer system to go for, assisted by the alternatives which have been set out by the problem solver.

(Avison and Wood-Harper, 1990, p. 142, my emphasis)

Notice how this decision is embedded within a social context. The technical objectives and alternatives are themselves 'inferred from the agreed primary task root definition' (Avison and Wood-Harper, 1990, p. 138), which was arrived at without regard to technical considerations since it focuses on the organisation. Moreover, the borders

between the two systems cross insofar as it is the problem owner as representative of the organisation who finally decides on the technical aspects of the information system.

Schön (1963, p. 120) considers that a problem of this way of deciding is that it emphasises evaluation rather than discovery; it focuses 'on the process of deciding whether to do this or that rather on the process of thinking what to do.' He argues that a limitation of this is that there is little reference to the way possible actions get formulated in the first place, and that 'the function of the codes is to rationalise a conclusion already arrived at' (Schön, 1963, p. 120). This stage in MVM potentially marks a return to means/end problem solving in hard approaches criticised in Chapter 3 of this thesis. This is suggested, for example, by the following quotation:

It is therefore possible to set out the various objectives of the system and then to formulate ways of achieving the objectives.

(Avison and Wood-Harper, 1990, p. 136)

#### ***9.4.2 Assumption 2: in the course of weighing, objects do not change***

Schön (1963, p. 121) explains that,

as far as the scale is concerned, an object goes out as it came in. If change occurs, the weighing does not cause it.

As such, Schön (1963, p. 121) argues that theories of decision making based on a displaced theory of weighing would treat 'objects of decision as unchanging.' This view is summarised in the following quotation:

When a process of deciding answers the question, 'Should I do this or that?' and answers it by listing and evaluating advantages and disadvantages of two courses of action, its conclusion is a decision to do this or that, or neither; not a change in the formulation of alternatives

(Schön, 1963, p. 121).

This is suggested generally by MVM's focus on a future analysis:

Once the future environment has been predicted, the rest of the socio-technical design can be carried out.

(Avison and Wood-Harper, 1990, p. 134, my emphasis)

In contrast to this, Schön (1963) argues that much of our practical thinking questions the formulation of problems so that all alternatives are considered. This was discussed previously in relation to SSM insofar as means and ends are themselves problematic (Checkland, 1981, pp. 38-48). Schön (1963) argues that such processes are undermined by the assumption of unchanging objects in decisions. This is supported by Bell and Wood-Harper (1992, p. 119) insofar as they describe predicting the future environment analysis as follows:

This is very subject to error. The task requires a look into the crystal ball on four levels....

Given this, it is perhaps surprising that the Avison and Wood-Harper's (1990, p. 16) text uses *Case 3 -- The Freight Import Agency*, to illustrate the socio-technical analysis stage since they explain that 'a major feature of the problem situation is uncertainty.' Moreover, Schön (1963, p. 122) argues that the effects of the balance scale metaphor on decision making are not merely theoretical because theories of deciding influence actual decisions.

This is evidenced by the way weighing up social and technical alternatives that lead to a socio-technical decision take place against the static unchanging background 'predicted' by the future analysis. For example, notice also in the alternative rankings that follow, how individual alternatives are merely juxtaposed with one another. Generally, the alternatives themselves do not change so resulting sums are not greater than a combination of their parts. This is evidenced by the rankings shown in the table below:

	Social Costs	Technical Costs	Social Resources	Technical Resources	Social Constraints	Technical Constraints	Total
<b>S1T1</b>	2	7	3	3	3	9	27
<b>S1T2</b>	6	8	7	8	6	7	42
<b>S1T3</b>	6	8	6	8	6	6	40
<b>S1T4</b>	9	8	8	8	8	8	49
<b>S2T1</b>	4	7	4	5	3	8	31
<b>S2T2</b>	5	6	5	6	3	5	32
<b>S2T3</b>	5	6	5	6	3	4	31
<b>S2T4</b>	6	9	8	7	5	3	38

S= social, T= technical

Social costs = introducing new staff, learning new skills, fitting in etc.

Technical costs = learning new systems, supporting new systems, redundancy of old systems, replacement costs, etc.

Social resources - high levels of awareness, low number of skilled staff, high reluctance etc.

Technical resources = existing equipment, existing software skills, no existing equipment etc.

Social constraints = acceptable work practices, managerial support etc.

Technical constraints = long-term viability, organisational capabilities

**Table 9.1. Socio-technical Rankings**  
(excerpt taken from Bell and Wood-Harper, 1992, p. 121).

#### *9.4.3 Assumption 3: on a balance scale, objects are weighed in twos*

Schön (1963, p. 123) argues that due to its historical structure, weighing is seen as comparing two things or two sets of things, and if more than two things or sets of things are considered, these are addressed in twos. Such pairings are seen generally in terms of social and technical alternatives. They also occur more specifically with alternatives being matched in twos, as shown in the following example:

S1T1, S1T2, S1T3, S2T1, S2T2, S2T3, S3T1...

(Avison and Wood-Harper, 1990, p. 135).<sup>3</sup>

<sup>3</sup> 'S' stands for social, and 'T' stands for technical.

Schön (1963, p. 123) argues that a limitation of this view is that it leaves out those aspects that have to do with “the elaboration of new ‘third’ possibilities.” In developing this, he points out that two people who are concerned with holding up their sides of an argument are unlikely to develop a new point of view (Schön, 1963, p. 124). Also, in practical situations this emphasis on duality is an oversimplification (Schön, 1963, p. 124).<sup>4</sup>

From a poststructuralist perspective, a balance scale metaphor for decision making reflects structuralist assumptions of a static system that neglects dynamic aspects of situations. These become supplementary in the sense that the socio-technical analysis emphasises ‘stabilisation’ while simultaneously admitting a disruption to this preferred reading as suggested by the following quotation:

Once integration has been achieved it has to be maintained, and this means that the new patterns of relationships must be stabilised so as to meet the values and interests of the groups involved over a period of time. But, a successful relationship on the four variables (i.e., task, technical, people, and company objectives) for one group may make it difficult for another group to achieve a similar relationship. To avoid “one man’s job enrichment becoming another man’s job impoverishment” imaginative solutions or even compromises may be required. The maintenance of a state of equilibrium into the future requires processes for socialising and for educating new group members; it also requires mechanisms for controlling tension when the fit between the variables slips and for resolving conflict when major divergences are experienced.

(Mumford, 1983, p. 16, my emphasis)

While stability and equilibrium are the preferred reading, this is disrupted by conflict and tension between groups, which is in turn controlled not just through education, but also by ‘mechanisms.’ To return to Chapter 4 of this thesis, this is potentially an

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<sup>4</sup> This criticism might also apply to Giddens’ (1979, 1984) structuration theory insofar as it emphasises a duality of structure.

example of a tendency to suppress the second aspect of meaning as specific instance in favour of maintaining a general structure.

#### ***9.4.4 A contradictory attitude towards participation***

By incorporating such aspects into its five ways of viewing information systems development, MVM may 'smuggle in' a contradictory attitude towards participation.

For example, Avison and Wood-Harper (1990, p. 137) explain that,

It is important for the analyst to listen to what managers and users are saying about their work. It is all too easy for computer professionals to get so enthusiastic about the technical objectives that they are not sufficiently sensitive to the users' social objectives.

However, users are not included in specifying technical objectives and alternatives:

It is the analyst's job to lay out the alternatives and to spell out the implications of them for the creation of the information system.

(Avison and Wood-Harper, 1990, p. 138, my emphasis)

This places users in a passive role as evidenced by the following quotation:

The best way for the people involved in a system to decide what they want is for them to be presented with a realistic set of alternatives. They can examine each of these preferably 'acting them out' in some way, to see which alternative seems the most comfortable.

(Avison and Wood-Harper, 1990, p. 133, quotes, their emphasis, underlining, my emphasis)

Again, users are presented with alternatives, and it is not for them to question how these were formulated. Instead, the closest they get to an 'active' role in making decisions is play acting, not real action, i.e., they can act alternatives out in some way. To return to the criticism of MVM's theory raised in the Chapter 7 of this thesis concerning CATWOE, the methodology may well be giving lip-service to participation as evidenced in the following quotation in which again it is the *owner*, who makes the final socio-technical decision:

It is a stage both of analysis and design where the problem solving team (consisting of analysts *and* users) lays out the alternatives and the problem owner decides which alternative to adopt.

(Avison and Wood-Harper, 1990, p. 142, italics their emphasis, underlining my emphasis)

This may therefore support views that analysts often act in support of management's position of 'rationality' over the interests of users (Jackson, 1989; Newman, 1989).

This section considered how MVM's acceptance of socio-technical alternatives may have unwittingly 'smuggled in' assumptions that mark the return of means/ends problem solving criticised in Chapter 3 of this thesis and that potentially undermine the notion of active user participation.

The next section extends this critique to MVM's conception of its five perspectives as tools.

## 9.5 The Metaphor of MVM's Five Perspectives as Tools

Morgan (1986) argues how important several metaphors are for understanding organisations, and Walsham (1991, 1993) extends this to information systems. In developing Total Systems Intervention (TSI), Flood and Jackson (1991b) use a range of systems metaphors, and they suggest drawing on an organisation's dominant metaphor as a guide for methodology choice. Kendall and Kendall (1993, 1994) also consider dominant metaphors in a range of methodologies, advising that chances of system success may be increased by choosing a metaphor appropriate to an organisation.

Such research suggests how situations may be structured by conceptual systems that are at least partially defined by metaphor. This focus on specific images may be a



consequence of what Schön (1963, p. 35) describes as the most common approach to metaphor: insofar as it is considered to be a part of language certain words or sets of words are said to 'be a metaphor.' For example, the Avison and Wood-Harper (1990, p. 270) text ends by discussing four roles of the systems analyst and four metaphors to express these activities as shown in the figure below:<sup>5</sup>

<p><b>Functionalist</b></p> <p><b>Analyst:</b> Technical Expert</p> <p><b>Ideals:</b> Objectivity Rigour Formal</p> <p><b>Metaphor:</b> Doctor</p>	<p><b>Interpretive</b></p> <p><b>Analyst:</b> Facilitator</p> <p><b>Ideals:</b> Meaning</p> <p><b>Metaphor:</b> Liberal Teacher</p>
<p><b>Analyst:</b> Agent for Social Progress</p> <p><b>Ideals:</b> Change Socio-economic class Structures</p> <p><b>Metaphor:</b> Warrior</p> <p><b>Radical Structuralist</b></p>	<p><b>Analyst:</b> Change Catalyst</p> <p><b>Ideals:</b> Change Socio-economic structures Psychological barriers</p> <p><b>Metaphor:</b> Emancipator</p> <p><b>Radical Humanist</b></p>

**Figure 9.2. Roles, ideals and metaphors assumed when defining an information system (adapted from Avison and Wood-Harper, 1990, p. 270).**

This section critiques the conception of MVM's perspectives as tools because

- it potentially treats language instrumentally,
- may reduce possibilities for unexpected novelty, and

<sup>5</sup> These four roles are also set out in Bell and Wood-Harper (1992, pp. 25-27).

- could undermine action research.

With regard to the above description of roles, ideals, and metaphors, Boland (1989, p. 282) argues that an awareness of language gives rise to a 'mistaken notion that metaphor can be taken hold of and used instrumentally.' He argues that if positivist approaches make the mistake of trying to rid language of metaphor by making it the 'mirror of reality' (which is nonetheless a metaphor), those who consider language as metaphoric without emphasising the consequences of this view reiterate the positivists' mistake (Boland, 1989, p. 282). That is, both consider language as a tool that can be drawn on and used instrumentally like a 'hammer or a screwdriver' (Boland, 1989, p. 282). Both try to stand outside experiences by 'grabbing onto a 'metalanguage' that will allow them to manipulate our forms of life by manipulating our metaphors' (Boland, 1989, p. 281).

We see this tool metaphor in MVM's four roles that advocate 'using' different metaphors.<sup>6</sup> Moreover, MVM's five perspectives are themselves conceived of as 'five components or tools' (Bell and Wood-Harper, 1992, p. 21). Further evidence is suggested by the following quotation:

In other situations particular tools and techniques are not appropriate to the problem situation. The systems analyst has to choose from a 'tool-box' those tools and techniques appropriate for each situation (Benyon and Skidmore, 1987), but within the framework of Multiview (Avison, Fitzgerald, and Wood-Harper, 1988).

(Avison and Wood-Harper, 1990, p. 269)

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<sup>6</sup> This criticism might also apply at times to Morgan's (1986, p. 343) use of metaphors in *Images of Organisation* insofar as he writes that 'the word organisation derives from the Greek *organon*, meaning tool or instrument.' Likewise, to return to Madsen's (1989, pp. 45-7) research discussed in Chapter 4 of this thesis, she also considers how metaphors can be used instrumentally as tools to provoke breakdowns in structured domains

In contrast to this, Boland (1989, p. 282) argues that we cannot step out of language and view it as an isolated abstract object any more than we can enter some culture-free abstract space. Similarly, Checkland and Scholes (1990, p. 112) criticise quantitative performance indicators for judging health care provision as follows:

For example, a PI (Performance Indicator) applicable to the use of hospital cleaning fluid might be the area of floor cleaned by a litre of it, and this could be used to distinguish between competing brands. In systems terms, however, PIs – or, in the phrase used in SSM, measures of performance – should never be one-dimensional, should never be plucked out of the air, and should never be defined in a vacuum; they are one part of a description of a *system*, and cannot usefully be regarded in isolation. (The *best* cleaning fluid according to the PI might be the one which causes headaches in users of it or it, might be the one for which there is no continuity of supply.)

In considering the importance of contexts, Boland (1989) refers to Ciborra and Lanzara's (1989) formative context, explaining that it characterises a field that framed and defined possibilities of action. However, 'the idea was soon taken up and turned into an object' (Boland, 1989, p. 282). The notion of formative context

became a lens, and actors could stand outside the context, switching lenses at will to guide organisational processes toward more humanly satisfying ends.

(Boland, 1989, p. 282, my emphasis)

Evidence for this in MVM is suggested by Avison and Wood-Harper's (1990, p. 24) implicit use of a lens metaphor to describe MVM's five perspectives:

Working from the middle outwards we see a widening of focus and an increase in understanding the problem situation and its related human and technical characteristics and needs. Working from the outside in, we see an increasing concentration of focus, and increasing in structure and the progressive development of an information system.

(my emphasis)

More recently, Wood-Harper and Avison (1992) have written a paper that suggests further evidence for their conception of perspectives as tools since the paper is entitled, '*Reflections from the experience of using Multiview: through the lens of Soft Systems Methodology*' (my emphasis).

However, Boland (1989) argues that this is a misunderstanding of language: since metaphors are nested in complex relationships with other metaphors, we cannot simply pick one out and use it in any clear, precise way. This was suggested, for example, in the previous two sections in which other metaphors were ‘smuggled in’ with notions of progress and decision making described in MVM. To return to Avison and Wood-Harper’s (1990) four roles of the systems analyst, it is possible, for example, that the doctor metaphor can entail the other three roles. Consider, for example, how doctors engaged as technical experts can also come to see themselves as emancipators treating those who are subjected to repressive regimes during times of war.

In the previous section, the use of metaphors as tools was critiqued with regard to socio-technical alternatives being weighed on a balance scale; insofar as these are not changed in the process of weighing or evaluation, they are used instrumentally as a *means* of achieving objectives. This contrasts, for example, with Vickers’ (1965) description of an appreciative system, insofar as norms and values are *themselves* changed in the process of evaluation.

To return to a criticism raised in this chapter concerning MVM and the metaphor of human progress, this too is linked with other images of language as a tool. For instance, when computers are labelled as intelligent and intelligence is considered a commodity (Boland, 1989, p. 283). This becomes explicit in Bell and Wood-Harper (1992, p. 2):

Information is a most versatile and pliable commodity.

To return to Chapter 2 of this thesis, conceiving of information as a commodity is associated with a whole host of assumptions. For example, it is a potential consequence

of Reddy's (1993) *conduit metaphor* in which meaning is contained in words that we can then sell since in this view communication works through the physical transfer of thoughts and feelings. This conception of information as an object is misleading since it undermines our skills in sense-making (Giddens, 1979).

Similarly, Schön (1963, p. 125) discusses the use of tools as displacements to theories of deciding, for example, 'building a theory' and using reason as 'an instrument' in achieving our ends. He explains also that this conception of decision making is not isolated; rather, it is associated with several assumptions. These are discussed below.

#### ***9.5.1 Assumption 1: A tool is used to do something that has been anticipated***

Schön (1963, p. 125) explains that we use a hammer because we want to drive a nail. Likewise, if we see decision making in terms of tools, this becomes a matter of manipulating instruments to achieve an anticipated goal. This was suggested in the previous section with regard to MVM's weighing up of socio-technical alternatives. Consequently, 'all problems become a species of technical problem' (Schön, 1963, p. 125). We try to remove conflict or attain agreement because our goal is not in doubt as was suggested in Chapters 7-8 of this thesis by the way MVM focuses on resolving differences between perspectives. Schön (1963, p. 126) explains that,

in this way we never ask what to do but only how to do it.

This is similar to Checkland's (1981, p. 139) criticism of the way engineers focus on the 'how' since the 'what' has already been decided. Likewise, Schön (1963, p. 126) argues that this way of deciding leaves out possibilities for the unexpected; as such,

it makes deciding closed - rather than open-minded.

Using MVM's perspectives as tools therefore has the potential effect of undermining the authors' preferred reading that the methodology is unique in each situation since tools are used to do something that has been anticipated (Avison and Wood-Harper, 1990, p. 12).

For a critique of Avison et al.'s (1992) proposal of an integrated tool kit for developing rich pictures, readers are referred to Kreher (1993). He argues, for instance, that a 'clean-cut and tidy' rich picture made by a tool kit might mislead users into believing that the problem situation was not as messy as was originally perceived (Kreher, 1993, p. 307). Moreover, default screens might constrain creativity since "the tool kit has already 'thought' for them" or because users become "intimidated by some 'standard.'" Kreher, 1993, p. 308) also discusses the way decomposing and merging different rich pictures carries a danger that different viewpoints contributing to the situation will become 'diluted.'

#### ***9.5.2 Assumption 2: A tool changes things but is not changed in the process***

Schön (1963) also explains how tools are privileged objects. When metaphors of tools underlie theories of deciding, authors tend to regard beliefs or actors themselves as privileged. The tool is a way of maintaining distance, and deciding becomes a process in which agents manipulate aspects of themselves, e.g., their roles in situations using the logic of human activity systems. However, Schön, (1963, p. 127) argues that we cannot casually 'adjust our beliefs' if we are intimately involved with them:

To talk of 'our' changing 'them' would be inappropriate. The change would be better described as a change in us.

Evidence for this was suggested in Chapter 7 of this thesis with regard to Checkland and Scholes' (1990, p. 67) discussion of 'change in perceptions' that occur 'in the heads' of SSM users while undertaking an intervention.

Schön (1963, p. 128) continues that tool metaphors carry with them assumptions that include the following:

1. Deliberate action is an active process; actions are things done rather than things that happen; deciding is something done rather than something that happens, e.g., it is purposeful action.
2. Actions are goal-directed insofar as they are done to some end, and the process occurs with a discrete beginning middle, and an end.
3. In deliberate action we undertake a goal-directed process and it works out from beginning to end.

When deciding is seen this way, agents are set off against materials that are manipulated, e.g., rules, concepts, metaphors, alternatives, socio-technical resources.

However, Schön (1963, p. 129) argues that these assumptions are questionable since deliberation need not be seen as an exclusively active process. For example, surprises and changes often arise only through happenings in which we feel at least momentarily passive. When we see deciding as a displaced theory of deliberate action we try to eliminate unexpected novelty or change which suppresses the second aspect of meaning as specific instance discussed in Chapter 4 of this thesis.

This is a potential implication of MVM insofar as limiting choice within a single methodology may reduce possibilities for unexpected novelty. This is suggested, for example, in the way the authors consider MVM a more ‘complete solution’ and an ‘alternative to choosing between different methodologies’ (Avison and Wood-Harper, 1990, p. 3, p. 13). Moreover, this way of conceiving of MVM’s five perspectives as tools has the potential effect of undermining action research since as Schön (1963) argues, tools are *not* changed through use. Language, however, does change through use, and perhaps this is why Checkland (1981, p. 99) suggests that we need ‘a basic *language of systems ideas*’ (his emphasis). However, he may also have unwittingly ‘smuggled in’ the view that language is something we can step out of and manipulate like a tool insofar as he continues to describe this language as ‘meta-disciplinary.’

Ulrich’s (1981, 1983) research may go some way towards addressing this insofar as he calls for a reorientation from ‘systems science’ to ‘systems rationality’ that gives up claims of comprehensiveness and faces up to an incomplete understanding.

This section criticised the conception of MVM’s perspectives as tools because

- it potentially treats language instrumentally,
- may reduce possibilities for unexpected novelty, and
- could undermine action research.



## 9.6 Summary and Conclusion

This chapter has critiqued three metaphors in MVM. The metaphor of progress was criticised for ‘smuggling in’ a journey metaphor that marks progress with linear development even though means and ends are problematic in information systems development, a tendency to suppress the second aspect of meaning as a specific instance in favour of harmonising a single view, and an unwitting acceptance of potentially repressive power relations.

The metaphor of a balance scale in decision making was likewise criticised for a means/ends problem solving focus. Additionally, it potentially undermines the notion of active user participation. Treating MVM’s perspectives as tools was criticised for treating language instrumentally, reducing possibilities for unexpected novelty, and undermining changes to theory and practice through action research. The next chapter relates the analysis set out in Chapters 7-9 of this thesis on MVM to the theory and practice of methodologies in general.

# 10.

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## **INTERPRETING METHODOLOGY UNDER ERASURE -- BETWEEN THEORY AND PRACTICE**

### 10.1 Introduction

The previous chapter argued that metaphors influence how information systems development is enacted. This focused on a critique of three metaphors in MVM as follows: the metaphor of progress in information systems development, the balance scale metaphor in decision making, and the metaphor of MVM's five perspectives as tools.

This chapter considers implications for the relationship between theory and practice of methodologies in general in light of the argument developed in previous chapters. The chapter is structured as follows:

- what it means to interpret methodology under erasure,

- a dichotomy between using and describing methodology in use,
- methodology in use as a hermeneutic process, and
- a main outcome -- methodology in use works as metaphor.

## 10.2 What it Means to Interpret Methodology Under Erasure

So far it has been argued that the various critical positions set out in Chapter 3 of this thesis share a similar conception of meaning as general structure and specific instance. This also considered how in drawing on the resources of a tradition that is criticised, we tend to reiterate some of its limitations. This was described as the Trojan horse phenomenon. A main implication of this is that in working critically with a tradition, we conduct interventions tentatively, under erasure.

To return to the discussion of two uses of the concept, *system*, raised in Chapter 3 of this thesis, Checkland and Scholes (1990, pp. 21-23) implicitly write under erasure when they explain how their use of the concept as a 'possibly plausible description' of reality differs from a second use of the concept that confuses it with reality itself. Checkland and Scholes' (1990) use characterises soft methodologies, while the latter characterises hard methodologies. In addressing this, Checkland and Scholes (1990) explain that Koestler's (1967, 1978) concept, *holon*, would help to clarify the distinction between these traditions of thought. Nonetheless, they do not entirely abandon the hard concept of system. Instead, it is restored in our subsequent understanding of its relation to soft methodologies. Checkland and Scholes' (1990) example indicates what is entailed in

criticising a tradition. We do not suddenly abandon a tradition because we use some of its language and assumptions in making a case against it.

This approach to inquiry derives from Heidegger (1958, pp. 80-81, 82-83), who often crossed through the word, Being, making it, ~~Being~~ (cited in Spivak, 1977, p. xv). Drawing on Heidegger's work, Derrida (1977a) also uses this to describe poststructuralist methods of deconstruction. In writing under erasure a term is used, crossed through, then both word and deletion are printed. This recognises that the term is inadequate, so we cross it out, but because it is necessary, the term remains legible.

In this chapter's title, the concepts, *theory* and practice, have been written as, ~~theory~~ and ~~practice~~ to suggest the potential inadequacy of these inherited terms. I hope readers will pause to reflect on this, especially insofar as these two terms may reinforce as well as break an inherited division between thinkers and doers. To avoid creating a stylistic irritation, such terms are not explicitly crossed through in the rest of this chapter, yet in reading what follows, please bear in mind how criticism requires us to conduct inquiry in this way, tentatively, under erasure.

This section described what is meant by interpreting methodology under erasure. In researching the final area of investigation set out in Chapter 2 of this thesis, the next section considers the relationship between a methodology's theory and practice.

## 10.3 A Dichotomy Between Using and Describing Methodology in Use

This section considers how the tradition we have inherited affects inquiry. Specifically, it considers why we speak of a gap between theory and practice. As described in Chapter 6 of this thesis, binary pairings such as theory and practice are not neutral. Rather, they often imply a hierarchy wherein one term (usually the first) is given priority over the second. Evidence for this was given by Schön's (1983, p. 24) explanation of how the relationship between theory and practice has been traditionally hierarchical, with the 'general principles' propounded by theory being more highly valued than 'concrete problem solving.'

To investigate this gap from a deconstructive perspective, the ordering of theory and practice is reversed to reflect a perspective that is learning to think in terms of *practice* and theory. From this basis, it is argued that the gap names a dichotomy between using and describing methodology in use. Implications of this for a methodology's meaning are then discussed first in terms of experience and description, and second in terms of context bound meaning and boundless contexts.

### ***10.3.1 Meaning is between experience and its description***

The gap between practice and theory suggests that a methodology's meaning is divided between at least two sources:

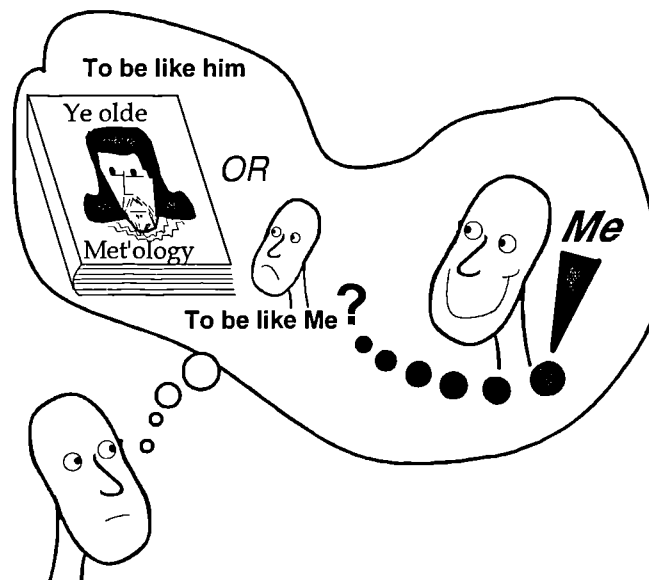
1. it is a practitioner's experience of using a methodology, and
2. it is a constitutive property of a methodology.

This is supported by Mingers (1984, p. 85) insofar as he explains that even subjectivist methodologies such as SSM are 'not in themselves sufficient for guiding social intervention' (my emphasis). Also, consider the following quotation:

If a reader tells the author 'I have used your methodology and it works', the author will have to reply 'How do you know that better results might not have been obtained by an ad hoc approach?' If the assertion is: 'The methodology does not work', the author can reply, ungraciously but with logic, 'How do you know that the poor results were not due simply to your incompetence in using the methodology?'

(Checkland, 1972, p. 114, also quoted in Checkland and Scholes, 1990, p. 299)

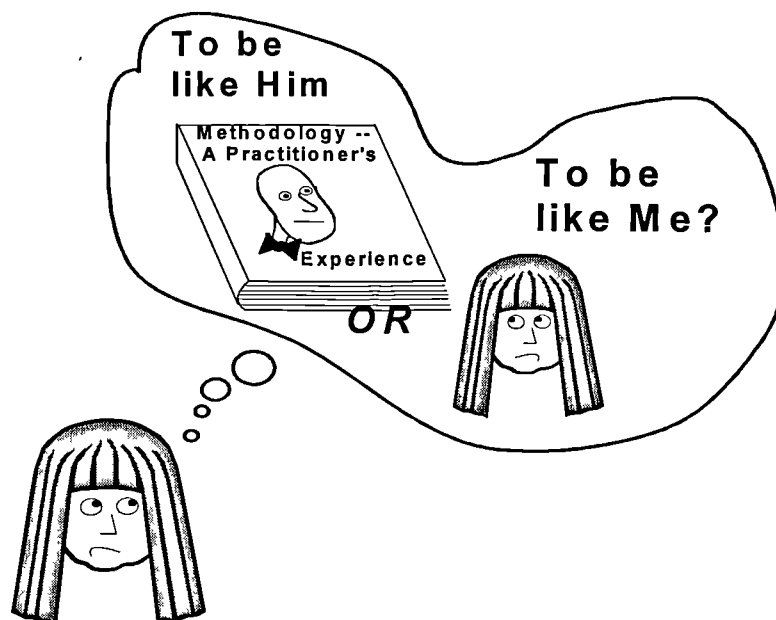
We might hesitate here. Because information systems is a practical discipline, it is tempting to disagree with the above quotation. In returning to Schön (1983, 1987), for example, we might recall his criticism of how theoretical knowledge has dominated research, but that a practitioner's experience resides in 'knowing-in-action.' From this basis it might seem appropriate to side against theory and against the authors, saying that a *practitioner's experience* is the meaning of a methodology. This critical response to Checkland and Scholes (1990, p. 299) is shown in the figure below:



**Figure 10.1. It is tempting to decide that the practitioner's experience is the methodology's meaning.**

However, conducting inquiry tentatively, under erasure, suggests that before dismissing theory, we need to consider more closely what happens in choosing to make the methodology's meaning our own practical experience. Specifically, we need to address the following question: *can we go beyond the dichotomy between using and describing methodology in use by choosing our own practical experience of knowing-in-action?*

For a time this may seem to be an adequate solution. Yet when we tell others about our experiences of 'knowing-in-action' we may unwittingly reiterate Checkland and Scholes' (1990) limitation, this time from our own practical point of view. Like them, if we choose to focus on our own experience of using a methodology, resulting descriptions present other practitioners with a situation not of immediate understanding, but of deferral. There is once more a gap between experience and its description. This is shown in the figure below:



**Figure 10.2 -- One practitioner's experience presents another practitioner with a situation of deferral.**

We might begin to address this by surrounding descriptions of our experience with additional criteria for interpreting a methodology's meaning. For example, we may describe criteria for choosing between methodologies (e.g., Banathy, 1987, Flood and Jackson, 1991a, and Jackson and Keys, 1991). Like Checkland and Scholes (1990), we might even establish a set of Constitutive Rules for conducting debates about using a single methodology. But this does not fundamentally alter our predicament. Here too our descriptions leave other practitioners in a situation of having to interpret our criteria or our Constitutive Rules.

With this in mind, perhaps the gap *between* practice and theory might be more critically described as a special case of a more extensive gap already admitted *within* practice itself. This gap emerges because here also our experience has

- already happened, yet
- it remains to be described.

Checkland and Scholes (1990) make this explicit in their outline of the process of SSM. Each intervention begins with a *history*, an experience that has already happened, yet remains to be described in how we define a problem situation. Moreover, this pattern of experience and its description is reiterated as the would-be improver of the problem situation extends this description to include experiences of culture and tasks and issues in terms of relevant systems and models.

To continue this example, if we structure practical experience of using a methodology specifically through its Constitutive Rules as in the case of SSM, or more generally through case studies as in MVM, we indicate that methodology structures our



experiences through descriptions. These continue to inform theory, for instance, through debates about methodology in use. But again, notice how even in each intervention practical experience is checked successively through description. Indeed, these have become highly specialised and are often how we distinguish stages in a methodology one from the other.

To return to Kuhn (1970), such descriptions are conceived of as models, and in information systems development, these reflect a group's commitments, which may vary from heuristic to ontological. So, for instance, staging debate about change using SSM or MVM is initiated when we compare heuristic systems models with *real* situations (Checkland and Scholes, 1990, p. 52; Avison and Wood-Harper, 1990, p. 65). Eventually our practical experience may result in a *real* model, a technical artefact or formal information system, but this is also a highly specialised description, written in a language designed specifically for computers, e.g., COBOL, PASCAL, C++.

Furthermore, if we continue to describe this information system in use, we reiterate our predicament with describing methodology in use. For example, in criticising information richness theory, Lee (1994, p. 144), considers how information 'richness' or 'leanness' is not an inherent property of electronic mail (e-mail). Instead, the meaning of an e-mail message emerges through the interaction of it as a communications medium with its organisational context. As with methodology, the meaning of using an information system is both a user's experience, and a constitutive property of the information system. Checkland and Scholes (1990, p. 299) similarly emphasise that instead of having one source to choose from, a methodology's meaning is always somewhere between experience *and* its description:

the inseparability of the methodology from the use made of it by a particular user in a particular context will always mean that SSM itself, as a description on paper according to the new Constitutive Rules, will forever remain undecidable.

This predicament of describing methodology in use can be summarised as follows: our practical experience may be an indispensable point of reference, but it is never simply there, never simply something we can take as given (Culler, 1983, p. 63). Rather, the meaning of our experience is interpreted even in practice through the descriptions we make in enacting an intervention. Below, it is argued that that this is symptomatic of a more general situation concerning meaning and context.

### ***10.3.2 Meaning is context bound, but contexts are boundless***

Our predicament in describing methodology in use arises because meaning emerges in context (Lyytinen, 1987; Jackson and Keys, 1991). However, we do not simply escape this situation by describing all the ways that a methodology's meaning varies with context. To return to Chapter 4 of this thesis, this would be a tendency for the first aspect of meaning as general structure to suppress the second aspect of meaning as specific instance. That is, if we really conceive of meaning also as a specific instance, as something that emerges in each context of use, then by definition, we cannot describe all features of all contexts. Culler (1983, p. 123) explains this as follows:

Meaning is context bound, but contexts are boundless.

So even if we admit choice within or between methodologies by recognising that meaning is context bound, contexts continue to elude us. They remain boundless in at least two senses:

1. Any known context remains open to further description since there is potentially no limit as to what may eventually be relevant.
2. Context is unmasterable insofar as attempts to codify it can be reintroduced onto the contexts it sought to describe; this creates new contexts that exceed our prior explanations (Culler, 1983, p. 125).

Examples of the first sense of boundless context are scientific discoveries in which previously neglected factors become relevant to describing the behaviour of objects such as the existence of ether. In the second sense, Wittgenstein's (1969) example of *not* being able to take 'bububu' to mean 'if it does not rain I shall go out for a walk' paradoxically results in a connection making it possible to do just that (Culler, 1983, p. 124).

In information systems development, the emerging significance of social factors might offer a similar example of the first sense of boundless contexts. In Chapter 7 of this thesis, we saw an example of Culler's second sense of boundless context in Lyytinen's (1987) taxonomic perspective. By claiming that we *cannot* compare socio-technical with technical methodologies, Lyytinen (1987) paradoxically creates a new context making it possible to compare the two types. Moreover, the comparison occurs even *within* one of the types insofar as social and technical are *already* entailed in socio-technical methodologies.

As such, Lyytinen's (1987) example suggests how the creative potential of language can exceed our expectations as well as our conscious control. Even authors may therefore apply a methodology, sometimes unwittingly, in relation to new contexts, to new

situations that they may not have anticipated. But this is not simply a limitation to be avoided. If we consider the consequences of this analysis so far, it is something to be expected if meaning is context bound but contexts are boundless. To consolidate implications from the above argument, in addressing context we find ourselves reading, writing, and acting under erasure since possibilities may remain for the emergence of something new (Watson and Wood-Harper, 1995b).

This section considered the dichotomy of using and describing methodology in use. In relation to meaning's two meanings, it was argued that a methodology's meaning is both a constitutive property of methodology and a practitioner's experience. It was further argued that meaning is context bound, but contexts are boundless in at least two senses.

The next section draws on Ricoeur's (1991a) theory of text as work to describe methodology in use as a hermeneutic process.

#### 10.4 Methodology in Use as a Hermeneutic Process

Drawing on Boland's (1991) research concerning information systems use as a hermeneutic process, the term 'text' is used in a general sense to describe any symbol system that we might want to interpret. In considering how methodology works in practice as a hermeneutic process, the argument draws on the poststructuralist philosopher, Paul Ricoeur (1991a), for the following reasons:

1. Hermeneutics applies not only to texts but to situations and actions as well.

2. Texts are incomplete descriptions since they lack meaning in context; consequently in interpreting them we do not try to uncover an author's originally intended meaning, but instead consider how methodology may be interpreted in our present situation.<sup>1</sup>

While Ricoeur (1991a) extends his theory to actions, in this chapter, discussion is confined mostly to texts since methodologies are objectified as texts, and they describe many things, including actions.

The main point is not to offer Ricoeur (1991a) as the answer to all our difficulties in grappling with meaning's two meanings. Rather, it is argued that his view of texts can make an important contribution to methodology insofar as discourse is no longer limited to a category of writing. Rather, it extends to a category of work and hence of practice.

In this view, constructing a discourse is a form of labour:

To impose a form upon material, to submit production to genres, to produce an individual: these are so many ways of treating language as a material to be worked upon and formed

(Ricoeur, 1981, p. 136).

This view is likewise supported by a tradition of reflective practice. Schön (1983, p. 40), for example, writes,

In real-world practice, problems do not present themselves to practitioners as givens. They must be constructed from the materials of problematic situations which are puzzling, troubling, and uncertain. In order to convert a problematic situation to a problem, a practitioner must do a certain kind of work.

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<sup>1</sup> Ricoeur's (1991a) view is a further example of how poststructuralist approaches do not intend to uncover author's meaning; instead, they focus on conceptual implications as was discussed in Chapter 6 of this thesis.

This approach towards language as a material to be worked upon and formed is even reiterated in the naming of our own discipline: in-formation systems. Vickers (1968, p. 162), for instance, explains that information means what it says: it gives form. As explained in Chapter 2 of this thesis, Boland (1987) conceives of information as an ‘inward-forming,’ a change that arises within us from working with data. Additionally, we use the concept of ‘form’ to distinguish between formal and informal systems.

To continue the example from the previous section, methodology may help to shape a technical form, and this is then worked by subsequent users to help them do their jobs individually and collectively in an organisation. Markus (1991), for example, explains how managers use e-mail to make ‘mosaic messages.’ Using the FORWARD command, individuals learned to send copies of their files appended with their own comments, which were further appended with comments by various recipients. This resulted in a collective file expressing not a single, but several points of view (cited in Lee, 1994, p. 155).

Discourse as work thus arises through forms that structure what we do, and these result in descriptions and actions that structure how we understand our experience. In relating this to methodology, both soft and hard traditions use diagramming techniques such as rich pictures, conceptual models, entity-relationship diagrams, and dataflow diagrams to structure and mediate understanding between those engaged in an intervention.

Resulting formal information systems are structures, *interfaces*, that mediate between users’ present and past situations through an exchange of further structures, *inputs and*

*outputs*. More generally, practice is related back to theory through case studies that further mediate between the methodology and a user's subsequent understanding.

This is described below in terms of Ricoeur's (1991a) dialectic of distanciation and appropriation.

#### ***10.4.1 Distanciation and appropriation -- methodology contextualised, decontextualised, recontextualised***

As argued so far, a methodology's meaning is context bound, and our experiences of using a methodology are described through texts. Insofar as texts are structures, they become objectified and decontextualised from an author's experience. They thus have a tendency to suppress the second aspect of meaning as a specific instance. However, this tendency does not mark the end of interpretation. As with Markus' (1991) 'mosaic messages,' because contexts are boundless, we can re-write a methodology to make it meaningful in our current situation.

Ricoeur (1991a) describes subsequent interpretation of works through a dialectic of distanciation and appropriation, which may help to describe both how methodology and resulting information systems are interpreted. Meyers (1993, 1994), for example, discusses information systems failure using Ricoeur's (1991a) dialectics; this suggests a potentially more productive way of considering theory and practice: perhaps we should speak not of the gap separating theory and practice, but of the dialectic that engages them (Wood-Harper and Watson, 1993). This is considered specifically in relation to methodology below.

The first term, *distanciation*, refers to the sense that we belong to traditions through a relation of distance. A more concrete way of thinking about *distanciation* is through the figure of an articulated limb. This represents not an absolute severing, but a point of intersection that both separates and connects opposing forces or tendencies (Johnson, 1993, pp. 126-132). As such, *distanciation* describes our position of moving between what is far and near and what is alien and what is kindred (Ricoeur, 1991a, p. 35). This might explain why Checkland's research (1981, p. 245) initially began in modifying hard methodologies when they failed in situations that were soft and ill-structured. It might also explain MVM's combination of hard and soft perspectives on information systems development. When we interpret a tradition, we recognise a degree of likeness in spite of a difference that arises through *distanciation* (Ricoeur, 1991a, pp. 76-85).

In returning to descriptions, *distanciation* refers to how they become autonomous in at least three ways:

- with respect to an author's intentions,
- the cultural conditions of a text's production, and
- the audience for whom the description was originally intended.

(Ricoeur, 1991a, p. 298)

*Distanciation* might therefore account for the gap, for the distance we recognise between theory and practice. Building this into the above argument, *distanciation* refers to the way that producing a text describing methodology in use objectifies and thereby



decontextualises it from any single concrete meaning. It is therefore representative of the first aspect of meaning as general structure.

Distanciation sets conditions for how subsequent users may appropriate meaning, thereby recontextualising methodology in new situations. Appropriation describes the processes through which users make the methodology their own, not by trying to copy what the author originally thought, but by trying to consider potential meanings in the present situation (Ricoeur, 1991a, p. 87). In this analysis, we potentially avoid one of hermeneutics' greatest pitfalls: psychologising with the author (Moore, 1990, p. 95).

Ricoeur (1991a) argues that interpretation proceeds through a dialectic consisting of two movements. In the first, meaning surpasses the event of saying as well as the speaker's intentions. Because a methodology's meaning may be interpreted as something other than what was initially intended, the problem of the right understanding is not solved simply by returning to the author's alleged intentions (Ricoeur, 1981, p. 211; Thompson, 1981, p. 53; Moore, 1990, p. 95). In practice, therefore, authors lose control over how their methodologies are interpreted (Atkinson, 1986; Jackson, 1989; Watson and Wood-Harper, 1993). For example, in recent debates over Beer's (1985) Viable System Model (VSM) there is nothing to prevent its use in authoritarian *or* democratic ways (Ulrich, 1981; Jackson, 1989, p.429). As such, the concept of practice may be understood as a potential disruption to authors' preferred readings.

However, while a methodology can be understood in more than one way, this does not mean that all interpretations are equally valid. Rather, as with Checkland's SSM, it is possible to argue for or against an interpretation not through empirical verification or

appeal to facts, but through debate (Ricoeur, 1991a; Schön, 1993). Consequently, as suggested by the Trojan horse phenomenon, it becomes important to recognise that when we make a case against a position, we use some of its language and assumptions, so we may end up reiterating some of the limitations we criticise in others (MacCormac, 1985, Watson, 1995a).<sup>2</sup>

In returning to Ricoeur's (1991a) dialectic, the second movement addresses the following situation: a methodology's meaning surpasses the audience for whom it was originally intended as well as the situations that gave rise to its initial formulation. This becomes explicit insofar as we commonly speak of our work as 'having to put theory into practice.' This situation suggests two attitudes towards the methodology:

1. We may take a structuralist view and consider the methodology as a closed stabilised system.
2. We may take a poststructuralist view in which meaning potentially exceeds a given form or description.

Jackson and Keys (1987), for example, describe the structuralist orientation of many information systems development methodologies. Additionally, in criticising VSM, Jackson (1989, p. 433) cites Ulrich's (1981) distinction between syntactic and semantic-pragmatic levels of communication. Again, we return to this concept of 'form.' The syntactic level is only concerned with whether or not a message is well-formed in the sense that it can be read, while the semantic-pragmatic level is concerned with meaning.

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<sup>2</sup> In the next section, this will be explained further in terms of metaphorical entailments.

This returns to Checkland's (1981) criticism of the way communications engineers have traditionally focused on the structure of signals instead of their meaning, thereby failing to distinguish between changing socks and pressing nuclear buttons. These criticisms suggest that meaning is *not* an inherent property of an information system or of a methodology. Consequently, it is more appropriate to take a poststructuralist view if we consider information as meaning.

In this view we consider how a description of methodology might apply to our present situation. A methodology's texts do, after all, refer to real world interventions, situations in which it is actually quite important to distinguish between socks and nuclear buttons. This strategy of depth hermeneutics emphasises how our understanding is *not* identified with something felt in common with a methodology's author. Instead, it is linked with how we experience and describe the context presented by each situation. For example, this attitude towards the text results in an understanding structured by descriptions such as conceptual models.

This is discussed below in terms of self-reflection mediated through working descriptions.

#### ***10.4.2 Self-reflection mediated through working descriptions***

Thompson (1981, pp. 54-6), one of Ricoeur's translators, explains how the above theory of interpretation has two implications for self-reflection:

1. As in psychoanalysis, the subject is displaced. As Mingers (1984, pp. 97-8) explains, authors are often unconscious of their intentions which may be additionally distorted or even pathological. In Ricoeur's (1991a) analysis, an author's subjective intentions

are subordinated by a text's potential meaning. This was argued earlier in terms of a methodology's meaning being both a practitioner's experience and a constitutive property of the methodology.

2. By removing the author as the centre of meaning, a way is prepared for reintroducing subjectivity. However, this time it plays a more modest role since self-reflection is mediated through our traditions of working descriptions.

Initially, for example, our understanding of a situation may be mediated by how we define 'terms of reference' intersubjectively with a client, or more dramatically, we begin an intervention by creating a 'universe of discourse.' Then at each stage of analysis and design, our reflections are further mediated through an assortment of diagramming techniques and technical prototypes. Texts are thus written, rubbed out, and re-written as we recontextualise a methodology's meaning in relation to our self-reflection in a situation.

This structure of self-reflection is also reiterated generally in action research. Here self-reflection is mediated insofar as each case description is structured through the methodology. Action research also means that where we draw the boundary between a methodology's theory and practice is itself open to interpretation. This is addressed by Checkland and Scholes (1990) and by Avison and Wood-Harper (1990) in moving from a linear to a flexible model, and it is developed further by Checkland and Scholes (1990) in discussing variances of SSM between Modes 1 and 2.

To return to Chapter 2 of this thesis, SSM's authors explain that their methodology may be understood in relation to their experiences of failure with hard systems engineering

methodologies. Checkland and Scholes (1990, p. 25) suggest that what was initially treated as a difference between hard and soft turns out to be a variation *within* soft methodologies: they explain that SSM ‘subsumes the hard approach, which is a special case of it, one arising when there is local agreement on some system to be engineered.’ This might also explain the criticism raised in Chapter 7 of this thesis concerning MVM’s displacement of the problem of choosing *between* to choosing *within* methodologies. In such methodologies variation becomes even more pronounced. This type of structure also occurs, for example, in Jackson and Keys’ (1991) system of systems methodologies and in Flood and Jackson’s (1991b) Total Systems Intervention (TSI).

These developments may be examples of poststructuralist approaches to meaning insofar as a methodology’s identity is not homogenous since its theory reflects traces of other methodologies. This occurs also in SSM, as evidenced by the following quotation:

...Sophia Martin found the metaphor to describe it (i.e., learning in the finding out phase of SSM), one which in the authors’ experience applies to all such phases, when she said that we were ‘allowing knowledge to be built up in the manner of a palimpsest’, knowing that as we erase and write the new on top of the old knowledge, something of the old knowledge is retained.

(Checkland and Scholes, 1990, p. 103, my emphasis)

Implications of this argument are consolidated into a single statement as follows:

*differences between methodologies may be special cases of differences in meaning that are already admitted within each methodology even in practice between experience and its description.*

This section considered methodology in use as a hermeneutic process drawing on Ricoeur's (1991a) dialectic of distanciation and appropriation. An outcome of this analysis for methodology in use is described below.

### 10.5 Main Outcome: Methodology in Use Works as Metaphor

An outcome of the above analysis is that methodology in use works as metaphor. As was discussed in the previous chapter, we think metaphorically when we try to understand one aspect of experience in terms of another (Lakoff and Johnson, 1980). Schön (1963, p. ix) refers to this process of metaphor as the 'displacement of concepts' through which we bring our understanding of the familiar to bear on the unfamiliar to develop new concepts, 'while at the same time retaining as much as possible of the past.' This was suggested above in considering the relationship between a methodology's theory and practice with reference, for example to the way Checkland (1981) developed SSM through his experience of failures of hard systems engineering methodologies.

To return to distanciation, we recognise that our situation is both different from and similar to previous experience. Additionally, appropriating meaning in new contexts, suggests how methodology works as metaphor even in practice because meaning is further divided between experience and its description (Watson and Wood-Harper, 1994b).

The difference between a methodology's theory and practice also suggests the partial nature of metaphorical structuring. As Lakoff and Johnson (1980, p. 13) explain,

if it were total, one concept would actually *be* the other, not merely be understood in terms of it.'

(their emphasis)

This is seen in individual metaphors insofar as they simultaneously highlight and hide aspects of a situation. This was discussed in the previous chapter when critiquing MVM's use of metaphors. Flood and Jackson (1991b, p. 51) also discuss this, for example, in describing a range of systems metaphors in the creativity phase of TSI.

The explicit use of metaphors in methodology also indicates how truth is relative to conceptual systems that are at least partially defined by metaphors. As indicated by Flood and Jackson's (1991b) example, the partial structuring of metaphor suggests that we need several metaphors because a single metaphor is so often inadequate. A consequence of such research suggests the need for pluralistic approaches to methodology.

Another consequence of metaphor's partial structuring is that a methodology's meaning is not defined entirely in terms of a set of inherent properties as prescriptive methodologies imply. This is reflected in the above analysis of context bound meaning and boundless contexts. As such, this research supports Lakoff and Johnson's (1980, pp. 119-122) argument concerning interactional properties of metaphor.

In this view, the concepts that we use to define our experience emerge from our interactions with one another and with the world. This leads to a prototypical understanding of a methodology's concepts based on what we compare through family resemblance rather than a 'fixed core' of properties (Wittgenstein, 1974; Lakoff and Johnson, 1980, p. 123; Ricoeur, 1991b). This notion of prototypical categories may help to explain variations within individual traditions such as SSM's two modes. It may also explain MVM's three paths (Bell and Wood-Harper, 1992).

Lakoff and Johnson's (1980) notion of metaphorical entailments might also account for composite structures such as MVM and TSI. A metaphor's entailments refer to the associated network of concepts and images that a metaphor conjures up. As suggested by the notion of a prototypical category, entailments of different metaphors can sometimes overlap. In returning to the definition of methodology set out in Chapter 2 of this thesis, shared entailments result in a *coherence* among different metaphors that allows them to 'fit together' even when they may not be entirely consistent with respect to there not being a 'single image' that completely unites the different metaphors.<sup>3</sup> This understanding of prototypical categories and family resemblance may go some way towards addressing Kumar and Welke's (1992) criticism of MVM being a 'grab bag.'

That is, if we turn to Kendall and Kendall's (1993) classification of metaphors in methodology, we see that the boundaries between metaphors in methodology overlap in this way. For example, they identify Mumford's (1983) ETHICS with a family metaphor, and they identify MVM with a society metaphor. However, there is a shared entailment between the two images. This helps us to perceive an additional coherence -- that families are parts of societies.

In this respect, we may want to criticise such metaphors for being inconsistent. Yet, Lakoff and Johnson (1980, p. 221) explain that there is a 'good reason' for conceptual systems having inconsistent metaphors for single concepts. This reflects the inadequacy of a single metaphor to account entirely for the complexity of a situation. To work only

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<sup>3</sup> Mingers' (1993) notion of intersubjectivity as a similarity in cognitive structures might also be understood in light of a network of metaphorical entailments that help individual subjects perceive resemblances between different points of view.



with a single consistent set of metaphors may mean that we hide aspects of reality.<sup>4</sup> For example, while methodologies may help to structure understanding in complex and changing situations, one disadvantage is that they can become so effective at structuring inquiry that we subsequently mistake them for reality. When this happens, modelling activities are in danger of becoming unreflective formulae for response, and this can lead to a passion for fine-tuning existing theory that atrophies our critical abilities to respond to present situations (Watson et al., 1993).

West and Travis (1991, p. 67), discuss this phenomena by combining the terms metaphor and paradigm to make a new word, 'paraphor.' This denotes a metaphor whose use is so common that it becomes a 'first principle' for any form of theory expansion. As such, its metaphoric nature is ignored unless an explicit challenge is made to its literal status. The concept, *system*, may be an example of a paraphor in our discipline, and Checkland and Scholes (1990, p. 22) question its literal status as follows:

Choosing to think about the world as if it were a system can be very helpful. But this is a very different stance from arguing that the world is a system, a position which pretends to knowledge that no human being can have.

(their emphasis)

Such examples indicate that having inconsistent metaphors for single concepts may not just result in a 'grab bag' methodology. Sometimes, it may help us to reflect on the complexity of a situation.

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<sup>4</sup> This might be a potential implication of Lewis' (1994) interpretive data analysis insofar as he emphasises a consistency in each model.

## 10.6 Summary and Conclusion

This chapter argued that in working critically with a tradition, we interpret methodology under erasure insofar as we recognise the inadequacy of existing concepts and activities, yet we continue to draw on them to develop new approaches. From this basis, the relationship between practice and theory was investigated in terms of a dichotomy between using and describing a methodology in use. Ricoeur's (1991a) view of text as work was then discussed in considering how using methodology is a hermeneutic process. The main outcome of this analysis was that methodology in use works as metaphor.

The next chapter sets out reflections on this research by adopting Checkland's (1991) model concerning a framework of ideas (F) and a research approach (RA) to investigate an area of application (A).

# 11.

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## REFLECTIONS ON THIS RESEARCH

### 11.1 Introduction

This thesis was structured in two parts. *Part I: A Theoretical Matrix of Critical Themes* considered an area of concern of information as meaning and its implications for information systems development methodologies. Drawing on Boland (1987), information was conceived of as a process of inward-forming that occurs as we interact with data. Since processes of inward-forming are not readily observable, traditionally hard methodologies may have avoided a conception of information as meaning by assuming that information is structured data. In criticising this tradition, soft methodologies consider information as data plus the meaning people attribute to it (Checkland, 1981).

In learning how to work critically with a tradition of methodology, Multiview Methodology (MVM) was the area of application since it combines a range of other already established hard and soft methodologies. The aim of this thesis was to contribute something towards research traditions of methodology interested in building theories that address a conception of information as meaning. As such, the thesis focused on a range of critical themes associated with linking hard and soft methodologies. An organising framework of meaning's two meanings as both a general structure and a specific instance was set out to make sense of the various critical positions. The outcome of this was a conception of a paradigm as network in which methodologies were considered as a disciplinary matrix of loosely connected concepts working with the tension associated with meaning's two meanings.

Two traditions of research approaches in information systems were then considered: those deriving from the natural sciences and those deriving from the humanities. Criticisms of approaches derived from the natural sciences were set out, and the need for humanistic approaches was discussed. Tensions associated with traditions of research were then related to meaning's two meanings. Galliers' (1991a) taxonomy for choosing an appropriate approach in relation to the research topic was used to structure definition of a descriptive/interpretive research approach based on a poststructuralist textual analysis. This approach was justified due to its potential suitability for an apprentice researcher to learn how to reflect on a methodology's cumulative tradition.

*Part II: Problems with a Critical Strategy in Practice* critiqued conceptual implications of MVM's theory. The outcome was a Trojan horse phenomenon, which refers to

tendencies to reiterate limitations criticised in others. Following this, case studies of MVM's studies were critiqued. The outcome was summarised in terms of the constraints associated with traditional print media insofar as these emphasise singular descriptions that are static and linear. This neglects the dynamic and iterative aspects of methodology in use as well as the ways people perceive the 'same' situation differently.

Following this, conceptual implications of three metaphors associated with MVM's synthesis of five views on information systems development were critiqued. These were the metaphor of progress in information systems development, the balance scale metaphor in decision making, and the metaphor of MVM's five perspectives as tools.

The previous chapter generalised the critique of MVM by discussing how in working critically with a tradition, we interpret methodology *under erasure*. That is, while recognising the inadequacy of existing concepts and activities, we continue to draw on these to develop new approaches. The main outcome of this analysis was that methodology in use works as metaphor. This refers to the displacement of concepts, the process through which we bring our experiences with the familiar to bear on the unfamiliar in a way that works to develop new concepts while still retaining aspects of our experience.

In reflecting on the research, this chapter is structured as follows:

- summary of four main outcomes of the research,
- reflections on a hermeneutic framework of ideas,
- reflections on a descriptive/interpretive research approach using a poststructuralist textual analysis, and

- reflections on information systems development methodologies.

## 11.2 Summary of Four Main Outcomes of the Research

Researching how to work critically with a tradition of methodology that is beginning to address a conception of information as meaning led to four outcomes:

1. a conception of paradigm as network,
2. the Trojan horse phenomenon,
3. constraints of traditional print media, and
4. methodology as metaphor.

### *11.2.1 A conception of paradigm as network*

This research suggests that methodologies represent a working body of *interleafing* concepts and activities. This blurs the boundaries between types of methodologies (e.g., social and technical) as well as individual methodologies (e.g., MVM's synthesis of five perspectives, SSM's Modes 1 and 2). Though we currently describe methodologies in terms of distinct paradigms, this outcome suggests that it may be more appropriate to conceive of methodology in terms of a paradigm as network. Evidence for this is suggested by Kuhn's (1970, p. 182) revision of his initial concept of paradigm to a disciplinary matrix; this still refers to the objects of a group's commitments to certain beliefs, but it avoids the notion that they are to be discussed as 'all one piece.' It also considers that commitments can take the form of models that vary from heuristic to ontological. This was discussed in Chapter 3 of this thesis in relation to explanations of the concept, *system*, as an epistemological and as an ontological device in soft and hard systems methodologies respectively.

In working critically with a tradition of methodology, this conception of a paradigm as a network of potentially interrelated concepts and activities may be especially appropriate for a discipline of information systems, if one takes seriously, for example, Vickers' (1968, p. 171) explanation of information as 'an *incomplete* concept.' In considering a conception of information as meaning, this was suggested in Chapter 4 of this thesis in terms of meaning's two meanings *both* as a general structure and as a specific instance. In the previous chapter, this was argued further in terms of context bound meaning and boundless contexts.

### ***11.2.2 The Trojan horse phenomenon***

The Trojan horse phenomenon describes what is entailed in making a critique. In working critically with a tradition, we depend on some of the language and assumptions of others, if only to contrast them with our own. Given this situation, even a critical perspective often 'smuggles in' contrary themes, and these potentially undermine the main position it asserts. Perhaps unwittingly, a critical perspective may therefore tend to reiterate some of the limitations it criticises in others.

This was evidenced, for example, in Chapter 7 of this thesis with regard to Lyytinen's (1987) taxonomic perspective. Insofar as he claims that socio-technical and technical methodologies cannot be compared, a counter theme emerges, that makes a comparison possible. Moreover, the comparison *already* exists in one of the categories Lyytinen (1987) is considering, i.e., socio-technical (Watson and Wood-Harper, 1994a). This was discussed further in relation to the second sense of boundless contexts in the previous chapter.

This suggests that differences between perspectives are often special cases of differences already admitted within perspectives. The Trojan horse phenomenon also suggests that individual methodologies are not 'pure' insofar as they entail wider contexts and other points of view with which they may or may not agree (Watson, 1995a). This was further specified in Chapter 9 of this thesis in terms of metaphorical entailments. These refer to the associated network of concepts and images that a metaphor conjures up; these result in prototypical categories of meaning through which different metaphors can often overlap (Lakoff and Johnson, 1980).

### *11.2.3 Constraints of traditional print media*

Traditional ways of describing methodologies do not reflect experiences of how they are used in practice. For instance, authors often present a methodology's theory, and then explain how practice doesn't work like a 'text book' example due to non-linear iterations that characterise such activities (e.g., Avison and Wood-Harper, 1990). Criticisms of the way methodologies are often described as a sequence of stages (e.g., Miles, 1988) might therefore be understood in light of constraints associated with traditional print media.

As discussed in Chapter 8 of this thesis, a linear argument forces authors to cut off apparently irrelevant contexts of a situation even though these may turn out to contribute towards meaning. The linearity of traditional print media also gives descriptions of methodology in use an illusory centre, i.e., a single omniscient narrator, whose force is intensified by such selection. However, in working critically with a



tradition of methodology, hypermedia was suggested insofar as it has potential for including different stakeholders' points of view.

Describing methodology in this media would allow one to return repeatedly to different contexts thereby revealing the richness of a methodology's potential implications (Landow, 1992, p. 81). This parallels Schön's (1993) explanation of how the Japanese film, *Rashomon*, stimulates reflection by presenting several different stories about the 'same' situation. While MVM may go some way in doing this through its inclusion of five different views on development, this is sometimes undermined by singular omniscient descriptions that proceed through the methodology's stages in a linear manner. Conversely, descriptions in hypermedia would *not* emphasise explanations of methodology in use in the traditional sense of an underlying unifying content, (e.g., a primary task model as in Checkland and Scholes, 1990). Rather, methodology would be described in ways that investigate a system of differences and oppositions in the *multiple* arguments stakeholders use to define their understandings of a situation.

#### ***11.2.4 Methodology as metaphor***

As was discussed in the previous chapter, methodology may be understood to work as metaphor. This refers to the way we try to understand one aspect of experience in terms of another (Lakoff and Johnson, 1980). This results in a 'displacement of concepts' through which we bring our understanding of the familiar to bear on the unfamiliar to develop new concepts that we understand in relation to our past experience (Schön, 1963, p. ix). This was argued in considering the relationship between a methodology's theory and practice with reference to Checkland's (1981) process of developing SSM.

That is, SSM derived through Checkland's (1981) reflection on his experience concerning the way traditional hard systems engineering methodologies could not cope in situations in which means and ends were themselves problematic.

In the previous chapter, the gap between theory and practice was further described as a special case of a division between experience and its description that *also* characterises practical activities. This supports Polanyi's (1962) view that language and action are *intertwined*. That is, in using a methodology, systems analysts learn to perceive what they describe as part of learning how to take purposeful action in a situation. Evidence for methodology as metaphor is evidenced in SSM, for example, in the *comparison* between systems models and the real world that proceeds actions taken to improve a situation (Checkland and Scholes, 1990, p. 29).

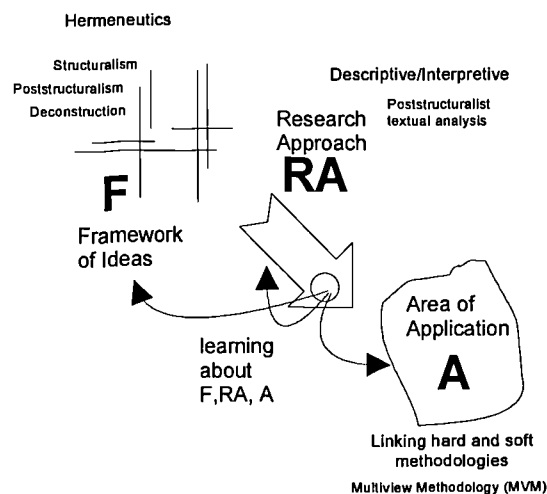
As described earlier in this chapter, this thesis criticised three metaphors in MVM: the metaphor of progress in information systems development, the balance scale metaphor in decision making, and the metaphor of MVM's five perspectives as tools. Criticisms included the way journey metaphors mark progress with linear development even though means and ends are problematic in information systems development. Metaphors of progress also were criticised for their tendencies to suppress the second aspect of meaning as a specific instance in favour of harmonising a single view and for their unwitting acceptance of potentially repressive power relations.

The metaphor of a balance scale in decision making was likewise criticised for a means/ends problem solving focus. Additionally, it may potentially undermine active participation of different stakeholders. The way the authors consider MVM's

perspectives as tools was criticised for treating language instrumentally, reducing possibilities for unexpected novelty, and undermining changes to theory and practice through action research. These criticisms suggest that if metaphors are ubiquitous even in practical activities, then an awareness of how they shape our perceptions in enacting an intervention is potentially important.<sup>1</sup>

This section related four main research outcomes back to the research question of how to work critically with a tradition of methodology in information systems.

In returning to Chapter 6 concerning three elements of any piece of research, this chapter sets out conclusions by drawing on Checkland's (1991) model for reflecting on findings through a framework of ideas (F) and a research approach (RA) to investigate an area of application (A). In working through the chapter, specific lessons will be drawn for each of the three areas shown in the diagram below:



**Figure 11.1. Three elements constituting this research.**  
(adapted from Checkland, 1991)

<sup>1</sup> For a highly considered range of views on ethics in the use of mathematical models to support decision making with computer technology, readers are referred to Wallace (1994).

Reflections on a hermeneutic framework of ideas are considered below.

### 11.3 Reflections on a Hermeneutic Framework of Ideas

This research began by identifying an area of concern centring on information as meaning. It was argued that methodologies help to make meaning of experiences not just through actions, but also through descriptive models that arise as we read and write in each situation, e.g., rich pictures, conceptual models, and dataflow diagrams. Drawing on Latour and Woolgar's (1979) discussion of laboratory life, an implication of this process of reading and writing in information systems development was that methodology might be understood as a way of organising persuasion through a series of 'literary inscriptions.'

This was evidenced, for example, in Goldkuhl's (1987) view of information systems as a professional language in action. In this view, the purpose of an information system is to influence certain people and their actions through communication. In considering information as meaning, this research drew on a general framework of hermeneutic ideas since such traditions have derived from addressing problems of meaning in relation to texts and actions (e.g., Ricoeur, 1991a).

A main difficulty in researching information as meaning is that processes of inward-forming are not amenable to empirical investigation since they are not directly observable (Boland, 1987). Addressing this led to a kind of personal 'action research' on inward-forming insofar as my understanding of a general framework of hermeneutic

ideas was changed by the practice of doing research in information systems and vice-versa.

Reflections on these ideas are consolidated in terms of three research lessons set out as follows:

Lesson	Reflections on a Hermeneutic Framework of Ideas
1	Reality is experienced more in terms of continua than dichotomies.
2	Criticism entails an ambiguous relationship of belonging and not belonging to a tradition.
3	Language and action are intertwined.

**Table 11.1. Reflections on a hermeneutic framework of ideas.**

***Lesson 1: Reality is experienced more in terms of continua than dichotomies***

The discipline of information systems abounds with dichotomies such as theory and practice. Nonetheless, while these dichotomies may be convenient, the reality they dichotomise resembles far more a continuum (Locke, 1992, p. 170). An implication of this for working critically with a tradition of methodology is that differences between methodologies may be special cases of differences already admitted within. Likewise, insofar as the Trojan horse phenomenon challenges the notion of a ‘pure’ point of view, it may be important that we conceive of theory *and* practice rather than theory *or* practice since theoreticians and practitioners *both* face differences between experience and its description. Experience might therefore be more appropriately described through concepts like action research that *relate* rather than separate theory and practice.

***Lesson 2: Criticism entails an ambiguous relationship of belonging and not belonging to a tradition***

Ricoeur's (1981) concept of texts may help to establish a basis for co-operative debate between hermeneutic traditions and Habermas' (1972) critical theory insofar as Ricoeur sees this as a conflict between participation with and alienation from a tradition (Thompson, 1981, pp. 66-8). In developing an 'interpretive systemology,' Fuenmayor (1985) also argues that there are no fundamental contradictions between interpretive and critical perspectives. This is supported by Meyers (1993, 1994) and Lee (1994) who use Ricoeur's (1981) dialectics to investigate information systems use as a hermeneutic process.

In recalling Ricoeur's (1991a) concept of distanciation, there is a family resemblance here with Derrida's (1977a) deconstruction because it also suggests a way of engaging with tradition by addressing limitations that undermine the main position a tradition asserts. As such, deconstruction is likewise concerned with the ambiguous situation of belonging and yet *not* belonging to a tradition (Critchley, 1992, p. 30). In expressing this relationship, deconstruction thus centres on the experience of undecidability. This was suggested in the previous chapter through an analysis of the gap between a methodology's theory and practice. Given this, it was argued that meaning was not simply a constitutive property of a methodology or a practitioner's experience, but a combination of *both*.

***Lesson 3: Language and action are intertwined***

This research suggests that the language of information systems development is an inseparable part of its practice. This was described in Chapter 9 insofar as language does not merely describe what people do in developing systems; rather, it actually helps to determine or *enact* what they perceive as their goals in an organisation (Mason, 1991). This supports Winograd and Flores' (1986, pp. 35-6) view that each time people speak they do not just describe a situation; they also partially create it. Generally, this research also supports Searle's (1969) conception of speech as acts, although the argument concerning context bound meaning and boundless contexts given in the previous chapter would question his assertion of having *exhaustively* specified types of speech acts. That language and actions are intertwined is also evidenced by Vickers' (1968) conception of history as a two stranded rope of ideas and events, which has been adapted to soft systems thinking (Checkland and Casar, 1986).

This section set out personal lessons derived through reflecting on a hermeneutic framework of ideas that may have some relevance to others working critically in a humanistic tradition of information systems. The next section discusses reflections on a descriptive/interpretive research approach using a poststructuralist textual analysis.

**11.4 Reflections on a Research Approach**

This section considers three lessons derived from a descriptive/interpretive research approach using a poststructuralist textual analysis:

Lesson	Reflections on a Research Approach
4	Choose research approaches appropriate to a researcher's role and experience.
5	Maintain a research diary to learn how to reflect critically on processes of inward-forming.
6	A poststructuralist focus on disruptions to preferred readings helps to expose universal claims.

**Table 11.2. Reflections on a research approach.**

*Lesson 4: Choose research approaches appropriate to a researcher's role and experience*

The area of concern investigated in this thesis centred on a concept of information as meaning. In deciding how to investigate this, Galliers' (1991a) taxonomy was drawn on in choosing a research approach appropriate to the research topic. From this it was argued that a descriptive/interpretive research approach was suitable. In reflecting on the taxonomy, a delineation of roles might be useful. This occurs in Checkland (1991, p. 402), for example, when describing a process of action research. In learning from Mumford (1985), for instance, it might be helpful if the taxonomy specified the suitability of research approaches with regard to whether a researcher is working alone or in a group. Additionally, in information systems, there seem to be at least two roles open to researchers seeking a Ph.D:

1. apprentices working in the role of 'would be' researchers and
2. mature practitioners or academic researchers already with established careers integrating their experiences in the form of a Ph.D.



As discussed in Chapter 6, this thesis represents an apprentice's first attempt, and the research was undertaken alone. Consequently, approaches such as action research were not considered appropriate. However, given the role of an apprentice researcher, a descriptive/interpretive approach was useful in learning how to reflect on a field's cumulative tradition. Likewise, given the need for a humanistic approach to information systems discussed in Chapter 6, the hermeneutic and phenomenological basis of this approach encouraged reflection upon previous experiences in the humanities. As will be discussed in the next chapter concerning the limitations of this research, such matters as role and previous experience were intertwined with the selection of an appropriate research approach as well as the choice of MVM as the area of application to research.

***Lesson 5: Maintain a research diary to learn how to reflect critically on processes of inward-forming***

A research diary amounting to over 500 pages was maintained to help address the elusive aspects of meaning as a process of inward-forming, the difficulty being that inward-forming is not amenable to empirical investigation since it is not directly observable (Boland, 1987). This led to a kind of personal 'action research' on inward-forming insofar as my understanding of a general framework of hermeneutic ideas was changed by the practice of doing research in information systems and vice-versa. Without the diary, it would have been difficult to maintain an understanding of the course of the research, and emotionally, it helped to develop a sense of what it meant to 'do' research. Re-reading the diary was painful insofar as it forced me to compound with limitations associated with being an apprentice. However, this may also be seen in

a more positive light as evidence of learning through a process of inward-forming. With reference to Appendix I, diary entry Thursday-Friday 27-28 May 1993, my *mechanical* use of Ricoeur's (1984) stages of emplotment in analysing Boland and Day's (1989) case study is similar to the way a novice might use SSM as a sequential seven stage model.

***Lesson 6: A poststructuralist focus on disruptions to preferred readings helps to expose universal claims***

We often assume that there is a natural way of approaching development. For example, Checkland and Scholes (1990, p. 300) write that,

once the epistemology of SSM is grasped, using it seems so natural.

(my emphasis)

However, as suggested by the above quotation, the way we approach development only appears 'natural' because it is the way we were taught. As such, tradition often is something we are drawn into and 'use' before we learn how to reflect on it. In relation to Burrell and Morgan's (1979) four paradigms, like Rosenhead (1984, p. 82), this research emphasises that methodologies carry 'a pantechicon of ideological baggage' whether they are reactionary or emancipatory. In considering how language and action are intertwined, a poststructuralist focus may be helpful in exposing universal claims insofar as it is a way of recognising that methodologies are partial and biased perspectives for enacting development.

That is, deconstruction does not explain texts in the traditional sense of attempting to grasp a unifying content or theme; rather, it investigates the work of conceptual

oppositions in arguments and ways in which textual relations produce disruptions to authors' preferred readings. When faced with universal claims such as 'paradigms are incommensurable' (e.g., Kuhn, 1970) or 'paradigms are mutually exclusive' (e.g., Burrell and Morgan, 1979) it may be useful to turn to poststructuralist deconstruction since this looks for disruptions to such readings. As argued in the previous chapter with reference to context bound meaning and boundless contexts, if our experiences are limited, then we are *not* in a position to make such finalising claims. Moreover, in *enacting* such claims we may marginalise aspects of a situation that could eventually turn out to be important.

This section set out personal lessons derived from reflecting on a descriptive/interpretive research approach using a poststructuralist textual analysis, which might also be of some interest to others working critically with research traditions. The next section describes reflections on the area of application, which was information systems development methodologies.

## 11.5 Reflections on Information Systems Development

### Methodologies

This research suggests how the relationship between a methodology's theory and practice may be founded on a tension between meaning's two meanings. In this view, theory has a tendency to suppress meaning as a specific instance in favour of developing a general structure, while practice has a tendency to suppress meaning as a general

structure in favour of meaning in a specific instance. Reflections on this area of application are set out below in terms of six lessons:

<b>Reflections on Information Systems Development Methodologies</b>	
<b>Lesson</b>	
7	Methodologies are speculative possibilities that reflect a disciplinary matrix.
8	Theory and practice are open to revision through an incomplete concept of action research.
9	Turn to poststructuralist deconstruction in real speech situations.
10	Practice reconstructing, not replicating a methodology.
11	Practice focusing on how structures produce meaning.
12	Practice addressing blindspots and marginal perspectives.

**Table 11.3. Reflections on information systems development methodologies.**

While the lessons described below are based on a self-understanding derived from an individual's 'action research' on inward-forming as a way of beginning to learn how to work critically with a tradition of methodology, they may have some wider relevance to other apprentice researchers interested in working critically with a tradition of methodology through action research.

***Lesson 7: Methodologies are speculative possibilities that reflect a disciplinary matrix***

This research suggests that new methodologies are not entirely new. Rather, they are derived from the old systems they seek to replace (e.g., MVM's synthesis of five existing methodologies). This suggests that 'old' theories are often not suddenly

discarded; instead, they frequently live on as special cases of ‘new’ methodologies. This is evidenced in Checkland and Scholes (1990) for example, insofar as they see hard as a special case of soft methodologies, i.e., a case in which means and ends are *not* problematic.

Insofar as the Trojan horse phenomenon suggests the possibility of *reiterating* limitations criticised in others, methodologies may be understood as speculative possibilities that reflect the field’s disciplinary matrix. In considering methodology as metaphor with a group’s commitments varying from heuristic to ontological, it might therefore be worthwhile to bear the following quotation in mind:

When a poet suggests a possible new conception, we usually know that this metaphor is a speculative possibility and not an actuality because it is poetry. But when a scientist suggests a possibility, do we have the same awareness of the status of the metaphor?

(MacCormac, 1985, p. 230)

Treating methodology as a *speculative* possibility therefore reflects Vickers’ (1968) explanation of information as an incomplete concept that may or may not achieve meaning in a network of participants.

***Lesson 8: Theory and practice are open to revision through an incomplete concept of action research***

Since authors’ experiences are limited, they may not be completely aware either of their intentions or of what they achieve in describing a methodology. Consequently, authors mislead potential users by claiming any ultimate solution or complete synthesis. As argued in the previous chapter, if we place value in recognising the potential for further

insights, theory and practice are not separate, but necessarily paired dialectically through action research (Wood-Harper, 1985).

Vickers' (1968) explanation of information as an incomplete concept, can therefore be paralleled with an *incomplete* concept of action research in information systems development methodologies. This also reflects the view that language and action are intertwined. As such, theoretical description completes its agenda when it creates a further response. Likewise, practical experience completes its agenda when it is described.

This incomplete structure works by dividing the methodology against itself: theory creates a methodology to which one responds and practice creates a methodology that includes a response to a methodology and so on. Such theory therefore explores self-referential structures, but this amounts to a critique of attempts at self-mastery. That is, trying to know ourselves may sometimes make for a powerful discourse, but in relation to boundless contexts, there is always much that remains unknown.

***Lesson 9: Turn to poststructuralist deconstruction in real speech situations***

The discussion of boundless contexts set out in the previous chapter indicates that perspectives cannot all be prespecified. A deconstructive research approach focuses on differences in points of view and attempts to deal with hierarchies and potential conflict between and within perspectives by dismantling the logic through which systems of thought, political structures, and organisations maintain their force (Culler, 1983).

Deconstruction therefore helps to bring out a general pattern of belonging and *not* belonging to a tradition by locating a point of ‘otherness’ within a dominant position. This focus on ‘otherness’ within a dominant position has parallels with Ulrich’s (1983) Critical Systems Heuristics insofar as he also focuses on the difference between ‘what is’ and ‘what ought to be done’ to expose hidden boundary judgements and question intimidating strategies often used by technical experts. This focus on ‘otherness’ results in a pattern of double logic that simultaneously repeats or restores the dominant position, but that also suggests a counter-logic undermining what that position asserts. Eventually, this counter-logic may turn out to be pivotal in developing a new understanding, as in the example given earlier in which Checkland and Scholes (1990) argue that hard is a special case of soft.

While valuing the ethical commitment entailed in Jackson’s (1992) pursuit of an ‘ideal speech situation’ as described by Habermas (1970), this research suggests deconstruction as an appropriate research approach in real speech situations because it can help to draw out and analyse systematic differences within and between perspectives. That is, if reality is constructed in a way that reflects an unequal distribution of power, deconstruction may help to break down such logics. As such, deconstruction may potentially help to reconstruct what Habermas (1972) describes as an ‘emancipatory interest’ by attending to perspectives that might otherwise be marginalised in debates.

***Lesson 10: Practice reconstructing, not replicating a methodology***

If a practitioner always interprets a methodology, and if an attempt to recreate an author's intentions is only a particular highly restricted case of reconstructing a methodology, then perhaps we should work towards changing our way of speaking to reflect this practice. In short, practical activity does not merely assert; it actively creates (Watson and Wood-Harper, 1995c). Consequently, in practice we reconstruct methodologies, retaining old concepts, but using them in new systems of relations (Locke, 1992, p. 170). This is evidenced, for example, in Hirschheim and Klein's (1994) reformulation of Mumford's (1983) ETHICS methodology to realise Habermas' (1972) emancipatory principles.

If methodology works as metaphor since meaning remains to be interpreted in context, then practitioners may be misguided if they try to *return* to an author's original meaning since this arose in different contexts.<sup>2</sup> Instead, practitioners deconstruct one meaning by reconstructing it in a new situation. In this view it becomes important to emphasise that a methodology is not replicated like a laboratory experiment. In information systems development, each iteration of methodology is different since situations are context bound, yet contexts are boundless. Moreover, our efforts are generally directed towards *changing*, not reproducing an organisation's processes.

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<sup>2</sup> Indeed, with reference to the Trojan horse phenomenon, this desire to return to an author's original meaning may be a hermeneutic version of what Checkland (1981) describes as 'repeatability' in the natural sciences that was criticised from humanistic perspectives in Chapter 5 of this thesis.



***Lesson 11: Practice focusing on how structures produce meaning***

Incomplete concepts such as action research that encourage self-reflection help practitioners focus not on the stated meaning of methodology according to its authors' intentions but on how *structures* produce meaning. For example, in discussing contingency frameworks, Oliga (1991, p. 179) suggests that we question 'how they (variables and dimensions) arose and why they came to be what they are,' and Jayaratna (1992) argues that defining such structures makes practitioners consider the reasoning for sequencing sets of activities.

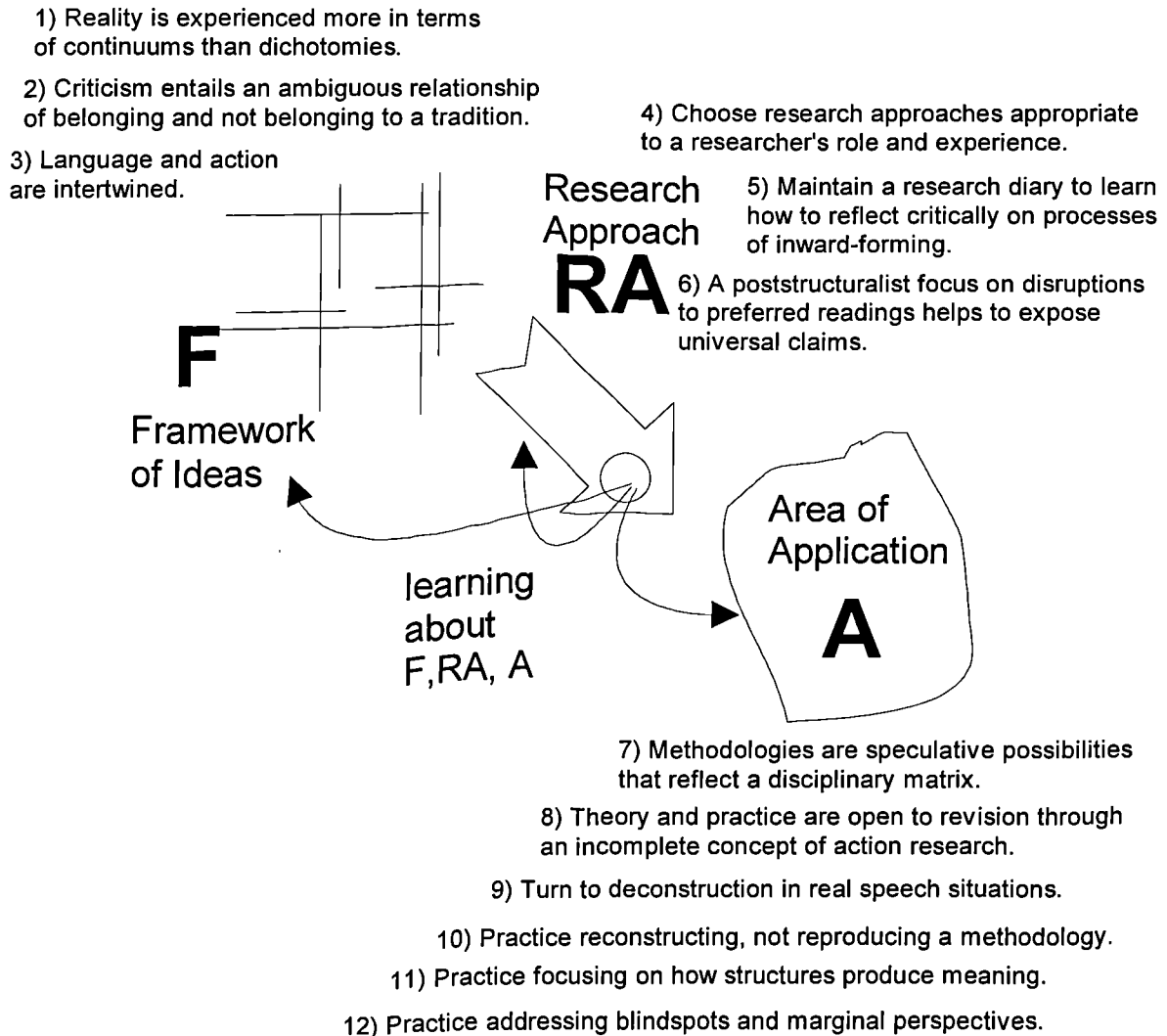
Thompson (1981, pp. 179-80) also explains how critiques have a potentially important practical outcome insofar as they help illuminate social conditions of actions for participants themselves. The link between self-reflection and critique established through incomplete concepts such as action research and deconstruction means that methodology can help participants with the process of structuring social conditions in which their actions take place.

***Lesson 12: Practice addressing blindspots and marginal perspectives***

Heidegger (1962, 1968) discusses the phenomena of blindness as our normal everyday condition of being unaware of the objects that help us to carry out our activities. Drawing on Heidegger, Winograd and Flores (1986, p. 97) explain how this is linked to our view being 'limited to what can be expressed in the terms we have adopted.' With regard to this, perhaps the Trojan horse phenomenon may be understood as an inward-forming type of blindness.

As argued in the previous chapter, if we are bound to the limitations of certain perspectives and if metaphoric truth is partial, one way of coping with blindspots is a strategy of deconstruction whereby we reverse supposed opposites. These often result in new views of situations that show areas of resemblance previously unnoticed. Conversely, this may also make the logic of familiar situations appear suddenly strange. Because information systems work involves changing organisational contexts, it may help to remain attentive to apparently trivial features and marginal perspectives both in the methodology and in the situation since these might eventually turn out to be important.

Lessons from this research have been described in terms of a hermeneutic framework of ideas, a descriptive/interpretive research approach using a poststructuralist textual analysis, and an area of application in information systems development methodologies. After Checkland (1991), lessons derived from this research are summarised in the diagram below:



**Figure 11.2 -- Model for reflecting on research (adapted from Checkland, 1991).**

A summary and conclusion is set out below.

## 11.6 Summary and Conclusion

In learning how to work critically with a tradition of methodology that addresses a concept of information as meaning, this thesis was structured in two parts. *Part I: A Theoretical Matrix of Critical Themes* discussed significant prior research through themes associated with linking hard and soft methodologies. These were organised

through a framework of meaning's two meanings both as general structure and specific instance. Traditions of research in information systems derived from the natural sciences and the humanities were considered, and a taxonomy was used to choose a descriptive/interpretive research approach based in a poststructuralist textual analysis as a way of investigating meaning in Multiview Methodology (MVM).

*Part II: Problems with a Critical Strategy in Practice* critiqued conceptual implications of MVM's theory and practice. Conceptual implications of three metaphors in MVM that may have been unwittingly 'smuggled in' through its synthesis of five already established methodologies were also critiqued. Implications of this were then related to the theory and practice of methodologies in general through the concept of interpreting methodology *under erasure*. This refers to a situation of recognising limitations of existing concepts and activities, yet having to draw on these as a way of developing new approaches.

This chapter drew on Checkland's (1991) model to consider reflections on the research as follows:

- summary of four main outcomes,
- reflections on a hermeneutic framework of ideas,
- reflections on a descriptive/interpretive research approach using a poststructuralist textual analysis, and
- reflections on information systems development methodologies.

The next chapter discusses limitations and an area for further research.

# 12.

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## AFTERWORD

### 12.1 Introduction

Drawing on Checkland's (1991) model, the previous chapter set out reflections on the research described in this thesis. Lessons derived from the research question of learning how to work critically with a tradition of methodology were considered in terms of a hermeneutic framework of ideas (F), a descriptive/interpretive research approach using a poststructuralist textual analysis (RA), and an area of application in information systems development methodologies (A).

This chapter concludes the research by setting out an afterword as follows:

- limitations, of this research and
- an area for further research.

Limitations of this research are considered below.

## 12.2 Limitations

This section considers limitations of the research described in this thesis as follows:

<b>Limitations of this Research</b>	
1	Taking a degree of pride in prejudice
2	Marginalising other conceptions of information systems
3	The need for a value system
4	Choosing a different methodology for research
5	Choosing a triangulation of research approaches

**Table 12.1. Limitations of this research.**

### *Limitation 1: Taking a degree of pride in prejudice*

In reflecting on limitations, it is perhaps worthwhile to consider the wider traditions in which an individual work of research is judged. With respect to the Galliers' (1991a) taxonomy, for example, weaknesses of descriptive/interpretive research approaches include a researcher's subjectivity and bias. These criticisms may derive from dominant scientific traditions that value objectivity, and from this perspective, bias is a phenomenon that one should try to overcome or at least avoid. Evidence for the influence of this tradition on social scientists is described by Argyris and Schön (1991, p. 85) as the dilemma of rigour or relevance:

If social scientists tilt toward the rigour of normal science that currently dominates developments in American Universities, they risk becoming irrelevant to practitioners' demands for usable knowledge. If they tilt toward the relevance of action research, they risk falling short of prevailing disciplinary standards of rigour.

They explain that the challenge for an action researcher is to set out and meet standards of ‘*appropriate rigour without sacrificing relevance*’ (their emphasis). With reference to hermeneutic traditions, Winograd and Flores (1986, pp. 28-30) discuss Gadamer’s (1975, 1976) view of prejudice as a *positive* construct. As such, while this research derives from an individual apprentice’s first attempt, it does also reflect a more general tradition’s view of the *limitations* of individual understanding as evidenced by the following quotation:

To acquire an awareness of a situation is, however, always a task of particular difficulty. The very idea of a situation means that we are not standing outside it and hence are unable to have any objective knowledge of it. We are always within the situation, and to throw light on it is a task that is never entirely completed.

(Gadamer, 1975, pp. 268-9; also quoted in Winograd and Flores, 1986, p. 29)

This suggests that descriptive/interpretive research approaches might at least take a small degree of pride in prejudice insofar as they derive from a tradition that recognises how knowledge is also an *incomplete* concept limited not just to an individual’s but also to a tradition’s understanding in a particular historical context.

### ***Limitation 2: Marginalising other conceptions of information systems***

Lyytinen (1987, p. 35) explains how technical design oriented methodologies neglect language and organisational contexts thereby strengthening failure patterns in some cases. A potential limitation of this research is that its focus on language may be in danger of marginalising Lyytinen’s (1987) other two contexts: the technical and the organisational. However, the boundaries between such categories are themselves problematic. This was suggested, generally, by the argument set out in Chapter 10 of

this thesis concerning context bound meaning and boundless contexts. Additionally, to return to Chapter 3 of this thesis, Bloomfield (1992, p. 191), for example, questions the dichotomy between social and technical arguing that criticisms should focus not so much on the way technological perspectives have ignored social aspects of organisations, as the way they have ‘ignored the social nature of the *technical* aspects of systems development’ (his emphasis). Dahlbom (1992) also argues how perspectives are represented in material forms, so, for example, technology may itself represent an organisational or even a language perspective. In extending Dahlbom’s (1992) argument, this research suggests that regardless of whether we are interested in technical, organisational or language contexts, in communicating such concerns to other people, we nonetheless often rely on some form of language.

***Limitation 3: The need for a value system***

A further criticism of a deconstructive approach is that it does not adhere to any given tradition’s set of values (Dahlbom, 1992, p. 118). Against a different background this could also be understood as a strength if one considers, for example, that being critical is not a quality of a certain approach but a quality of remaining *self-reflective* with regard to all approaches (Schecter, 1991; Galliers et al., undated). While this supports Boland’s (1989) assertion that knowledge is *not* guaranteed by a method because it is based in practice, deconstruction could be coupled with perspectives that are interested in adhering to certain value systems. For example, Giddens’ (1984) structuration theory could be linked with a deconstructive research approach to reflect on the material and historical circumstances in which values systems are embedded. Similarly, a



deconstructive approach could inform values systems based on democratic principles by drawing attention to the ways these are suppressed or considered supplementary. For a considered discussion of the way deconstruction can be understood as an ethical demand, readers are referred to Critchley (1992).

***Limitation 4: Choosing a different methodology for research***

The research began by considering Boland's (1987) conception of information as a process of inward-forming that causes changes in people through their encounters with data. This differs from a traditional view of methodologies that conflates information with structured data. In working critically with a tradition of methodology that is beginning to address a conception of information as meaning, this research focused on MVM since it combines a traditional focus on structured data with an appreciation of how different people attribute meaning to data.

Because MVM derives from a synthesis of *other* methodologies in information systems, this had the advantage of helping an apprentice learn about a *range* of potential methodologies available. In relation to Galliers' (1991a) criticisms of choosing a particular 'house style' regardless of the research topic, learning from this range has resulted in less commitment to a single methodology. To return to a lesson concerning a hermeneutic framework of ideas, this derived from having developed a sense of belonging yet not belonging to a tradition.

However, in retrospect perhaps this research may have reflected a richer understanding if SSM (Soft Systems Methodology) had been selected as the area of application since its initial formulation was self-consciously derived from a

phenomenological/hermeneutic tradition. Additionally, SSM has a longer history, and it is used by a wider range of practitioners. Consequently, reflections on its use within the SSM community may have led to a greater degree of conceptual refinement than may have occurred in MVM. Making SSM the focus of this research may therefore have resulted in a wider relevance to an information systems community concerned with how to work critically with a tradition of methodology.

***Limitation 5: Choosing a triangulation of research approaches***

Likewise, this research would have benefited from a triangulation of research approaches and methods. While language and action may be intertwined, this research is limited to an understanding of meaning as a general structure that *describes* how theory and practice are intertwined in terms of meaning's two meanings. To return to Chapter 6 of this thesis, while a triangulation of research approaches was recognised as being important, given the area of application in information systems development methodologies, these were generally considered too ambitious for an apprentice. That is, action research was considered as an appropriate research approach for information systems development methodologies, but since it required an actual intervention in a professional situation, this was considered beyond the skills of an apprentice working alone on research for the first time.

Given the constraints associated with this role, motivations for choosing MVM were intertwined with the possibility that it would lead to opportunities of participating in action research case studies. While this would have improved the research insofar as it

may have led to opportunities to learn from experienced professional researchers, such situations, unfortunately, did not arise during the time of this research.

Consequently, this thesis has tried to address limitations, such as those associated with subjectivity by making *published* methodology manuals the main focus of inquiry. This concern was a primary motivation for *not* interviewing MVM's authors. To return to Polanyi (1962) as discussed in Chapter 6 of this thesis, insofar as an apprentice researcher is in a position of *learning* the language that describes not just what professional practitioners do, but that also helps them to formulate their actions, this led to an interest in *conceptual implications* of methodology. The importance of concepts is evidenced, for example, in SSM insofar as Conceptual Models (CMs) influence the process of intervention. This was argued above in terms of methodologies being reiterated rather than reproduced in professional practice through each stakeholder's process of inward-forming.

With regard to this, interviewing MVM's authors, would have given this research too much control in describing how *they* conceived of methodology. Not only may this have been an inappropriate practice for an apprentice researcher, but additionally, unlike interviews, published texts of MVM at least exist in a form amenable to further empirical investigations by others interested in criticising this particular research. Moreover, these texts have affected the cumulative tradition as evidenced by citations

and criticisms of the manuals in the literature (e.g., Lyytinen, 1987; Jackson, 1992; Mingers, 1992b, 1995).<sup>1</sup>

To return to Checkland and Scholes (1990, p. 10), professionals *do* intend others to be able to take action on the basis of what they read in manuals. Focusing on a textual analysis of published methodology manuals was therefore linked with the research role of an apprentice insofar as it might be of interest to other researchers who are *also* trying to learn from authors' descriptions.

To return to Galliers' (1991a) taxonomy, in working critically with a tradition of methodology, this thesis has potentially contributed towards *building* theories of methodology that address a concept of information as meaning. Due to the limitations described above, the main outcomes and lessons derived from this research are *tentative*. Brittain White (1985, p. 241) explains that the real worth of research is not so much what has been achieved as it is in potential for going beyond. In learning from Checkland's (1992) criticism of systems and scholarship as 'the need to do better,' this research merely points towards a position that has yet to be developed in detail. Precisely what such detail would look like is an area for further research.

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<sup>1</sup> Likewise, this was the motivation for not focusing on a textual analysis of the authors' Ph.D.s. since these rarely have impact on a discipline's cumulative tradition even though individually they may be 'richer' than published materials (e.g., Wood-Harper, 1989), especially if these have been co-authored since compromises had to be made (e.g., Avison and Wood-Harper, 1990).

This section considered limitations of this research. Out of a concern for developing knowledge that reflective practitioners might find 'usable' (Argyris and Schön, 1991) an area for further research is discussed below.

### 12.3 An Area for Further Research -- Case-Based Reasoning

Chapter 2 of this thesis centred on five themes in linking hard and soft methodologies. In *Theme 5: Possibilities for Future Developments*, Mingers (1992b, p. 86) expresses a concern over subjectivity being 'suppressed in the interests of developing a single hegemonic information system,' and he cites Galliers (1991b) and Keys and Roberts (1991) in expressing a similar reservation. Mingers (1992b) then asks the following question:

Can we not do something to retain this diversity of view in the developed system?

In continuing to address information as meaning, the following practical area of further research may go some way towards answering, *yes*, to the above question. In discussing this, it is first necessary to return to Schön's (1983) book, *The Reflective Practitioner*. As set out in Chapter 2 of this thesis, *Definition of Key Terms*, Schön (1983, p. 60) describes practice as follows:

In the first sense 'practice' refers to performance in a range of professional situations. In the second, it refers to preparation for performance. But professional practice also includes an element of repetition. A professional practitioner is a specialist who encounters certain types of situation again and again. This is suggested by the way professionals use the word 'case' – or project, account, commission, or deal, depending on the profession. All such terms denote the units which make up a practice, and they denote types of family-resembling examples.

(underlining, my emphasis)

The concept of a *case* used by professional practitioners in various fields does itself seem to entail a recognition of meaning's two meanings. That is, it reflects both an element of structure denoted by *units* that make up a practice, but it also allows for meaning as a specific instance insofar as each case is slightly *different*, being based on family-resembling examples.

From this premise, recent developments in case-based reasoning (CBR) initiated at Yale University might suggest the potential for retaining diversity of view in future information systems (Schank and Abelson, 1977). In defining CBR, Althoff et al. (1995, p. i) write,

Case-based Reasoning (CBR) is one of those rare technologies whose principles can be explained in a single sentence: 'To solve a problem, remember a similar problem you have solved in the past and adapt the old solution to solve the new problem.'

These authors continue by drawing attention to the difficulties of explaining the main principles of other technologies such as neural nets and expert systems in under twenty-five words (Althoff et al., 1995, p. i). Such difficulties might also affect practitioners developing databases in information systems as evidenced by the continued high rate of failures despite technological advances (e.g., Davis et al., 1990; Hornby et al., 1992; Meyers, 1993, 1994). Since CBR is easy to explain, it may suggest potential for practitioners interested in helping people from different backgrounds communicate with each other through the concept of a case. That is, in the manner of a reflective practitioner, a case-based reasoning system helps *people* to solve cases by using or adapting solutions that people in *similar situations* have described concerning previous cases.

To return to the research question that structured this thesis, case-based reasoning *also* derives through working critically with a tradition:

Reasoning, under the traditional view of reasoning in both artificial intelligence and cognitive psychology, is largely a process of remembering abstract operators and composing them with each other. Case-based reasoning takes an alternative view. Rather than viewing reasoning primarily as a composition process, case-based reasoning views reasoning as a process of remembering one or a small set of concrete instances or cases and basing decisions on comparisons between the new situation and the old instance.

(Kolodner, 1993, p. 14)

Like hard methodologies in information systems, traditional approaches in artificial intelligence have tended to suppress meaning as a specific instance in favour of developing general structures. CBR addresses this by focusing on concrete instances but through a general organising structure -- a *library* of previous cases. However, like Vickers' (1968) concept of information, such libraries are understood as *incomplete*. While cases become part of an organisation's history, they remain open to adaptations and changes through use as people learn from their experience through reflection on past courses of action (Watson and Marir, 1994).

Case-based reasoning systems may therefore have the potential of addressing Galliers' (1992) criticism that debates about linking hard and soft methodologies are probably misplaced. Since specific applications 'almost by definition' require constant amendments, he argues that we should focus on developing 'a *flexible information architecture* to meet changing information needs, rather than the development of specific information systems applications' (Galliers, 1992, pp. 146-7, my emphasis).

Like a library, a flexible information architecture such as that supported by CBR technology is never complete since there are always new cases being written into and

out of the system. To return to Chapter 10 of this thesis concerning ~~theory~~ and ~~practice~~, CBR may therefore represent a material form through which we can interpret *under erasure*. International organisations already using CBR systems include the following: American Express, Andersen Consulting, Bluecross, British Petroleum, Dun and Bradstreet, Lockheed, Microsoft, Prudential, and Touche Ross (Althoff et al., 1995, pp. x-xi). Some examples of CBR systems that help organisations address situations similar to those that might be encountered by a professional practitioner in the field of information systems include the following:

- **ORCA -- the organisational change advisor:** This system gives advice to consultants helping them to gather data about a client. Based on similarities between the consultant's situation and previous cases, ORCA retrieves previous scenarios, which are based on business publications and interviews with experts. As such, the system helps people to formulate a range of problem-solving alternatives by incrementally building up a description of the current problem situation through comparing and contrasting it with multiple stored cases. As more cases are retrieved, questions are asked, and more is learned about the present problem situation. In a manner similar to SSM's iterations of potentially relevant systems, this continues from scenario to scenario as long as users feel that it is helpful to answer questions and view cases (Bareiss and Slator, 1991, 1992). Lessons learned from this system reflect the tension between meaning's two meanings discussed in this thesis. That is, while different scenarios are useful, people have difficulty in agreeing on a



general structure of indexing terms for referencing the stories because the various scenarios mean different things to different people.

- **TaxOps:** This system advises tax professionals about corporate tax planning and services. Advice is given in the form of stories gathered from videotaped interviews with corporate tax specialists. As discussed in Chapter 8 of this thesis concerning the potential for hypermedia, users interact with a network of video clips, making a 'roomful of experts' available. A TaxOps session begins with users filling in a form describing a business scenario of interest. They are then given a choice of several entry points into a video network, and they are allowed to navigate freely according to their interests or move through pre-set links posing questions that are answered by connected video clips of different experts (Slator and Reisbeck, 1991; Slator and Fidel, 1993).
- **INCASE: impact on audit decision-making:** This system was designed for Touche Ross with the London School of Economics to investigate ways that CBR can help decision-making in unstructured domains. The application area is top management fraud, and to develop users' expertise, the system includes both fraudulent and nonfraudulent cases. These provide users with advice and criticisms in an area in which traditional auditing techniques for detecting fraud have failed. Like Winograd and Flores' (1986) argument concerning tools for conversations, INCASE is seen as a 'conversational tool' that supports a *range* of querying styles and explanation facilities. Additionally, the system evaluates conclusions reached in past cases to sensitise users to possibilities of different explanations. INCASE is

therefore an ‘on-going holistic evaluation’ that emphasises learning described in ‘soft-information-based cases.’ Following Argyris (1991) and Garvin (1993) the system is derived from values centring on critical, evolutionary organisational learning (Curet, 1995).

<b>Conceptual Model (CM)</b>					
<b>Method</b>	<b>Type of CM</b>	<b>Number of CMs</b>	<b>Data Model above/below line</b>	<b>Link to IS Method</b>	<b>Additional SSM Constructs</b>
Wilson	Primary	One	Below	None	Maltese Cross
Checkland	‘Relevant’	One	Above	None	
Prior	‘Agreed’	One	Below	DFD <sup>2</sup>	
Sawyer	Issue to primary	One	Above	DFD	
Gregory and Merali	‘Agreed’	One	Below	DFD	Logico-linguistic model
Miles	‘Agreed’	One	Below	DFD	Conceptual flow model Conceptual data model
Savage and Mingers	‘Relevant’	One or more	Below	JSD <sup>3</sup>	JSD framework
Galliers	‘Relevant’	Multiple	Below	None	Scenarios

**Table 12.2. Ways of linking SSM to information systems.**

<sup>2</sup> DFD = Dataflow Diagram

<sup>3</sup> JSD = Jackson Systems Development

In considering the potential for CBR in information systems, it is perhaps worthwhile to return to Mingers' (1995, p. 42) chart that compares ways of linking SSM to information systems above.

Unfortunately, most interpretive approaches have certain limitations in achieving material impact. They either do not have a link to an information systems method (e.g., Checkland, 1981; Miles, 1988; Wilson, 1990; and Galliers, 1995), or they return to a traditional structured method (e.g., Prior, 1990; Sawyer, 1991; Gregory and Merali, 1993; and Savage and Mingers, 1993).

In addressing concerns raised in Chapter 3 of this thesis, CBR systems would seem to offer potential for ensuring that interpretive values *do* have material impact in organisations (e.g., Dahlbom, 1992; Vidgen, 1993). Additionally, not only do CBR systems emphasise the importance of representing different stakeholders' views and different definitions of the 'same' concept (e.g., Mingers, 1992b), they also explicitly derive from an interest in reflective organisational learning (e.g., Revans, 1982).

As suggested in Chapter 8 of this thesis, Bolter (1991) and Landow (1992) consider the convergence of critical theory with hypermedia to help us to reflect upon rather than exclude different aspects of a situation. In relation to the discussion of contexts set out in Chapter 10 of this thesis, and the CBR systems described above, we face descriptions that can *always* be expanded. Moreover, in reflecting on these, we create new contexts and new meanings. By linking these electronically, we can quickly change from one context to another. Learning from this may result in a richer analysis and an information system that is more tightly woven into its organisational context. That is, CBR systems

*grow* through use and therefore reflect an organisation's 'emergent behaviour' (Kolodner, 1993, p. 565).

With reference to methodology, Kumar and Welke (1992) propose Methodology Engineering (ME) to reconstruct methodologies that are specific to each situation. Case-based reasoning could therefore help by building a repository of experience on previous case studies to reflect the way that organisations continuously adapt methodologies. With reference to Multiview Methodology (MVM) the authors often do not set out the rationale for *why* particular stages were used in each case study, so it is sometimes difficult to learn general lessons from their experiences. Case-based reasoning has the potential for helping with post-evaluation concerning matters such as why particular stages were used, how they worked or did not work, what sorts of situations the authors encountered, and so forth. Learning from such post-evaluations may therefore help to plan forward-looking strategies dealing with information technology in ways that are appropriate to an organisation's history and business needs (e.g., as in Galliers and Sutherland's 1991 revised stages of growth model).

CBR systems may therefore help to provide a general paradigm as network structure for organising hypermedia information systems in organisations. Applying CBR technology to information systems may provide further insight in at least four ways:

1. No model of how to analyse a situation is necessarily assumed or prespecified.
2. Multiple perspectives of the same case may be stored and compared.
3. Cases can always be added to as further insights arise.

4. Cases can work with existing modelling and rule-based technology since electronic links could join them with other types of software.<sup>4</sup>

Resulting systems may thereby help to clarify what has been argued in this thesis. If we value critiquing rigid distinctions, for example, between theory and practice, and if we consider this in relation to context bound meaning and boundless contexts, then maybe we can reflect this concern in technologies that allow for multilinearity, networks, and multiple ways of conceiving of situations.

## 12.4 Summary and Conclusion

This research began by outlining a specific area of concern: a conception of information as meaning. This was conceived of as a process of inward-forming that arises as we interact with data (Boland, 1987). Traditional hard methodologies were considered to be limited insofar as they often conflate meaning with structured data. In criticising this tradition, soft methodologies address a conception of information as meaning that people attribute to data. In learning how to work critically with a tradition of methodology, Multiview Methodology (MVM) was chosen to research since it combines a range of other already established hard and soft methodologies.

Drawing on such developments, this thesis considered how to work critically with a tradition of methodologies that are beginning to *build theories* of information as

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<sup>4</sup> *ART\*Enterprise* (1994), for example, combines cases, rules, object-oriented programming techniques, and database management systems in a single environment to produce a corporate-wide information systems.

meaning. Significant prior research concerned with linking hard and soft methodologies was organised through a framework deriving from the tension associated with meaning's two meanings both as a general structure and as a specific instance.

Research approaches in information systems deriving from the natural sciences and the humanities were considered and related to meaning's two meanings. A taxonomy was drawn on to define a descriptive/interpretive research approach using a poststructuralist textual analysis as an appropriate way of researching information as meaning. Conceptual implications of MVM's theory and practice were critiqued as well as metaphors in MVM that may have been unwittingly 'smuggled in' in its synthesis of five other approaches to information systems development. The theory and practice of methodologies in general was then discussed through the notion of interpreting methodology under erasure. This refers to the way we may recognise the inadequacy of existing concepts and activities, yet in working critically with a tradition we nonetheless continue to draw on these to develop more appropriate ways of making information systems.

This chapter considered limitations of this research as follows:

- taking a degree of pride in prejudice,
- marginalising other conceptions of research,
- deconstruction does not adhere to any given set of values,
- choosing a different methodology for research, and
- choosing a triangulation of research approaches.

Case-based reasoning was then set out as a *practical* area for further research insofar as it has potential for representing and reflecting on changes in multiple points of view.

In concluding, I would like to return to Kuhn's (1970) research on *The Structure of Scientific Revolutions*. Here he argues that observation is theory laden and that apparatus are designed with the values of a particular theory in mind. Given this, perhaps Kuhn's (1970) initial conception of paradigm focused on meaning as a general structure due to his background as a physicist working in a tradition that values generalisable natural laws. Evidence for this might be suggested by criticisms of his work for promoting scientific relativism (e.g., Lakatos, and Musgrave, 1970). In treating information as meaning, as a process of inward-forming that arises as we interact with data, perhaps Kuhn's (1970) response to critics including his *revision* from paradigm to disciplinary matrix is exemplary insofar as it reasserts both aspects of meaning as general structure and specific instance.

In thinking about Thomas Kuhn (1970), I am reminded of Shoshona Zuboff's (1988, p. 11) observation that the structure of revolution produces at least two meanings. There are extraordinary revolutions, the ones that we all remember. Nonetheless, there are also more common forms, less dramatic to be sure, yet more diurnal. This meaning of revolution presents us not so much with a vision as a revision, not so much with a gap between theory and practice that we finally bridge, but with a reflective tradition that we turn to when engaging with our past out of a genuine concern for the future. To return to Schön (1963), that is the kind of practice described in this thesis, in the sense of a *daily preparation* for future performances as a would be professional researcher.

To this end, I hope one day to practice research that may help to turn a ‘none’ in Mingers’ (1995) chart into a *yes*, naming an information system that retains diverse points of view.

That would be an end worth beginning.



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# APPENDIX I

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## Excerpts from Research Diary

I maintained a research diary from the 27th November 1992 -- 28th March 1994. The following excerpts have been selected to give a 'flavour' of the types of activities re presented.

### **Tuesday: 12 January 1993**

Today I attended the M.Sc. course on methodology. Afterwards I had a meeting with BW and TWH to discuss the assumptions paper I've been working on. They seemed to like my idea of analysing approaches to information systems definition in terms of Mitroff and Linstone's' framework of types and features of inquiry systems. They also gave me some useful suggestions, which would not have occurred to me on my own. For example, BW said that no approach deals adequately with conflict. Also, both helped me see that the sociotechnical approach is not an inquiry system based on multiple realities as I had initially thought. Though a social and a technical system are depicted, this is only in a functional sense insofar as those are features of reality (in the singular) in any situation. We also discussed the limitations of its approach to user participation.

We agreed the following generalisations on six approaches to information systems definition: human activity systems in SSM is based on multiple realities and unbounded systems definition. (However, I've just read in *Systems Thinking, Systems Practice* that SSM is-- according to its author -- also based on conflict, so I'll have to inquire further about this.) The sociotechnical approach is based on agreement in a sense on multiple realities, but only in a functional sense. Prototyping can result in any inquiry system since its most fundamental assumption is learning through doing, and that can be used in both the reductionist and the systems paradigm. Structured Systems Analysis is based on agreement. Technical specification is based on agreement.

I was also given hoards of reading to do on Churchman etc. Plus my book by Ricoeur on *Conflict of Interpretations* came as well as Bolter's *Writing Space*. Needless to say, I have plenty of work to do. TWH said for me to finish this assumptions paper before I do my proposal. I wish I had done this paper last month since I really want to get my proposal out of the way. TWH also said that the paper I wrote for the Warwick conference is going to be published in *Systemist*, so tomorrow I'll have to sort that out as well.

Oh, my New Year's resolution is only to go into campus one day a week, and to work on my research four days a week. This means that I won't be attending the doctoral seminar. I do like doing things other than my research, but I've not been spending enough time on it.

#### Thursday: 21 January 1993

Today I structured my understanding of six approaches to information systems development methodologies in terms of CATWOE leading to root definitions. I found that the only helpful bit of the CATWOE structures are the transformation and Weltanschauung aspects, and sometimes the constraints. (I want to look and see how this relates to Mitroff and Linstone's features of inquiry systems.) For example, I found it helpful with CATWOE to remember to specify inputs and outputs as nouns. After this I want to go through my Mitroff and Linstone analysis and make sure I have specified inputs and outputs as nouns and the operator as a process. I remember in Mitroff and Linstone's discussion of Delphi in Chapter 1 of their *Unbounded Systems Thinking* book that input and output are nouns too and that the operator is a process.

Of course, the purpose of this exercise was to get me thinking about SSM, and TWH will be pleased to know that he was right. In my initial analysis I did forget the situation as input, and I believe my confusion comes from SSM being doubly systemic. Here's my train of thought:

**First attempt:** In my last meeting with TWH I (wrongly) thought **input** was 1) data set consisting of entities describing relevant human activity systems coupled to a theory of the problem situation consisting of logical and cultural streams of inquiry and 2) a range of different couplings representing various views of the problem. TWH disagreed since this input ignored the situation.

**Second attempt:** Then I formed a second articulation with **input** as 1) real world situation of concern and 2) relevant systems of purposeful HAS. The **operator** then is the process of comparing models with perceived reality and suggesting changes, and the **output** is action to improve situation....Then I realised I was wrong again since I was using **systems concepts within SSM vocabulary**, and this, as a re-read in Checkland and Scholes, is the **less** fundamental part of systemicity in SSM.

**Third attempt:** So then I formulated the whole IS as an articulated system as follows: **Input** is 1) **data set** consisting of a) real world situation of concern and b) relevant models (HASs) **coupled to a theory** of understanding a problem situation as two streams of inquiry (logical and cultural) and 2) a range of different couplings representing various views of the problem. **Operator** is an executive decision maker that 1) views the range of different couplings using a logical and cultural analysis to transform entities into conceptual models (holons) using systems concepts and 2)

compares resulting models to the real world via debate with the purpose of learning to accommodate different interests. The **output** is 1) either a choice or selection of an entity (HAS) changed to a new form of itself that is systemically desirable and culturally feasible from which action can be taken to improve the situation or 2) a demand that the initial range of views be expanded and further inquiry takes place before one chooses. The **guarantor** is a learning cycle based on the following argument: 1) people attribute meaning to experience 2) based on this meaning they can decide to do something or not to do something (i.e., they formulate intentions) and 3) from this ability to formulate intentions they can take purposeful action to intervene in a situation.

So, that's the current state of affairs, which I will discuss with TWH in our next meeting. Of course, then several problems arose (as they always seem to do with me).

1. My abstraction is itself within a system (i.e., Mitroff and Linstone's). So, while I could argue that Mitroff and Linstone's features of inquiry systems are more useful than the CATWOE analysis by comparing specific inquiry systems in these terms (which is what I'm currently doing), the idea implied by this exercise, assumes a fundamentalism that is **reductionistic**.
2. Nonetheless, I arrived at this understanding by using **systems concepts**.
3. Thus, it seems that, reductionism is an emergent property of systems thinking, and conversely that systems thinking is an emergent property of reductionism (insofar as this method attempts to formulate general laws from specific instances).
4. If this is the case, then one could understand TWH's two paradigms (systemic and reductionistic) using the hermeneutic circle insofar as the latter focuses on the parts and the former focuses on the wholes.
5. However, this use of the hermeneutic circle is itself reductionistic.
6. Nonetheless, its focus of inquiry is more critical than reductionistic epistemology because it explicitly centres more on the **ACTIVITY OF ESTABLISHING RELATIONSHIPS** than it does on the specific entities that arise from this process (which tend to be the objects of interest in reductionism).
7. By not focusing on the entities (which are static), one focuses on the relationships (the dynamics) which sets up the conditions of dialectic necessary for interpretations (i.e., the difference between explanation and understanding).
8. This view opens possibilities for developing a multiperspective critical theory. That is, it could be used to argue how structures and dynamics of inquiry systems in general constitute specific phenomena such as six approaches to information systems development. On the other hand, it could be used to argue that interpretations of six approaches to information systems development can elucidate understanding of inquiry systems in general.
9. If this is the case, then MVM is particularly useful because it combines two paradigms of inquiry specific to information systems development which are in themselves aspects of a more general paradigm of inquiry (i.e., the hermeneutic circle). In doing so, MVM explicitly sets up the conditions of dialectic necessary for

interpretation in at least three ways 1) generally by focusing on the difference between explanation and understanding 2) more specifically this activity focuses on forms of inquiry systems and 3) even more specifically this focuses within the field's specifics, which are the range of approaches to information systems development.

Anyhow, I have some questions to ask TWH about SSM: 1) Is it unbounded systems thinking or not because it takes things as existing outside the system of inquiry, e.g., the E in CATWOE? 2) Also, SSM claims only to be doubly systemic; if it were truly unbounded systems thinking, wouldn't it be infinitely systemic?

Well, I must go. A builder is coming around this evening to discuss The Barn.

### **Wednesday: 10 March 1993**

I spent the **entire** day from 9 a.m. to 6 p.m. beginning to sort out my references, and I still have over two pages of details to do! I really cannot believe how long it takes to attend to references. All I did today was print off my existing list of references. Then I went through my proposal, checking to see if everything matched up. I made a list of references that weren't already on my list but were in my proposal. Then I spent hours collecting these from my database and incorporating them into my list. This took ages because all the fields in the database are separate and can't be imported all at once together, so I had to cut and past, cut and paste, cut and paste for each one. Then of course, since I've been keeping my database for several years, the styles between the references are not consistent. Then there are all sorts of spelling mistakes, and sometimes there aren't any page numbers, and sometimes there's no place of publication, and then there's all the editors and translators, and series titles, and then I forget what's supposed to have a comma after it and what's supposed to end with a full stop.

God, what a nightmare! Priests should really give people references to do for penance; it's much worse than wearing a hair shirt or kneeling for hours on gravel. To top everything off, no matter how hard I try, I always find more mistakes; it seems that if I correct a single mistake, I make five more in the process.

### **Monday 15 March 1993**

Research seems to be about maintaining an adaptive strategy for coping with delays. At first I thought that the most fundamental delay was how long it takes me to assimilate and to understand what I'm doing. Now I'm learning that's just the tip of the iceberg. There are far more practical delays requiring further consideration. Individually, they appear insignificant. But together they have a high level of risk associated with them.

At the library there are delays in reserving books, reserving inter-library loans, doing literature searches, and tracing references. With people there are delays in arranging meetings, delays in waiting around for meetings to begin, delays when meetings begin officially for all the niceties to be said and done before the real purpose of the meeting can be addressed. There are hundreds of delays in waiting for papers to be written and read and written and read and written and read. With people there are so many delays in just getting to the point. In publishing there are delays of delays.



I don't have time at the moment, (and here, alas is evidence of yet another delay in action!) however, I want to look at the effects of delays on each of the research activities outlined in my project plan to see just how much they are affecting my inquiry.

### **Monday: 24 April 1993**

Today I read chapters 4, 5, 6, and 7 on the Bell and Wood-Harper (1992) book again. The relationship between theory and practice continues to interest. I'm also interested in the traditional (Simon) based decision-making in information modelling and sociotechnical design. Consider this in terms of Winograd and Flores. Also, in information modelling a lot of the analysis seems to be based on implicit (and sometimes explicit) technical assumptions arising from existing technology. Moreover, when the conceptual model is 'translated' into the information model, what happens to the knowledge that doesn't fit into entities, attributes, functions, and events?

Sometimes I get glimpses of great weavings between hard and soft assumptions that I want to trace and work out.

### **Wednesday: 12 May 1993**

Reading two chapters from Vickers' *Values Systems and Social Process: Appreciative Behaviour and The Normative Process*. I was thinking in terms of my own framework of a way of explaining to TWH in terms more familiar to him. My notes are as follows:

appreciation (shared conceptual milieu) is similar to preunderstanding in Ricoeur. Regarding temporality and narrativity, our understanding of the temporal characteristic (appreciation) though based on the past and present is concerned for the future (hence the new relevance in prediction pertaining to metaphor as discussed by Ricoeur). Moreover, regarding history and temporality, the development of ideas in an inquirer's head is recognised as distinct from the history of event.

In relation to Ricoeur's discussion of event, plot, and story, with plot mediating between event and story, there are similar concepts in Vickers' three fields of inquiry. To Ricoeur's event, I map Vickers' actual, to Ricoeur's plot, I map Vickers' appreciation, and to Ricoeur's story, I map Vickers' norm (standard of comparison). Also, with regard to story as represented in a methodology's cases studies I note that Vickers discusses the double meaning of a story represented as a report. It is a story of relevant events and it is a story of relevant ideas. Moreover, as with Ricoeur's plot, norms are changed and developed in the process of applying them. Relate Ricoeur's discussion of history being linked to human action. Relate Vickers' normative function (discrimination (observation of actual), evaluation (compare with norm), and action. Also with regard to intelligibility of plot being configurational, not episodic relate to Vickers' ability to perceive relations over time and the process of appreciation. Note also the points of comparison between explanation and understanding, with explanation being grafted onto understanding with Vickers' objects of attention: these include relations extended over time, and this is to be expected because organisms and organisations are relations extended in time.

Note also that Vickers discusses 'unobservable' activities within the human head that can be attested to and studied through volume of human communications. (In both these chapters there are good reasons in support of the research approach I've taken. Go

through them when you re-do your proposal.) For example, he discusses the importance of doing conceptual studies.

Note also that Vickers discusses objects as events; when they appear stable over time we call them objects. There are also similarities between Ricoeur's productive imagination and schematicism and Vickers' concepts and interpretive schema. Concepts are defined as schema for classifying objects of attention, and he says that schema is by nature incomplete and incapable of being complete, in relation to the concept of information he says that this is also incomplete (I say because it requires a context, which can itself become a concept, perhaps the closest to this in MVM is contingency). This can be related to Ricoeur's gap between living and recounting referring to the distance introduced by narrative itself as a representation and lived experience. In relation to Ricoeur's living metaphor with semantic innovation making a new relevance in prediction; relate this to Vickers as follows: regarding appreciation, though this is based on the past and present it's concerned with the future; appreciation: certainty/uncertainty since concern with the future. Moreover, regarding Vickers' interpretive schemata he says that these objects of experience resist change since coherence is precious. (I was thinking of TWH's statement that radical change in an organisation is impossible.)

More generally, appreciation can be related to understanding since it refers to a readiness to see value; also Vickers says that valuation is a circular process, which can be related to Ricoeur's reciprocal dialectic of explanation and understanding. Regarding explanation, this can be related to Vickers' capacity to classify objects of experience, and he says that meaning is given by relating them to each other (which is what interpretation does). Vickers also discusses conflicts of valuation which can be related to Ricoeur's conflict of interpretations; he also explains that these are not settled by a pre-determined ranking of norms and goals because the need to choose even among these arises in some situation; this can be related also to Winograd and Flores' discussion of traditional models of decision making; both Vickers and Ricoeur also discuss ideology, which Vickers' says arises through conflicting appreciative systems.

Anyhow, those are just some general notes; I wanted to get them down before I elaborated on them.

### **Friday: 14 May 1993**

In the morning I had my driving lesson. At the end I drove from Blackburn to Darwen and came quite close to getting side-swiped by a lorry going down the middle of the road.

This afternoon I did some work on Vickers. I read the chapter 'Science is Human' in *Value Systems and Social Process*. I then made a list of conceptual oppositions and some diagrams. I want to get a few things down about my technique of analysing text. I have tried to do this upon occasion, but reading Vickers brought it home again: if my methods are not those of the physical sciences, then say so, and be explicit about what they are. Now I'm fully aware of the gap between event and recollection of event. However, here's how I understand what I do on a first reading. (In writing this I sometimes referred to the paper I just read, as empirical evidence for my reflection).

On a first reading I go through the text making various markings: 1) I circle key concepts, which I either identify because the author defines them or because they relate

to the purpose or interest I have in reading a text, for example, I often circle the word 'metaphor' even if the author is only using it casually. This is because I'm interested in the concept of metaphor, and I often compare different uses of the word. If there are many key concepts on a page, and I see an immediate linkage between them, I circle the concepts and link them with arrows. This appears to clutter the page, but even after years I find that it helps to refresh my memory at a glance. 2) I underline passages, these often have key concepts in them, but sometimes not; I underline them to draw my attention to them later; I consider them as 'things to think about subconsciously' as opposed to key concepts, which I actively analyse. On subsequent readings I look over these if I'm confused or want further clarification. However, sometimes I underline something if it would make a good quotation.

If a passage is important, but not important enough to underline (or too long to underline!) I write a line down the outside of it, which serves as a sort of bracket. Next to the bracket I sometimes write something if it's important (e.g., if it explains a key concept). If something's really quite important, I'll put two or three or four brackets, as one would do with exclamation marks: !, !!, !!!.

3) In relation to the above two activities I sometimes write headers in the margins to assist me in subsequent readings; what I write is sometimes just a summary of the main point of the paragraph (e.g., three weaknesses of scientific method, parts of appreciative system), but it's often advice on how something might relate to or differ from my existing understanding (e.g., apply this to methodology, relate to hermeneutics, put in proposal.) Sometimes I'll mark an X or a check next to a passage, and I'll make the same mark at the top of the page with a header explanation; again, these are to assist me in scanning on subsequent readings. Because I find it faster to scan through the top of pages, these things tend to be more important.

4) extended notes marking the development of an idea (e.g., what are the implications of this assumption, they mean that.....)

4) I also make various symbolic marks some are more accessible such as check marks for 'I agree' and question marks for 'huh?' However, I also have a symbolic set that is probably only intelligible to me. I use two parallel marks for 'the,' and if I know a foreign word that's shorter than the English, I use that, for example I write 'che' for 'that' and 'entre' for 'between,' again, just to save time. Additionally, I often abbreviate key concepts in my inquiry to the initial letter with a circle around it to make it stand out better e.g., the symbol *I* with a circle around it stands for *interpretation*, A stands for assumption, E stands for explanation, U stands for understanding. I've always done this, even as an undergraduate. I think that I started doing it because authors names and books are so long, so I'd abbreviate them to make writing notes in the margins less time-consuming. Perhaps this is odd, but even now when I look back, I remember my abbreviations. So, for example, when I look back at *The Wasteland* I see, Pr and know that it stands for Proust, and I see Ch, and I know that it stands for Chaucer. (In other contexts I know that Ch stands for chapter or Checkland.)

6) I also make numbered lists; these help me summarise things at the time of reading; and this helps me remember on subsequent readings

7) For the same reason I also make diagrams, particularly if one concept is defined according to other concepts as occurs in hierarchies, e.g., an appreciative system consists of a value system and a reality system.

Anyhow, that's pretty much what happens on my first reading. But I often use additional means of representation at this time. For example, if there are many concepts that are intimately interlinked, and their complexity is beginning to overwhelm me, in addition to making marks on the text, I draw a map (sometimes with definitions under each concept. Usually the process of drawing the map results in an understanding. However, if I'm still confused, I stop for awhile, and go over the map and the text from which the map was construed.

Now here is a big NO-NO which I never, never do on a first reading: I do not under any circumstances take separate pages of notes on a first reading. It is a complete waste of time.

I also do not take copious notes on a first reading. I remember doing it at school because teachers advised us, but I really found that the effort was wasted. In fact, the more that I think about it I feel that all in all it's a bad idea. From a practical point of view I found that my notes were too detailed and included things that weren't important (as I found on subsequent readings). Moreover, and here's an even more disastrous effect -- because of the effort it takes to write long notes, many people then never refer back to the text itself again. They just look at their own notes. This not only means that the resulting understanding will not be that comprehensive, but worse, it doesn't exactly exercise good skills in reading. It's fairly easy to read yourself; it's quite hard to read someone else.

I've heard many people say that they're saving time because they have to re-read twenty pages rather two hundred. However, you don't re-read all two hundred pages again because you already know the text; rather you look at specific sections that are relevant for your purpose in re-reading. And here the notes on the text itself come in handy in triggering your memory. These notes are also good in making an explicit record of your misunderstandings. It's easy to forget these once you become more familiar with something. However, sometimes on subsequent readings I come across a note that makes me blush because it's so stupid. I cross it out. Then again on subsequent readings I recall: Oh, dear, I used to think THAT!

On a second reading I often do more of the above, but additionally, if I'm doing a detailed analysis like I am for my PhD, the main purpose of the second reading is to add detail to my general understanding of the text as a whole. I use notecards writing down key concepts as I've described in previous entries. I like to write down one idea or pairs of ideas on each notecard. Why? Because this makes them easier to manipulate. As described above, I also make maps to help me understand. Writing concepts down on notecards also highlights where authors have defined the same term differently or used it in a slightly different way. I'm not complaining about the variance in definition or use; I think that this is inevitable, as indicated by my interest in Wittgenstein. However, having different uses of the concept down explicitly on notecards that can be juxtaposed increases my understanding of the concept.

Then I begin making patterns. I use the entire room, spreading the notecards out into vast trees. (The dog is not allowed in the room when I'm doing this.) After I've laid out my initial pattern, I walk through it all on my hands and knees, arranging and rearranging. Sometimes I remove notecards to a 'reject' stack. (I look at this after I'm

happy with my resulting structure to see what I've rejected and why, and if anything should be re-included.)

Sometimes I refer back to the text and make more notecards to add in where I've left things out. If I'm writing a short paper I add notecards with headings and transitions, and 'expand on this bringing in this and that and that.' However, if it's an extended analysis like the one that I'm doing now, I prefer to keep things in map form so that I can get to know the text as a whole. (If I were to write each stage of the analysis out into a paper, I'd get lost in the details when I went to review it months later.)

After I'm satisfied with my notecard map (and sometimes this takes days, so it's left out on the floor for the entire time), I make a hand written map of the key 'branches' of my pattern. At this stage there are often some key concepts whose definitions I don't know by heart, so I write these on the map. The effect of this is that sometimes the map is too detailed, and I've included things that I didn't need. However, I always do this at this stage even though I know that I'm writing down too much. I think that it's just a way of getting to know the text. For example, at this stage I often realise that I've left something out or included something that isn't that relevant at the moment. (I don't normally refer to the text at this stage.)

If the map isn't too big or too detailed (say no larger than an A4) I use it to refer to when I draw it with my graphics package. At this stage I don't bother with the lay out of the page or the font size so much. (I've used my graphics package so much now that I have a pretty good idea of the general font size to use.) I write things down, and put them in general clusters on the page, sometimes grouping them so I can move them about. I switch in-between actual size and page preview to get an idea of the structure and of how much space I have left on the page. When I'm through getting the text on then I worry about font size, arrows, and layout.

If the map is too big I hang it on the wall next to my computer. I look at it as an overview, but I refer to the actual notecards when using the graphics package. I take them up in segments, usually of no more than six, and I type them in. I do this because if the initial map is too big, it definitely won't go onto a single page in the graphics package. This lets me keep in mind the whole map, but break it down into details as I have to with the technology.

Once my maps are made and printed out they are an invaluable source of reference. I make notes on them and they evolve, and I keep records of their iterations. They're also useful when I refer back to the texts; again, sometimes I realise that I've got something wrong or that I've left something out, and with it there explicitly I can't overlook it or deny it.

I could go into more detail, but I think that the above description is rich enough to get across the basics of the way that I work. There's enough there to help me on subsequent reflections.

I said that I identified key concepts often because the author defines them or uses them frequently. Another way is to look in the index; however, this is not as good because the author often hasn't made up the index. It's better to consider the words the author explicitly makes a fuss about. After, my analysis, when I feel that I have a pretty good understanding of what's going on, I then take another look at the definitions. This time I

note what key concepts in the definitions occur repeatedly but are themselves not defined. This helps me to bring in the critical aspect of my inquiry. Sometimes these are so fundamental to the author's way of explaining that they are ignored and this gives clues to where the blind spots might be, i.e., while ways of thinking are insightful they are at the same time blinding. This thinking in terms of unquestioned assumptions leads me to the next phase which considers the unstated assumptions on which the inquiry is based.

And this thinking about assumptions first unquestioned and then unstated leads me to the next stage of inquiry, which is a reflection on my own methods. While it is logically impossible for me to question both my unquestioned and unstated assumptions it is possible for me to critique my inquiry to an extent. Sometimes this leads to a deeper critique of my approach, which is my intention in developing this habit, but obviously I cannot get out of my way of thinking. As Vickers describes: it changes when I think about how it changes. As far as I am aware there is an ineluctable gap between event and recollection of event. I can only reflect on my activities as best as I am able. And, yes, I do realise that these are all assumptions.

Anyhow, I feel happy that I had a pretty good afternoon of work. I like thinking, and I like thinking about thinking.

Now to conclude here is a list of some initial conceptual oppositions from the Vickers paper today:

energetic/responsive/appreciative  
 reality system/value system  
 interests/standards  
 readiness to see/unfamiliar  
 continuity/change  
 setting/judgement (gap between)  
 map maker/map user  
 reality system/value system/action system  
 receive information/compare with standard/make response  
 action/reflection (gap between)  
 psycho-social science/physical science

**Thursday-Friday 27-28 May 1993**

### **On Authoring History: A Brief Critique of Boland and Day's Case Study<sup>1</sup>**

Boland and Day describe a case study of a system designer's reflection on her experiences within an organisation. As with any history, events are purported to have a truth value. That is, they are really *supposed* to have taken place. As such, there are certain problems that are relevant to evaluating Boland and Day's research. The most obvious of these applies to any history: since it has already occurred, there is no way for

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1 The case history referred to is, *The Experience of System Design: a Hermeneutic of Organizational Action*, *Scandinavian Journal of Management*, 5(2), 87-104, 1989.

anyone to verify it directly. To interview someone who was there at the time, is only to postpone this problem since it will lead to yet another recollection of an event that has already passed.

Of course, one might argue that it is not important for events to have really occurred at all. Perhaps it is much more interesting or rather, *revealing*, to consider what those concerned would make of their experiences since this might reflect their present values in understanding a situation. Indeed, Boland and Day are explicit that their description does not purport to be an empirical chronology of events; rather, it is presented as an *interpretation* of experience. Yet I wonder if their assumptions in inquiry are not somehow contradicted or even undermined by their method of recollection.

For example, if interpretation is their concern, then one might expect them to be painfully explicit about their own research methods. How did they arrive at this description? I find this gap, this absence in recollection of not one, but of two authors of considerable interest. I suppose it's because Boland and Day are so up-front, so *open* about their values and assumptions concerning '*ideals* of phenomenological description and hermeneutic interpretation.' I am unsettled by this statement because it represents such a considerable commitment.

And in quoting their research, I have emphasised the word, 'ideals' because it is so noticeably absent in their next statement. Here, the authors recollect that the interviews 'did not start with a set of abstract, preconceived categories.' I wonder: so what then are we to make of these *ideals*? What I am drawing attention to is, I feel, a potential relation between their overtly subjective description and a tradition of objective empirical accounts from which the authors claim to differ. Again, it seems to centre on this most noticeable gap in their description: their method of conducting an *in-depth-interview*. I can't help but notice that we are told little more than that together the researchers 'guide' the subject's self-reflection on her experience.

Well, what exactly does it mean to *guide* a subject's self-reflection? Indeed, given that these interviews took place over a two year period, at one month intervals for at least two hours, it is odd, I find, that the product of such prolonged activity, the product of such *commitment*, culminates only as three research statements summarising the system designer's, and not the researchers' accounts. In this way, I suppose that it's more of a view than an inter-view. Again, it just seems strange. Does it imply a certain objectivity on the authors' or on the narrators' behalf as well as a singular, a *linear* conception of time not *unlike* an empirical chronology of events?

I'd like to explore this possibility.

To continue, Boland and Day's study purports to confront the limits of traditional methods for doing social science, and they explain that

Traditional method would like to stand apart from the social process and capture it with a clear picture from the outside. (p.93).

I have no dispute with this statement -- indeed, I agree with it -- but what I find odd is that there are certain stylistic techniques in Boland and Day's description that simultaneously seem to undermine their interpretive approach. For me, the effect

implies an objective point of view that plays out through a single reference originating time. Just look at the structure of recollection: the case history begins as an event happening in the *present*, and the system designer's actions are described in the third person through an *omniscient* narrator. Initially, at least, this tendency towards objectivity through an omniscient point of view is broken off in that the system designer's thoughts are made explicit and, indeed, bracketed in quotations:

As she experimented she thought to herself. "The marketing manager should be telling me this..."

However, by the second page the style has grown too comfortable with its object; it needs no longer to quote, to articulate, to both join and separate between what it is and what it is not: and so flexibly it slips from events directly into the system designer's thoughts, even borrowing from what is initially represented to be her own language:

But the marketing manager had not requested this promotional expense analysis. The marketing manager at the Credit Union was responsible for developing and conducting promotional activities. He should be interested in cost and effectiveness as regards making new loans. Either he or the president of the Credit Union should have asked for this kind of modification to the system. But they didn't.

What troubles me is that, given the authors' phenomenological and hermeneutic commitment, isn't this transparency between subject and object, between observer and observed somehow unsuitable? Moreover, isn't it strange that we as readers are not even addressed? Isn't it odd that we also just *overhear*? It is almost as if the research *speaks* for itself, has become reified, even.

And I can't help but fear (yes, a strong word) that this style of telling, of appealing through omniscience, is but one step from appealing through a language that has become objective as evidenced in the absence of a need for narration at all: no need for a narrator, for a subject to recollect since history, since research now speaks for itself...Yet my own experience (albeit this is limited) has been that research is so *personal*; no matter which way I approach recollection, it bears so much the feeble markings of its creators.

But let's continue because you see, I find it strange, that it is only after a blow-by-blow account of Paula (This is the name Boland and Day give to the system designer.) sitting 'erect in front of the terminal screen' (Should we be pleased that she did not *slouch*?) are we told that the description represents, not reality in the sense of a chronology of events, but a 'hermeneutic of organisational action' mediated only *indirectly* through the authors' method of in-depth interview. If this is the case, then might it tell us more about the researchers than it does about their objects of research? I say *might* because I am hesitant, not entirely certain.

Again, I return to my initial concern: what about these elusive authors? And again, their absence seems to undermine their approach; and again, it seems to me, that representing the products of this method of inquiry through a structure of *reality and reflection on event* is...potentially misleading. While it explicitly assumes multiple viewpoints for organising (or rather, re-organising) time, doesn't it achieve this by implicitly assuming a singular point of view since it recounts as one, a multiplicity of research activity? If



anyone is interested in pursuing this line of argument from a different point of departure, I notice that this structure is then repeated as the authors return to describe a 'Setting and Chronology of Events' before they give their summary of statements from the interview process and their implications.

Moreover, as I have touched on previously, this case history represents the experiences of two authors, yet even these multiple points of view are at once denied: in describing there is either only this one omniscient narrator observing or *recollecting* Paula's thoughts and actions or a unanimous 'we' (an extended self?) describing the authors' research methods. And I continue to wonder: if this is an interpretive account, then wouldn't it have been more appropriate to indicate which were the different authors' interpretations and whether they agreed or disagreed? In so describing wouldn't it force readers to interpret and so in reconciling different viewpoints *share in*, not distance themselves *from*, what it is to re-search, to iterate and to re-iterate as a consequence of finding themselves in a history that already exists, but in which they must nonetheless make their own ways?

With admiration, not malice, I point out that this tendency also appears in Boland and Day's case history. Despite the omniscience, they are *inconsistent* about the description itself: sometimes they state that it is Paula's interpretation (although she does not appear as author on the paper), and sometimes they state that it is a collaborative venture. But in returning to Paula for a moment, I notice something related to this conflation of many into a single point of view. I notice that Boland and Day often report Paula's reflections on events without offering any comments of their own. I find this way of telling to be particularly ambiguous especially when Paula is so blatantly patronising about the intended users of her system in a way that I cannot help but find offensive. For example, the description states that often she would have to leave and 'return later hoping to redirect the dialogue to avoid the need to tell them (the users) they were wrong' (p.100).

Wrong? I wonder: is everything so black and white even here in print?

Given Boland and Day's interpretive views on experience, I can't help but wonder if by not commenting on these remarks, well, do they imply complicity in point of view? Is this silence that calls forth an ambiguity accidental or intentional? I do not know. But I do know that to focus the question in those terms is again to misdirect my attention in research. Regardless of what Boland and Day may have intended, their telling of a case history brings with it a certain autonomy. Here also meaning transcends event, and like history this particular story is more than what the authors make of it. Each time it is read, a different significance unfolds because of a reader. This delights me.

However, while I begin to understand how interpretation is an open process, in which no conclusion is ultimate or final, again, I continue to be unsettled because I still find this style of recollection especially odd given that Boland and Day conclude by describing how conscious they are about the uses of language:

The problem of language is not how to clarify details of the picture being exchanged, but how to deal with its essential ambiguity (p.102)

But how do they deal with ambiguity? In the final section the authors describe how Paula has learned from the research, but they do not expand this reflection to turn on

their own experiences. This, I find, is indeed ambiguous. Is it *essentially* ambiguous? Is it *intentionally* ambiguous?

I don't know for certain, but these, in brief, are some of the difficulties with case histories: what are we, as readers, to make of them?

In the same way that I am drawn to Boland and Day in noticing an explanation that is somehow undermined, I am also drawn to Gummesson (1988). In reviewing his careful consideration of the strengths and weaknesses of case histories in research, I am simultaneously unsettled by his conclusion. To me the following statement seems even more ambiguous than Boland and Day's, and, sadly, not very helpful:

Consequently I avoid history and instead try to uncover the future.

(p.91, Chapter 4, Methods.)

But how are we to *avoid* history, given that we are *of* it and *in* it? And how do we distinguish time as *future* if not in relation to our past? I conclude in drawing attention to the word, *uncover*; it seems to imply a singular conception of time, from past to present to a future that seems, already, to exist, to need not to be made, but to be uncovered.

In beginning to make my own contribution through *re*-searching an existing case history below, I draw on Ricoeur's theory of history, time and narrative to consider how this might at least make readers more aware of descriptions. I am drawn specifically to his concept of plot as mediator between event and story. I then focus on time (though I certainly claim no *right* to do so, not being entirely certain of what time is, and I don't even think that phrase is *right*). At any rate, I focus on time to consider how Ricoeur's notion of plot may be more appropriate to an interpretive method of inquiry because it allows for a multiple conception of time through the notion of configurative over episodic recollection. I suggest this not as an alternative to an existing tradition, but as a way of building upon our existing methods of inquiry. Perhaps it is obvious, but I will say it anyway: my motivation stems from an interest in developing new from old. It is, I suppose, an interest that I might share with Gummesson for un-covering the future, though I do not entirely understand this term.

### **Using Ricoeur's Theory of History, Time, and Narrative to Reconsider Boland and Day's Case Study**

This section is structured in three parts: I begin by summarising Ricoeur's interest in narrative function, his notion of plot, and his notion of a plot's intelligibility. My intention here is to introduce these concepts as background to his theory of history, time, and narrative. Following this, I again analyse Boland and Day's case study, but this time I structure the activities described using Ricoeur's stages of mimesis as prefiguration, configuration, and transfiguration. Footnotes are the third element of structure. I use these to relate Ricoeur's theory of history, time, and narrative and his

stages of mimesis to my own research in information systems development methodology (ISDM).<sup>2</sup>

*Ricoeur's theory of history, time, and narrative*

**Narrative function, plot, and its intelligibility:** Ricoeur's inquiry into the act of storytelling centres on three concerns:

- to preserve the diversity and irreducibility of the various uses of language,
- to converge diverse forms and modes of story telling in terms of their functional unity which is their temporal characteristic, and
- to help others make the above connection between time and narrative by considering how language can organise through units of discourse longer than a sentence, i.e., through texts.

Ricoeur's reason for considering texts rather than sentences is twofold: 1) a text is an expansion of the first unit of meaning, which is a sentence, and 2) texts are a principle of organisation used, at least, by all printed forms of storytelling.<sup>3</sup>

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<sup>2</sup> As will become evident, I have paralleled Ricoeur's stages of mimesis as prefiguration, configuration, and transformation in the triadic structure of this section. While I admit that this is somewhat unconventional for an academic exercise in that it breaks a singular line of argument, I hope that it interests and so does not entirely offend beyond any further consideration. You see, I fear that we sophisticated technologists -- both inheritors and originators of a history of information systems -- are only just beginning to be able to face up to our inappropriately naive understanding of language. But to return to Ricoeur, while I admit that his theory has structured my expectations in analysing Boland and Day's case history, I hope, that in practice, through confronting the narrative's constraints in reading, I have created gaps relating its plot to my own experience; in elucidating how their history bears on my own research I thereby complete the act of emplotment insofar as the narrative serves only as a sketch, a guide for my own practice of reading.

In relating this to characters described in the plot of Wood-Harper's Ph.D., Chapter 7 I note similarities in the sense that a methodology is prefigurative, a situation is configurative, and the analyst is the transfigurative element in the plot.

<sup>3</sup> Ricoeur's view that words gain meaning only in context of use, the smallest unit being a sentence is similar to Wittgenstein's later philosophy. This brings him into potential conflict with a semiotic tradition in which a single word is often considered to be the smallest unit of meaning. Should someone criticise Ricoeur's approach in this way, I suggest a simple discussion to bring forth the validity of Ricoeur's point of departure. Perhaps open the discussion by writing the word *semiotics* on a blackboard. Argumentation is likely to centre on at least two concerns: 1) how a single word such as *semiotics* can have meaning on its own and 2) what the word *semiotics* means. But note how these concerns are articulated: in sentences. Clearly, it seems to me, that

The question then becomes one of identifying the major characteristic of storytelling. This is considered to be a plot. Plots mimic action, and they do so in refiguring that action. In considering this, Ricoeur draws on Aristotle's notion in which plot is a combination of incidents. However, plot is not a static structure of meaning. Rather, it is a series of operations. Ricoeur thus centres on the dynamics of emplotment, rather than the plot itself. Emplotment is thus defined as the selection and arrangement of events and actions recounted that make a story complete and entire with a beginning, a middle, and an end. In relating plots to action, Ricoeur explains that no action has a beginning except in a story that it inaugurates, no action has a middle unless it initiates some change of circumstance, and no action has an end except insofar as it concludes an action in a story told by the final event that clarifies the whole action.

As I indicated previously, plot mediates between an event and a story. Therefore, an event must contribute to the progress of the story; it is not just an occurrence; rather, it is a narrative component. As such, the plot functions as an intelligible unit composing human actions that in ordinary experience would be considered dissimilar and discordant. From this notion of the intelligible characteristic of the plot it follows that the ability to follow a story is indeed a very sophisticated form of understanding.

**History, Time, and Narrative:** Ricoeur's hypothesis is that time becomes humanised to the extent that it is expressed through a narrative mode, and narrative attains its full meaning when it becomes a condition of temporal existence. This is investigated by considering the ways in which the relationship between time and narrative is mediated through operations of emplotment. Ricoeur considers this as three moments of mimesis:

- prefiguration,
- configuration, and
- transfiguration.

**Prefiguration:** This centres on the way that making a plot presupposes a prior or pre-understanding of a world of action. If plot imitates action, then this requires some initial ability to perceive action by its structural features, to distinguish it, for example, from mere physical movement. For example, actions are constituted by semantics such as goals, motives, agents, and consequences, and narratives assume familiarity with these on the part of author and reader. Ricoeur refers to this as the sense component of narrative.

In addition to this, narratives have a referential component, which is a symbol system or framework for understanding action in a particular context.<sup>4</sup> This is connected to the

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there is a contradiction in using sentences of definition consisting of more than one word to argue that the meaning of a word is entirely contained within itself.

<sup>4</sup> In our work as a group of researchers at the University of Salford, this can be related to the *middle level* of a framework for IS that functions somewhere in-between case histories and Ricoeur's philosophy. I wonder if this might be the status of a critical methodology being somewhere in-between a utopia and an ideology?

notion of rule, which refers not just to the sense of rules for description and interpretation, but also to the function of norms in a culture through which actions are evaluated.<sup>5</sup> Because values attributed to actions are extended to actors, actions can never be ethically neutral.<sup>6</sup>

In addition to being familiar with the conceptual network described above<sup>7</sup>, perceiving action also requires an ability to recognise temporal structures because action is something that occurs in time. Practice thus orders actions through temporal structures of past, present, and future.<sup>8</sup>

To summarise, prefigurational mimesis recognises that to imitate or to represent action is first to pre-understand what human action is, in its

semantics,

its symbolic system, and

its temporality.<sup>9</sup>

<sup>5</sup> Note the similarity between this and Vickers' notion of an appreciative system. Perhaps this is an area for further research, a way of establishing a closer link between the linguistic traditions of hermeneutics and information systems, thus enabling us to understand in a more articulate way, our present condition?

<sup>6</sup> This is also a potential area for further research, particularly in relation to the growing list of Es in SSM and MVM. Perhaps they could be considered as rules or norms for evaluating activities of intervention? I note that Checkland and Scholes (1990, pp. 284-90) have recently made this explicit in the form of Constitutive Rules for defining whether someone has used SSM or not as the basis of an intervention. I am, however, interested by their focus on SSM as 'it' while simultaneously claiming that 'it will never be independent of the user of it' (p.285, my emphasis). Does this indicate a tendency towards objectification, reification as methodology becomes ideology in taking on a life of its own? I read further down the page and notice a question that the Constitutive Rules intend to answer: 'What is SSM? If there are no such rules then in what sense can SSM be said to exist?' The connection I make is far too ominous. Still, I can't help but wonder in leading to a further question: And what rough beast, its hour come round at last, slouches towards Bethlehem to be born?

<sup>7</sup> In Boland and Day's case history this would be hermeneutics and phenomenology on one level and systems design on another level; these mediate between their intervention and its recollection.

<sup>8</sup> Again, a potential area for further research relating this to reflection through action research. See how this relates to time as episodic and configurational as Ricoeur discusses in configurational mimesis?

<sup>9</sup> This can be related to the diagram that Wood-Harper adapts from Checkland. In fact, the whole diagram potentially fits into Ricoeur: history, a development team, and a perceived information situation (**prefiguration**); social (analysis of analysts' roles,

**Configuration:** This has a mediating function derived from the dynamic character of emplotment. It occurs because plot has an integrating function. Emplotment integrates between the pre-understanding of the order of actions and their temporal features, and the post-understanding arising through the activity of emplotment. Mediation of plot occurs in three ways:

- It mediates between the individual events and the story as a whole, thereby transforming events and incidents into a story;
- It mediates between heterogeneous factors such as agents, goals, means, circumstances, and intended and unintended consequences of actions in a configuration that is more than the delineation of a chronology of events.
- It mediates between temporal dimensions, one episodic or chronological and the other configurational insofar as events are understood as a single temporal unity, which is the story.

This configurational aspect is what makes the story intelligible. In following a story, a reader moves through events in an expectation that is fulfilled in the conclusion of the story. This end-point functions as the point of view from which the story can then be perceived as a whole, and in understanding a story a reader understands how and why successive episodes lead to this point.<sup>10</sup>

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social context, and political aspects), framework (HA, IA, ST, TS and learning), reflecting and modifying, assumptions socially constructed (**configuration**); and method in use (**transfiguration**).

<sup>10</sup> As an area for further research, one could explore how this relates to Schon's concept of backtalk, which Wood-Harper discusses in Chapter 7 of his Ph.D. Also, this is evidence for a holistic approach. You make unrelated fragments related through reflection. You begin with a disarray of unrelated fragments lacking a sense of linear progression; you read again, you reflect, and order emerges gradually in space rather than in time; these concentric circles of reflection encapsulate your experience in ways you had not previously conceived. Look at the repeated activities of writing in a space beginning with the loose semantics of a rich picture, proceeding through structured diagramming techniques towards a linear progression that ends in a computerised information system. But this end relates to yet another beginning and so changes through subsequent use. In reading the system I begin further actions, and so relate the information system back to how I belong in future situations. Through this activity, through subsequent use of language its structure, its history also gradually changes: I add and delete information, and in doing so I change, I both close and open potential ways by which the system informs my subsequent actions. Note the sophisticated vocabulary already forming in this field to delineate the roles of memory in computing: long term, short term, random access, for example. It is difficult to place boundaries in time, to mark the origins of signification since this depends so much on our points of view.

From this understanding a new quality of time emerges and the repetition (or the recollection) of a story is an alternative to representing time as flowing from past to future. As such, the act of recollecting inverts time:

'In reading the ending in the beginning and the beginning in the ending, we also learn to read time itself backwards, as the recapitulation of the initial conditions of a course of action in its terminal consequences.' (TNI: 67-8).<sup>11</sup>

Configuring time in this way is referred to as a work of the productive imagination. Following Kant, this is a generative matrix of rules categorising understanding into schemata through synthetic operations.<sup>12</sup> Schematisation occurs within a history or tradition that consists of the interplay between innovation and sedimentation of plot. Sedimentation occurs because a typology of plots exists in terms of formal features and genre.<sup>13</sup> Innovation occurs because every work is singular. While the range of possible works is vast, nonetheless, innovation is governed by the rules in a tradition's paradigms.<sup>14</sup>

**Transfiguration:** Here the world of the text converges with the world of the reader. That is, the world configured by the plot converges with the world in which real action occurs in terms of its specific temporality.<sup>15</sup> The transition from configuration to

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<sup>11</sup> This is probably of no interest to anyone else, but in *Four Quartets* T.S. Eliot describes a similar conception of time throughout, for example, in East Coker he begins by writing: 'In my beginning is my end.'

<sup>12</sup> In information systems development methodologies this is evidenced in research emphasising the complementary aspects of approaches, to see likeness in spite of initial differences; this opens the possibility of making a new relation.

<sup>13</sup> For example, the genre of information systems development methodologies is distinguished by formal features such as a methodology's stages and the sorts of diagramming techniques it uses. This can be expanded further, again by looking at Checkland and Scholes.

<sup>14</sup> In each methodology singularity within a tradition occurs in the concept of iteration. Iteration implies an identifiable form occurring within the tradition of a methodology; however the contingent characteristic of methodology within each iteration emphasises its singular quality. Within the larger tradition of information systems, historical evidence for sedimentation and innovation in methodology is seen in the inappropriateness of applying hard systems methodologies (the existing tradition of sedimentation) to soft problems (the innovation). However, soft methodologies emerge from within the rules (or norms) of this tradition, and so they are defined in relation to hard approaches.

<sup>15</sup> That is, the theory of methodology is applied in a specific situation. I can also relate this to SSM: it is the point at which action is taken to improve the situation. Here, another area for further research: how to relate our history of imagination in which stories help to create virtual realities to recent technological developments that extend this concern, that make so close the link between text and action in imagination. My

transfiguration occurs through the activity of reading.<sup>16</sup> In this mimesis, plot is characterised by two features arising through the convergence between reading and writing:

- schematisation and
- traditionality.

An existing paradigm structures readers' expectations helping them to perceive formal rules of the genre or type exemplified by the story; such rules function as guidelines for the encounter between text and reader, and so guide a story's capacity to be followed.<sup>17</sup>

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specific concern here would be the fate of reflection in a technology that tends to conflate explanation with understanding. I'm thinking of Ricoeur's consideration that distanciation, the sense of being somehow alienated that makes us strangers in relation to our own origins, is simultaneously at the heart of belonging to any cultural tradition whatsoever. What happens if we forget how to reflect? If we no longer feel the need to relate our own understanding with someone else's explanation? Do we search rather than re-search and so continuously invent the wheel as some ultimate, not penultimate revelation?

<sup>16</sup> That is, reading the situation through a methodology's configuration of it, but remember that the language of a methodology extends beyond itself and here I pause to draw attention to the role not of the verb or noun, but of the humble preposition because its function is to relate what we currently differentiate through eight parts of speech, and I wonder if Miller's 7 + or - 2 has yet a further significance even as we speak. Yet prepositions are so common, so familiar, that they have become translucent, reified, even. Again, this surfaces in the formulation of a root definition and of the significance of a boundary in SSM between the real world and thinking *about* the real world. Is this also a boundary for breaking a singular conception of time, for what concern is articulated in juxtaposing a real world with thought *about* a real world? A desire to know a point of origin, (consider the expression: *you are not getting to the point*) and simultaneously a sophisticated realisation that our condition is not one of origin, but of being somewhere in-between past and future; this is our condition of living in the present, of having arrived in a history that is already going *on*. If we take something as a point of departure, it is only so that we can explore and explain this *initial* understanding, and see here also a contradiction in needing to draw on something initial, but I note also the multiple meanings of that word and see not an insignificant role of initial in the field of IS. Moreover, we capitalise these innovations to indicate that they are somehow *different* from the surrounding words. However, I also notice how initials soon disseminate into words, sometimes towards the future, sometimes toward the past: MYCIN, KEATS, A-MYCIN, Prolog, prologue.

<sup>17</sup> Again, the theory of a methodology is a guideline for reading a situation, and so helps to interpret situations *as yet to be described*. Case studies are also helpful in this respect since they describe how authors read previous situations *through* the methodology. In Ulrich's Critical Heuristics this is made even more explicit in the methodology itself by distinguishing between what is done and what should be done,



Reading also accompanies innovation and sedimentation within emplotment: in reading one encounters narrative constraints and creates gaps in meaning. Because of this, the reader completes the act of emplotment in as much as the written work is a sketch for reading.<sup>18</sup> In this Ricoeur returns to the question of a narrative's reference: what is communicated is *beyond* the sense of a narrative; this refers to the experience in temporality that the reader unfolds.<sup>19</sup>

The above discussion serves as the context for Ricoeur's theory concerning the relationship between time and narrative. Different histories involve different conceptions of time. As an example, Ricoeur opposes the concept of a long time span to the concept of an event, and the history of civilisations to the history of the lives of contemporaries.<sup>20</sup> He argues that historical time stands in-between phenomenological time and astronomical time, and he discusses how the notion of a single time scale introduces the misleading idea that different temporalities are commensurable in terms of a comparative chronology.<sup>21</sup> He illustrates this with a paradox: the length of time of a human life compared to cosmic time is insignificant; however, the length of time covering a human life is the span from which most of our questions of significance arise. Cosmic and human time are not commensurable because the former lacks narrative, which is the understanding of being-within-time which it refigures.<sup>22</sup>

However, the two forms of time overlap in historical time, and Ricoeur relates historical and fictional narratives through their ability to re-figure time through mutual borrowings:

These borrowings...lie in the fact that historical intentionality only becomes effective by incorporating into its intended object the resources of fictionalisation stemming from the narrative form of imagination, while the intentionality of fiction produces its effects of detecting and transforming acting and suffering only by symmetrically assuming the

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and in how to deal critically with justification break-offs. Of course, Ulrich, like Ricoeur, also draws on Kant's a priori categories to structure practical reasoning. Kant, I am beginning to realise, is very influential indeed, and this influence is not curtailed merely because a reader does not have explicit knowledge of his work. Identifying the boundaries of an idea is not a simple matter.

<sup>18</sup> This applies to cases histories and to a methodology's application in a situation.

<sup>19</sup> This is why there is always a gap between theory and practice; our condition is to know both, to be somewhere in-between memory and expectation.

<sup>20</sup> In this field, long term memory, hermeneutic written and stored onto a hard disc and random access memory, phenomenological fleeting in-significance, insignificance disappearing so soon after the event?

<sup>21</sup> This indicates a need for a multiple conception of time that parallels an additional need to represent multiple perspectives in inquiry. Moreover, it indicates something about a current scientific ideal: to be able to repeat an event is not necessarily to understand its significance.

<sup>22</sup> Obviously, Ricoeur has been influenced by Heidegger.

resources of historisation presented to it by attempts to reconstruct the actual past. (TNIII: 102).<sup>23</sup>

History refers to two things: 1) the totality of the course of events and 2) the totality of narratives referring to the course of events.<sup>24</sup> These meanings converge through historical narrative and actual history in the concept of historical consciousness. As such, the question of historical consciousness is addressed in the refiguration of time by narrative.<sup>25</sup> This relates to a larger question of how to understand reality of the past (insofar as history purports to describe something that *really* happened).

Ricoeur argues that one can say something meaningful about the past in terms of Same, Other, and Analogous, which I think might be useful to borrow in my subsequent analyses of case histories:

- **Same** refers to ways of thinking about the past that see it as re-thought or re-enacted in the present.
- **Other** refers to ways of looking at the past that appear strange to us in the present, sometimes to the extent of denying the survival of the past in the present.<sup>26</sup>
- **Analogous** joins same, other, and similarity as the relationship of history to the past as ‘taking the place of’ or ‘standing for.’<sup>27</sup>

The above ways of seeing the past require readers since without them plots configure and refigure nothing. Of course, reading is itself an action, and forms of writing must take place within an extended theory of reading. I think that this is especially important to us in information systems because we are required to read not only past texts, but live situations. How do we begin? Ricoeur refers to the reality of the past as the interplay of ‘broken-off perspectives’ arising from the re-actualisation of the same, recognition of other, and the assumption of analogous. To go further one must explore the idea from

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<sup>23</sup> I’m not sure how helpful this distinction is in information systems, but I’m including it here as background, as a note to myself because it continues to haunt my own understanding; I continue to have an interest in the role of fiction in our society, which is now converging with a relatively unexercised interest in history.

<sup>24</sup> This also applies to methodology: 1) events are its practice, its application and 2) its narratives are its theory and its case histories. To me, this is a very important point.

<sup>25</sup> This is like Vickers’ case history of his own personal experiences, and is this emergence, or rather, re-emergence of historical consciousness indicated in information systems through the notion of reflection in action research? To not *just act*, but to reflect upon the significance of those actions as a necessary part of research?

<sup>26</sup> e.g., as in post-modernism.

<sup>27</sup> One can see these three concepts at work in various taxonomies of approaches and historical reviews in information systems. A further area of research could make this more explicit.

the other end insofar as broken-off perspectives converge in a pluralistic unity if they are brought together under the idea of reception of the past, pushed to the point of becoming a 'being affected' by the past (TNIII: 207).<sup>28</sup>

In conclusion, our historical condition requires the convergence of history and fiction as historical genres because this is implied in the nature of our experience of being historical, the three-fold nature of which is that we make history, we are emerged in history, and we are historical beings.<sup>29</sup> This focus on history serves as a point of departure for re-analysing the Boland and Day case study in light of the above theory.

### **Boland and Day's Case Study Again**

In this section I outline how Ricoeur's stages of mimesis are represented in the Boland and Day case study.<sup>30</sup> To summarise, their case study is organised under the five headings listed below.

- Introduction,
- A Hermeneutic of Organisational Action,
- Setting and Chronology of Events,
- Summary Statements from Interview Process, and
- Implications.

The *Introduction* begins by representing Paula's changes to a computer-based loan application. In terms of prefigurative mimesis I understand these as actions contributing to the plot of the case history because they are constituted by my preunderstanding of

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<sup>28</sup> We see this with MVM, and how perspectives are complementary (as a pluralistic unity) and are converged through MVM's authors' reception of the past (reflection on action research) pushed to the point of becoming affected by it (they change you as you think about it). Compare this to Vickers' explanation of norms that are changed through the process of reflection, and to Mitroff and Linstone's focus on three perspectives: personal, organisational, and technological. Additionally, I wonder if pushing to the point of becoming a 'being-affected' by the past might account for a tendency to *entify* a methodology? I notice that I speak of MVM as something *other* than a history of its authors experiences, and I wonder to what extent this taking form of a text, of a system, may account for its autonomy of meaning in relation to its authors intentions?

<sup>29</sup> Again, this is why I find it odd for Gummesson to want to avoid history. How would he manage to do it? But especially, why does he feel this need? Is it a misplaced desire to be objective, to be somehow outside of time and so capture a social process with a clear picture from the outside? Obviously, I am haunted by disjunctions between subject and object. Sadly, it is something that I have never entirely understood; something about it seems not quite right, but I sense frustration in not being able to articulate an argument because the way I now use language will not let me configure the question in a way that I could begin to consider.

<sup>30</sup> This is ONLY a sketch, an exercise; I have not gone into great detail.

semantics such as goals, motives, agents, and consequences. That is, her changes to the screen are distinguished at the outset from random movement in the narrative by an explicit motivation (which is something that I, as a reader cannot directly observe): ‘She was almost half-way through the design...when the request for this change was made’ (my underlining of the motivation for her actions). Hence, I understand her actions in sizing fields as goals motivated by this request for change. Additional cues for motivation are given in the narrative by phrases such as ‘she thought to herself’ and ‘as she reflected on the layers of meaning.’

While the above structures may be considered as the sense component of the narrative, they often link with its referential component, which Ricoeur describes as a symbol system for understanding action in a particular context. For instance, Paula’s attention turns ‘away from the system she was developing toward the organisation itself as a way of understanding the logics at work in designing the system’ (my emphasis). This is the context, describing the functions of norms within the culture through which Paula’s actions will be evaluated. As such, her revisions to the system are described as changing it from a knowledge-based to a data retrieval system because of political struggles within the organisation.

In addition to making use of my preunderstandings of semantics and symbolic systems in which human action occurs, the narrative also draws on my preunderstanding of temporality, of being able to locate actions in the past, present, and future. In the *Introduction* I initially understand the plot in the first four paragraphs as taking place in the present. In relating this to Ricoeur’s two notions of time, in these paragraphs plot flows linearly up to the beginning of paragraph five: ‘When the project had started, almost 6 months ago...’

This switch into the past serves as an endpoint which inverts my understanding of time back to the beginning. After this past is recounted, my perception of plot in the first four paragraphs changes in relation to the whole plot: now Paula’s actions are understood as occurring after this past that has been recounted.<sup>31</sup> In this sense, the plot has an integrating function between individual events and the story as a whole and between Ricoeur’s two forms of temporal dimension, so a configurative mimesis occurs insofar as my preunderstanding of the ordering of action is changed by my post-understanding that what I read first actually occurred after Paula had been in the organisation for six months. This configurational aspect of the plot is what makes it intelligible; because of the plot’s intelligibility I understand how and why successive episodes lead to this point, to this end.

A similar inversion in my understanding of temporality in plot occurs as I read the second heading: *A Hermeneutic of Organisational Action*. In the opening sentence, the previous plot is placed within a larger context, that of the case study itself:

Paula’s experience of system design, as reported in this paper, is the result of her process of self-reflection....

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<sup>31</sup> I notice also that we cannot re-count something until we have reached an end, be it money or a story.

Plot in this section primarily functions as an endpoint from which I re-view the previous plot, now as something occurring before the case study that Boland and Day have written up.<sup>32</sup> Moreover, because organisational action is considered explicitly in the plot in this section, I re-evaluate my prefiguration of the semantics and symbolic system in which Paula's actions take place in light of hermeneutic theory. Hence, within the symbolic system of hermeneutics the semantics of her actions are re-defined as phenomenological and self-reflective. These become my new way for prefiguring the actions that are subsequently described in the plot. And even my understanding of temporality from the previous plot is restructured with description being 'not merely empirical statements of what was observed...Instead, the statements are interpretive descriptions....'

The plot is additionally configurational in the sense that my understanding of Paula's actions are linked to her actions with the authors who have interviewed her. This transforms my understanding of the motivations and goals constituting events in the story from 'just occurring within the context of her job' to being reported within the context of a research project as a 'process of guided self-reflection.' My understanding of the plot changes then as Paula's and Boland and Day's actions become intertwined.

In the subsequent section, *The Setting and Chronology of Events*, plot again focuses on Paula's work in the organisation. While events in this specific history are reported chronologically, they make sense based on my configurational understanding of the larger narrative history linking Paula with Boland and Day's research. Descriptions of actions within the symbol system of the organisation are therefore additionally configured within the symbol system of this larger plot of hermeneutic action. For example, Paula's actions with the marketing manager in developing an inventory system while the operations manager was on holiday lead to a change in their relationship with the unintended consequence that he stops asking her to perform even trivial tasks. On one level this element of plot is configured within the organisation's symbol system giving the action context; that is, the outcome occurs due to politics within the organisation and is therefore configured with subsequent events in this plot describing the confrontation between the two managers. But on another level the operations manager's friendly behaviour is configured into Boland and Day's plot of hermeneutic action. Hence, Paula's action is described hermeneutically. She 'reinterprets' his behaviour.

Moreover, as I read the next section *Summary Statements from the Interview Process* my understanding of the plot changes as I relate it more closely to Boland and Day's research. To begin, I notice a change in Paula's position. In the organisational plot she is the main actor, but here she is described as 'the subject of this investigation.' Her actions are thus understood within the symbolic system of Boland and Day's research plot, and hence her behaviour is evaluated in hermeneutic terms being based on 'assumptions and presuppositions.'

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<sup>32</sup> I do not mean to dwell, but I wonder if there is anything significant in the way we write up, rather than write down a case study, particularly in relation to the role of critique through reflection in action research.

The plot here is explicitly configurational. Though chronological events occurred as a series of interviews over a year, here experience is 'summarised' only in terms of the symbolic system's evaluation of time: the experience of moving through organisational space<sup>33</sup>, of interacting with others, and of moral choice. On Paula's part the plot is transfigurational: she re-reads the situation in terms of her new way of structuring events through oppositions. Hence, the two managers are conceived as bi-polar opposites, their behaviour is interpreted as being centred on the core and the periphery of the organisation, and their perception of control is defined as freedom to act and task well done. This self-reflection on Paula's part also changes my understanding of the plot insofar as the chronology of events is reconfigured in terms of her evaluation.

In the final section, *Implications*, the plot configures events in this research to language and symbol systems in general. However, while we are told that Paula has learned much from the research, there is no explicit indication of the authors' learning through their research and hermeneutics. In this sense, I both configure the plot by relating it and Paula's experience to language and hermeneutics as my expectations are guided by the narrative's structures. However, in reading the narrative, I also transfigure the plot by relating it to my own experience: I think how to apply Ricoeur's theory to methodology even though there is nothing in the case study itself that requires me to make this connection.

I'm also thinking back on having written these comments. I confess that I neither write nor read linearly. I wrote my introduction last based on my analysis here using Ricoeur, so in the end is indeed my beginning. Nonetheless, when I began I felt impelled to depart from the position of theory, of tradition, of authority, and I notice this same tendency in texts describing ISDM, with a notable exception being the first MVM book in which the authors literally put practice *into* the theory. At any rate, I sense that I understand Ricoeur's theory of employment, but when I explain it there is also this sense of distancing reflected in a style of telling. I suppose that is after all Ricoeur's point concerning explanation and understanding. The understanding comes first, and the explanation is then grafted on. It's the activity, the reading, the act of employment, not the plot itself that matters. Only now, having been through it again, do I see the problem. To draw on Heidegger, it breaks down and seems strange, and so I notice on occasion that I write *you* when I really mean *I*.

So how to conclude? Well, I prefer my introduction because its reference is my own *practice* in reading. My reading using Ricoeur's theory in an explicit way is different; it's a method. In that sense it's naive and potentially predictable because it takes a guideline literally. And doesn't the same thing apply to methodology? How do you specify a practice? In doing so, don't you miss the point? I mean, what is a *science* of methods? The more I think about it, the stranger it seems. Moreover, I notice a close link between strategy and a desire or a need for prediction occurring yet again in information systems. But in drawing on a limited space in such a way, doesn't it end up being little more than a paint by number? But how can we begin to count and so chronologise into a predictive pattern, one that already exists, needing only to be filled in for us to see if inquiry begins lacking an end somewhere in the future?

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<sup>33</sup> Again, I notice plot emerging through space, not time.

But only if I take a linear view, and again I reach an aporia. Yet perhaps this is how we begin. Only in using a method do we learn its limitations. We break it, and in doing so, at last we confront the limitations of our own understanding. This, of course, leaves me in an odd position. It's ambiguous, essentially, and maybe it can never be more than that because it ends in hope that the next reader will also feel being in an uncomfortable position, and so might ask:

*Now what am I to make of that?*

And so begins in action, in yet another ending as reflection, as research on an authoring in history.

**Thursday: 17 June 1993**

Last night I started going over my research diary again. I've summarised some points in the following tables:

<b>Reading</b>	<b>Research Phase</b>	<b>Writing Activities</b>	<b>Reflective Revelations</b>	<b>Future Thinking</b>	<b>Problems</b>
<b>OCTOBER</b> ethnography	not recorded	"	"	"	"
<b>NOVEMBER</b> Bleicher on Betti and Heidegger, TWH CH.6 Rorty (Philo.Mirror) Bultmann, Gadamer	Shared meaning	3 pg. summary of purpose of research, argument for research approach, relate argument to selection of methodology	n/a	n/a	no sense progress research approach being descriptiv erpretive; began delineate deliverabl remedy
<b>Reading</b>	<b>Research Phase</b>	<b>Writing Activities</b>	<b>Reflective Revelations</b>	<b>Future Thinking</b>	<b>Problems</b>
<b>DECEMBER</b>					

<p>Bonnefly, Gadamer, TWH Ch.6, Mitroff and Linstone, Bob Galliers' book, Smith (Mutual Kg.), Landow, Lakoff and Johnson, Rorty (Cont,Iron, Solidarity)</p>	<p>CASE STUDIES: what's in and out of descriptions, fit case descriptions into categories of perspectives with boundaries, how does one perceive organisation structure and politics, and how does one act based on that perspective? ASSUMPTIO NS</p>	<p>Area of concern shifted: purpose not match up with existing proposal; throw it away except for D/I approach and triangulation of methods Began ASSUMPTIO NS paper, shared meaning paper in sociology and linguistics</p>	<p>try to overcome limits of representation through shared meaning</p>	<p>to consider returning to hypertexts (due to limits of rep. static to rep. dynamic) Re: recollection in r/s question: see begin to think about reflection</p>	<p>focus no texts action (b got emp wrong d backgrou Descp. how the interprete problem for action RESEAR QUESTI 1) feel been re: how used practice 2) now rep./descr authors' recollecti how it applied</p>
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<p><b>Reading</b></p> <p><b>JANUARY</b></p>	<p><b>Research Phase</b></p>	<p><b>Writing Activities</b></p>	<p><b>Reflective Revelations</b></p>	<p><b>Future Thinking</b></p>	<p><b>Problems</b></p>
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Morgan (Bey.Method), Mitroff and Linstone, Checkland (ST,SP), Ricoeur (Conflict of I), Barthes, Derrida	SHARED MEANING (w/AB) Focus on RELATIONS HIPS OVER OBJECTS; (began thing about Aristotle's notion of plot) Losing interest in linguistics and shared meaning but still doing U&E in M: complementar y approaches; RELATE HERM F/W TO HOW MVM FIT TOGETHER METAPHOR	SSM in relation to IQS Assumptions paper with Mitroff and Linstone added, tables of IQS, Systemist paper, CATWOE and ISD approaches	IQS as systems of I, assumptions of reality and kg make explicit, avoid using SSM vocabulary to describe systems concepts, use more general vocab., reductionism as emergent property of systems thinking and VV, Thurs: 21 Jan. reflects on this month's important bits; re: those who want to prototype w/o M: not best approach because need explanatory framework to develop shared meaning in phases	as IQS in each stage of M and relate to shared meaning, Re: dynamics of relations, relate to dialectic of U&E prototyping as an evolving form, assumptions in herm, structuralism, and postmodernis m how related to Mitroff and Linstone IQS, how critical thinking relates to shared meaning, practical outcomes: TOOLS for I, Panofsky: controlling principle of interpretation: HISTORY AND TRADITION (synthetic intuition), output of IQS phases lead to another level of resolution with more detail; think of concentric circles	MVM synthesis IQS (nut well rep txts) Troubles research question: looked at I, now lo why need to from ab to detail VV
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<b>Reading</b>	<b>Research Phase</b>	<b>Writing Activities</b>	<b>Reflective Revelations</b>	<b>Future Thinking</b>	<b>Problems</b>
<b>FEBRUARY</b>					

<p>Derrida, Weber, Flood &amp; Jackson (Creative Prob. Solving), Wartofsky, Walsham, Hirschheim and Klein's Paradigms, Ulrich, Land, 18 Feb: list of books, Jackson, Churchman, Ackoff, and Checkland letters, TWH tax., Frost and Sablein (Exempl. R's)</p>	<p>METAPHOR practical reasoning as critique, ambiguity, Ulrich, shared meaning, big personal self reflections, closure in notion of system</p>	<p>Systemist, proposal, assumptions paper, htxt paper</p>	<p>2 Feb: M in use: trope for reasoning as critique; framework here may be main outcome of research, 4 Feb: relate shared meaning to framework, go back to ARC as framework, combine two metaphors at theoretical level initiates dialectic between U&amp;E forcing boundaries of inquiry in moments of critical reflection; regardless of paradigm notion of intervention links mental world of intention with physical would of event (relate to Vickers: appreciative system linking hist. of event with idea) FRAMEWOR K: 1) Ricoeur U&amp;E dialectic and 2) Mitroff and Linstone to delineate boundaries for practical reasoning</p>	<p>IS and Boehm: use his risk anal. to get shared meaning in context via Mitroff and Linstone; hence include project management in M centring on I</p>
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<b>Reading</b>	<b>Research Phase</b>	<b>Writing Activities</b>	<b>Reflective Revelations</b>	<b>Future Thinking</b>	<b>Problems</b>
<b>MARCH</b>					
paper from Atkinson's PHD, Checkland SSM papers, Baskerville, Miles, TWH CHp7, 18 March, Barrett	perceiving boundaries between perspectives, metaphor, mostly proposal	proposal, Jackson paper	BW: T in CATWOE: suspicious about input being without something and output being with something; in differences lie the crucial things, not in similarities, statement of problem themes in SSM have to do with risk		want to proposal of way, 1 of 1 research writing hoc feeli delays, reflection
<b>Reading</b>					
<b>Research Phase</b>					
<b>Writing Activities</b>					
<b>Reflective Revelations</b>					
<b>Future Thinking</b>					
<b>Problems</b>					
<b>APRIL</b>					
2 April, Winograd and Flores, factor and process models, Pepper, Ulrich, Bell and TWH book, Averou and Cornford	Hermeneutic interpretation of texts and situations (7 April)	proposal, paper taxonomy, Australia paper, process models	JIS on key concepts in interpretation develop in a methodology's theory and practice? See 19 April for reflections on viva	reflections on viva, points of misunderstand ing, history	proposal delays, meeting cancellati self-reflec managing emotions
<b>Reading</b>					
<b>Research Phase</b>					
<b>Writing Activities</b>					
<b>Reflective Revelations</b>					
<b>Future Thinking</b>					
<b>Problems</b>					
<b>MAY</b>					

Vickers, Boland Day	hermeneutics and as background for textual analysis, how I read texts, how I do interviews, PLOT	Hermeneutic, Vickers, MVM diagrams relating text and action, tables translating between them, corrections to viva, draft first chapter of thesis, Boland and Day analysis using Ricoeur's mimesis	3 May re: how I do my textual analysis, interview techniques re: Chp 7 (12 May), Vickers concepts of inquiry	<b>Lessons in TWH ch7 and Herm. F/W (5 May)</b>	IT Ins slashing photocop phone, r and equipmen delays
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In reflecting on March, April, and May I was unable to do a close analysis because it was all still too near and dear to me. I do notice that a considerable amount of time was taken up before and after my viva; moreover, I was NOT happy for most of that time, with myself, my work, or those with whom I came into contact. I should try to sort a better way of dealing with this; otherwise doing my write-up will NOT be fun. I noticed that in these three months I mostly was concerned with managing my emotions and that the diary provided an outlet for that.

### 27 July--30 July 1993

I spent these days at the conference in Paisley.

I have pages and pages inside of me to tell, but I haven't the time since I have to write two papers this month. It was interesting to meet all the faces behind the papers. They're often so different from the way they write. Going to this conference has given me better insight into the field because I've met some of the people involved. I saw Checkland speak, and I liked that very much.

However, the conference was a bit unreal. I suppose it's because I'm not used to meeting living authors, but the whole experience felt like a parody of Virgil taking Dante to that circle in hell where all the great pre-Christian philosophers strut their stuff. I felt invisible and terribly out of place.

Everyone knew everyone else; except for me, I didn't know anyone. At the buffet at lunch I got separated from TWH, and I found myself queuing behind a woman from the Open University. She held a boiled egg in some tongs, and she talked about the advantages of having done a higher degree in philosophy to the man in front of her. I wanted to get past her because I didn't fancy boiled eggs, but she kept waving this egg about, and I thought I'd get hit with it if I tried to sneak by, so I stayed put until she and the man in front of her were good and finished. By then of course, there was nothing

much left on the buffet table aside from the boiled eggs, so I picked one of those up with the tongs and then went to find TWH.

Instead of going to the conference dinner (the student registration didn't include that), I walked around Paisley on my own.

The next day my presentation went down okay, I suppose. When I finished, there was silence at first. Then the chairman (Paul Lewis) asked a question about what I had found in researching the history of MVM's interpretations. I answered that the distinction between theory and practice was somewhat artificial and that the two concepts converged through action research. This set off a whole series of questions. No one was hostile at all. Someone even asked me how I knew when I was doing good hermeneutics. He nodded at my answer and smiled in a way that made me feel warm inside. It was almost a welcoming feeling.

Afterwards, I received three business cards, one from a professor. I wasn't sure what to do with these. The whole thing was very strange.

### **Tuesday: 10 August 1993**

I didn't sleep very well last night; I kept waking up thinking about my research. I knew this would exhaust me, but I couldn't help it. I went to bed at half past eleven; then I woke up at one. I was aware that I'd been thinking for ages when I woke up, and I hated to see the time. From then on it was all go. My stomach hurts, and it's because of this thinking. Several times last night I was able to relax, and my stomach would stop hurting. Then I'd start thinking about hermeneutics and the gap between theory and practice, and how to consider it, and my mind would race, and soon my stomach would writhe, and I'd have to stop and relax again.

It's no use. It hurts, and I'll have to think it through to make it stop. However, I'm so tired after yesterday's outpouring. I don't know where to begin. Well, actually I do, but I want to set it out step by step. Then maybe I should make a more detailed project plan of my analysis. I did a project plan of general activities last August, and I felt such relief afterwards.

I've started by copying yesterday's entry. There are several themes in it, and I want to organise them, so I can see the best way to begin. Here goes:

**Project management: papers** I haven't wanted to write these papers because I'm not interested in them at the moment. I want to play with these new thoughts, and I've been worried about losing them, of being left with a feeling and not a trace.

**Project management: time:** This slipping away has actually made me frustrated and angry; the two concepts are themselves related, with angry being the active part and frustration the passive. I keep thinking how much work and how little time and how much work and how little time, and my perception of time allotted for my research is changing: before it stretched out in expectation, now it's more stretching back on memory.

**Project management: reflecting on time** However, this in itself is a useful way for reflecting on research. I could relate this to perception of risk re: Boehm's spiral model. I could also relate this to research activities.

**Project management and mimesis:** Anyhow, in my first phase I was afraid and interested because there was so much looming ahead. Now I feel better about my research because I've covered so much ground in my mind and on paper as well. In relation to Ricoeur's 3 Mimesis, I suppose that I'm in the configurative phase. Now I have to transfigure, to make it my own in a coherent argument. Hence, more anxiety, and maybe that's why my stomach is hurting. I've made my stomach hurt before for days on end when I feel that I'm not able to do what I want. I feel a hotness in my throat and a fever, yet when I measure my temperature, it's normal.

**Project management: papers: Boehm, mimesis, and time:** By the way, it might be possible to kill two birds with one stone by developing these ideas for the Australia paper: Business process using Boehm's analysis of risk extended from software development to project management and Ricoeur's mimesis with the threefold notion of presence for **refining the notion of reflection in action research**. However, I still have a lot of intellectual work to do with understanding **change** in these two approaches.

**Project management: reflection on Mimesis, MVM, and Vickers:** And again I want to go back and look at all that work I did re: Mimesis, MVM, and Vickers. I'm sick of these **gaps**. However, I have to learn to deal with them because I will have more and more gaps as I get older. I have to learn how to pick things up and get back to work; I always want to get my hands dirty, but I must develop methods of doing it quickly. How? How? How?

**Textual analysis:** Anyhow, I knew that there was no point in staring at the computer screen all day trying to finish up our presentation for the OR Society Conference, and I knew that I wouldn't be able to think of anything else to write re: the IFIP conference in Australia. I'm fed up with Kuhn, and I have been for some time, yet I can't work out why; hence I'm fed up. Consequently, I spent the day looking at the first half of the first MVM text. Then I read some Ricoeur *Time and Narrative*, and then I went over my highway code.

**Textual analysis: methods** Some methods for textual analysis towards critique: 1) reverse the ordering of words e.g., from theory and practice to practice and theory 2) with concepts that stand on their own look for absent concepts implied by singulars e.g., what's absent in the notion of process, system? 3) look at little seemingly unimportant words. You could relate these methods to a way of dealing with power as it is exercised in links between language and action; for example, think of Foucault. Also think of Ricoeur's passive and active in relation to language and action respectively. These are ways of **bringing to light suppositions**.

**Textual analysis: Complementary critique of meaning** Hermeneutical assertions are circular, but they're healthy, not vicious circles. Draw on Jackson's notion of critique and complementary, not incommensurable approaches. Hermeneutic approaches are ways of dealing with **aporias or gaps in meaning**; science isn't good at dealing with these; think of **Kuhn**; they ignore anomalies until their accumulation forces them to

switch. Then they switch suddenly; with hermeneutics learning is gradual; there is a system, but it's unbounded. Ricoeur's knowing by degrees. Again, it's the confusion between the willingness to know and the knowing, the revolutionary and the incremental changes.

**Textual analysis of MVM: aporias in general concepts, MVM concepts** In looking at the MVM text for the first time I did the following. I'm aware now of concepts generally associated with the field, such as intervention, social and technical, process, theory and practice, systems thinking and real world thinking. However, to understand these I'm looking at their manifestations in MVM. For example, there are three main **modelling activities** with the following concepts structuring activities: 1) rich pictures: climate linking structure and process (Ricoeur's passive/active); primary task/issue (Ricoeur's passive/active); relevant system (the named one is passive in relation to human activity systems in real world; distinction between them and real world thinking is dependent on relationship of passive and active); root definition (based on agreement is passive); problem/system, CATWOE. 2) conceptual (to be expanded) 3) technical aspect of information system (The passive?)

**Textual analysis: (Future work on perspectives: deconstruct)** Things juggling in my mind that I'm not at ease with: **Mitroff and Linstone's unbounded systems**: what's missing? think of look at each in relation to passive active and parts such as input (passive) operator (active) output (passive) and guarantor (combination of active and passive), deconstructing SSM, CATWOE; limitations of **Kuhn's** analysis of paradigm switches; why **MVM works in practice**; not wanting to fix meaning through incommensurable paradigms; need to articulate reflection.

**Need to relate passive and active to critique of meaning once I understand how it works! Are concepts of inquiry themselves passive traditions upon which we depend to act, to carry out activity of interpretation? Yes! Yes! Yes, it's a start!**

**Now think of CONTEXT what does this notion entail?**

**Textual analysis: three fold notion of present to refine reflection in action research:** Next I'll look at these in relation to Ricoeur's three fold notion of the present, which I hope will be a way of conceptually refining the notion of reflection in action research. I think, for example, that it's a better way of **writing up and reflecting upon case studies**. Also, a **methodology's theory is the passive part** of the narrative, while its **practice is the active bit**. See, we need both! As it stands, everything is presented in a **sequential** or linear way: boom, boom, boom. But as Ricoeur argues we understand time as **attention, memory, and anticipation. Here, reflection, theory, and practice**. I want to relate this to **modelling activities**. In this way our perspective changes with the future being bigger in memory whereas at the outset of an intervention it's bigger in expectation etc.

**Textual analysis: future work relating perspectives:** This could be one way of relating different perspectives in inquiry; for example, top management sees future looming in expectation (hence their desire to predict; remember that **Kuhn** describes prediction as a deep seated value in a paradigm; however, his notion of time is simplistic in comparison to Ricoeur; this might also affect how we perceive **change**; it's



gradual if we have two perspectives; it's episodic if we have one linear view. Consider how this might affect our **view of meaning**.)

**Textual analysis: hermeneutic framework: narrativity and temporality** Here are some expansions of notes I've made in the margins of Ricoeur's *Time and Narrative*. **Two ways of entering circle of narrativity and temporality.**

**Textual analysis: hermeneutic framework: narrativity and temporality adapt to gap between theory and practice**

**Textual analysis: hermeneutic framework: narrativity and temporality adapt to gap between hard and soft approaches** Apply this quote to hard and soft approaches to IS (it refers to circular relationship between time and narrative); we also have it in notion of iteration of a methodology: Iteration is whole, and stages is parts.

They do not simply converge upon the same interrogation after starting from two radically different philosophical horizons: each engenders the inverted image of the other. (Ricoeur, TN, vol. 1, p.4)

With reference to the above quote I'm also thinking of the gestalt vase I used at Paisley. (Relate to argument re: critique of meaning and reciprocal relationship between theory and practice)

**Textual analysis: hermeneutic framework: narrativity and temporality adapt to MVM as combined hard and soft approaches; (hard enters from temporality and soft from narrativity)** system is itself based on notion of circle, so both are hermeneutic. Hard is passive, and soft is active. In same way in being objective inquirer emphasises passive role; in being subjective emphasises subjective role.

**Hard and soft: attitude to change linear and predictive or configurative and ? (refine this idea; attitude to present)** 'But it is precisely in separating the analysis of time from its backdrop of eternity that its aporetic features can be brought out.' (TN: 1:6) Do this with case studies: re: hard and soft approaches re: change hard with meaning fixed focuses on eternity also with notion of change as linear and want to predict; but soft separates time from backdrop of eternity; gives change context. **Combining hard and soft make aporias in time:** Hence, in combining them we make aporias, and we can interpret. **Time links with narrative:** In relation to this (6) Ricoeur states that speculating on time is an inconclusive activity to which narrative alone can respond.

**Major aporias: measurement of time: change vs continuity** (Relate this to change; with change being active part of relationship; active part being more powerful part; also gap between theory and practice; analysis and design; social and technical systems-- in IS this converges explicitly in combining socio-technical systems) He discusses **positive and negative aspects of language**, with verbs being positive and adverbs being negative; he wants to reconcile them; I'm thinking of its potential relevance to SSM defining purposeful activity through verbs. I also remember that I was interested in the parts of speech a few weeks ago, but that I didn't have the opportunity of pursuing this

in detail. Positive Ricoeur verbs in relation to time: 'to have taken place', 'to occur,' and 'to be' and adverbs 'no longer,' 'not yet,' and 'not always.'

**Major aporias: measurement of time: change vs continuity** Paradox of measurement is direct (8) result of paradox of being and not being; relate to predictive strategy in IS. **(do this later; it needs more thought)** Also, consider Lakoff and John's discussion of the measurement of time. Augustine and time (8): we don't measure past and future; we **measure expectation and memory. methodology does this too 1) advise on how act (expectation) based on 2) memory.**

**REFINE NOTION OF PRESENT** in this way. It becomes plural and therefore admits an internal multiplicity. Apply a MVM. Narration implies memory and prediction implies expectation to influence future practice; to advise on actions yet to occur; but in advising, they do occur in the sense that we bring them into existence in speaking (10); What makes for **enigma is structure of image**; it sometimes stands for an impression of the past; sometimes as a sign of the future (12) This applies to methodology and to IS. Power of ambiguity: re: an enigma, the direction in which to search for the solution is in the enigma itself, just as the enigma is in the solution. Again, the gestalt vase and combining apparently contradictory approaches.

**Both hard and soft do: The complexity of comparing introduces need to introduce memory and expectation.** (Future research: A way of dealing with conflict through each perspective?) Element of comparison requires notion of three-fold present (17): relate to conceptual model and real world with SSM and MVM. Also in relation to structure and process: action based on memory depends on passivity of models as sign images (apply to conceptual models and ISD) (18). 'The shadow of passivity accompanies three actions, now expressed by three verbs;' (19) **The vocabulary here continues to oscillate between activity and passivity**; the contrast appears in the present (19). Apply also: the vocabulary here in MVM and SSM etc. alternates between hard and soft, and the contrast appears in the present.

**Activity systems and models (passive as sign images)**; contrast appears in the present through notion of intentional (passive) intervention (active); also with subject (active, action) and object (passive, language) Prototyping also brings in active notion for reflection in SSM framework (passive)

**Textual analysis: case history and refining notion of reflection** Look at quote on p 20 and argue that it's the same with methodology, perhaps linking with threefold present is useful way of analysing case history and hence conceptually refining notion of reflection (linking it through strategy; also see change through contingency to strategy and critique, with strategy being the passive part and critique being the active part in this new pairing).

**Gap between theory and practice:** Reflection is passive part of ACTION IN ACTION RESEARCH. TO REFLECT IS ACTIVE IN THE SENSE THAT YOU'RE DOING SOMETHING, BUT IT'S ALSO PASSIVE IN THE SENSE THAT YOU'RE DISTANCED FROM THE ACTUAL EVENTS UPON WHICH YOU ARE REFLECTING. THIS THREEFOLD NOTION OF PRESENT IS USEFUL FOR

REFLECTING ON ANALYSIS OF CASE STUDY (INTERVENTION) CAUSE AT THE MOMENT IT'S REPRESENTED THROUGH SINGULAR NOTION OF TIME WITH BEGINNING TO END AS SEQUENTIAL, LINEAR, WHICH IS NOT RICH ENOUGH FOR REFLECTION IN ACTION RESEARCH.

UNABLE TO ARTICULATE PASSIVITY, SO CALLS IT IMPRESSION-IMAGE OR SIGN IMAGE: in IS relate this to passivity of models. Is there a word through which we are able to articulate this passivity? Also, two passivities: one related to expectation (what's going on in conceptual models), the other to memory (what's really happening in real world)

**Three-fold present as metaphor:** Refers to this notion of three fold present as a metaphor; it's useful because it holds together THE IDEA OF PASSING AWAY IN THE SENSE OF CEASING AND THAT OF PASSING THROUGH IN THE SENSE OF RELEGATING (DEMOTING TO A LESSER POSITION OF IMPORTANCE). There seems to be no concept that surpasses this living metaphor (21) Relate three fold notion of present further to interface of computer (towards end of research; now focus on methodology); consider Vickers' appreciative system: what's it lacking; it's something to do with HOW we appreciate; it's too general, people often say.

**[Further research: refine two ways of entering circle of narrativity and temporality methodology is narration and strategy is prediction. However, expectation is analogue to memory; it consists of an image that already exists in the sense that it precedes the event that does not yet exist. (Again, relate to strategy; this area for further research since ISDM begins strategy of technical aspect of IS linking to social and strategy extends; get Galliers scenarios and analyse them].**

Whole/part: looking back at part and forward at part.

**DECONSTRUCT FRAMEWORK:** Look at little, barely perceptible words as source of further aporia: still/already (12) Later do this in deconstructing your framework.

**Project management: Reflecting and research:** Note also that this way of reflecting can be related to how I reflect on this process of doing my research. However, I am making a hell of a lot of work for myself. Think of my changes from **Boehm** to a more personal style: analysis of risk as three fold present: plan (expectation); develop and monitor (attention); assess (memory)! That's what I've been looking for; it's been bugging the hell out of me. I found it useful, but I couldn't say why. Now expand this by relating it to **Winograd and Flores' critique of Simon's decision-making and focus of commitment**. There was something here that bugged me, and now I'm working towards an answer: think of it in terms of gaps.

**Gap between change and continuity: power** One thing about scientific revolutions, if groups don't want change because it upsets the balance, then incremental change more democratic and hence one way of dealing with power and conflict. If we're good at switching gestalts, then not so threatened by them. Danger as always is that this can be substitute for seeing and hence just another method; focus on process, not structure. This focus on the little unimportant words (or actions) that the important concept nonetheless depend on is on way of making linguistic practice more democratic.

**Commitment to ideals: hard and soft approaches:** Winograd and Flores (105) : in applying a predicate to an entity one is committed to belief that entity is kind of thing to which predicate properly applies. maybe their discussion of commitment is active aspect of passive applied to objective ideals of rationality. (Commitment to ideals: in hard approach are objective/passive; in soft are subjective/active) **Absence** of this potential to commitment gives computers wholly different kind of being (106). See argument re: decision making and resolution and thrownness (active in meaning) and importance of background (passive in meaning); also unintended transfer of power (154)

This exercise has helped to refresh my memory, and to raise my enthusiasm for doing the work. Now I'll print it out so I can see the whole thing, and I'll arrange it. From this I hope to clarify:

- gap between theory and practice
- gap requires reflection in action
- way of refining how we reflect on purposeful interventions: hermeneutic framework of temporality and narrativity
- three fold present: attention, expectation, and memory
- how this links to hard and soft approaches: critique of meaning; complementary in practice from Paisley
- status of methodology as metaphor, not literal description
- passive/active enigma of sign (two levels: a) narratives describing theory and practice and 2) modelling activities)

(this could be expanded by deconstructing SSM)

- their mutual dependence
- how this plays out in MVM's history of interpretations at two levels: a) gap between theory and practice in relation to narrativity and temporality b) how this plays out within specific concepts
- further research

I cut out all my pieces and arranged them in little groups, but since I made the list above, I preferred to look at it to summarises rather than at the pieces of text. I need to flesh it out, but this gives an idea of what I need to do:

**Gap between theory and practice and meaning that varies with context**

- gap between theory and practice: meaning changes; past context broken off from present practice; practice is present but theory is absent
- gap requires reflection in action: practice of interpretation to develop meaning in context

**Gap between hard and soft approaches to ISD: converge in practice of interpretation**

- how meaning is considered in hard and soft approaches and TWH and Fitzgerald taxonomy: 1) theory 2) practice
- In practice both hard and soft begin reflection with meaning of methodology as metaphor, not literal description
- theory and practice, hard and soft converge through notion of reflection in action research

- what is required in refining approaches to meaning? way of refining how we reflect on purposeful interventions

*MVM? (need to do before look back on Ricoeur)*

**Closer analysis: what does a purposeful intervention mean: reflecting on time and narrative**

- single perspective of time: change one way
- aporia: time: meaning of event in reflection extends beyond events, so how measure change?
- two perspectives on time: way of refining how we reflect on purposeful interventions: hermeneutic framework of temporality and narrativity (quote from Ricoeur re: time and story telling)
- TIME: three fold present: attention, expectation, and memory
- NARRATIVE: three fold mimesis

**Time and narrative in methodology**

- a further gap: passive/active enigma of sign (two levels: a) narratives describing theory and practice and 2) modelling activities)
  - their mutual dependence: active/passive -- intentional intervention
- rephrase theory and practice, hard and soft: active/passive start on meaning
- complementary

**Time and narrative in MVM: explicitly combining perspectives**

- how this framework for reflection plays out in MVM's history of interpretations at two levels: a) gap between theory and practice in relation to narrativity and temporality; e.g., 1) best from existing range 2) contingent 3) critical
- b) how this plays out within specific concepts and modelling activities; more aporias e.g., deconstruct soft systems with reflection refined

(ad hoc only if view time linear; however, just argued that theory and practice reciprocal and configurative alternations between memory (passive) and expectation (active) in attention of practitioner. Enigma of sign is it's passive/active: unable to articulate because concept of reflection was linear with initial synthesis on how definition work in practice)

- further research: deconstruct framework, IS strategy and methodology as further refinements in practice making closer link entre social and technical

**I'll concentrate on this section:**

**Time and narrative in methodology**

- a further gap: passive/active enigma of sign (two levels: a) narratives describing theory and practice and 2) modelling activities)
  - their mutual dependence: active/passive -- intentional intervention
- rephrase theory and practice, hard and soft: active/passive start on meaning
- complementary

**Time and narrative in MVM: explicitly combining perspectives**

- how this framework for reflection plays out in MVM's history of interpretations at two levels: a) gap between theory and practice in relation to narrativity and temporality; e.g., 1) best from existing range 2) contingent 3) critical  
b) how this plays out within specific concepts and modelling activities; more aporias e.g., deconstruct soft systems with reflection refined

### Thursday: 12 August 1993

Right, today I want to begin with a plan: I know this will change, but I want to consider things as ACTIVITIES and COMMITMENTS:

1) PARTS: What authors identify as MEANINGFUL ACTIVITIES: e.g., Analysis of Human Activity System, Root Definition etc.; analysis and design (I realise this has a higher place in the hierarchy; that MVM activities are defined within this; this probably has a stronger and perhaps less reflected upon effect in memory and expectation, to use Ricoeur's three fold present)

2) WHOLE: COMMITMENTS that surround these activities: e.g., ISD is human and technical matter, analyst acts in a role according to appropriateness of each situation, multiple perspectives

(For above I've obviously drawn on Winograd and Flores as well as Ricoeur from texts to action.) The next bit is less clear, but it gives me something to think about.

3) Hermeneutic framework: to relate 1) to 2)? Also, can 1) be thought of as ACTION THEORY while 2) is SYSTEMS THEORY. It's not so clear cut because a commitment to say ethics does not necessarily have anything to do with systems, expect insofar as they can organise in a meaningful way that commitment.

One thing in relation to Tesch and in relation to much else of what I have read re: textual analysis: it usually advises on organising unstructured data. Well, mine is already structured: MVM is a system of commitments and actions to fulfil those commitments. (It seems so obvious now; why couldn't I have come to that conclusion yesterday?) Now the thing is that the MVM structure at least of activities has not changed that much, so the concepts organising it are linked in a more subtle way. It's not so much the activities, but the commitments that are important, so one part of my analysis will be to understand the hidden assumptions in activities in relation to commitments. Consider this in terms of meaning and a critique of meaning.

One thing, for example, is that the authors spent quite a bit of time defining perspectives; that is, socio-technical, individual, organisational perspectives are less taken for granted. However, such things as stages and iteration are not. I don't quite understand yet how this works, but I am at least aware of this. Do we need to reflect on these concepts that we take for granted? I have a feeling that we do.

Anyhow, I have a tendency to want to jump ahead to deconstruct because I'm always looking for contradictions. I have to resist that for the time being.

Tesch advises one to begin by looking at topic, not content. I found this distinction unhelpful because it was meaningless. However, I think it relates to her advice on

looking first at wholes over parts. Hence, I'll begin by looking at commitments; then I'll relate these to activities in MVM. I'll read pgs 150-60 of Winograd and Flores to get a firmer idea of what I mean by commitments.

## RECURRENCE AND BREAKDOWN

To be in business is to know how to deal with breakdowns, and to be PRE-ORIENTED in anticipation of them

(Winograd and Flores, 1986, p.150, my emphasis, thinking of Ricoeur's memory and expectation and attention)

Taken for granted recurrence in organisations include DEFINITIONS OF WHAT PRODUCTS AND SERVICES ARE TO BE OFFERED AND TO WHOM AS WELL AS WHAT KINDS OF REQUESTS WILL BE CONSIDERED. (150) Thinking of ROOT DEFINITIONS.

Rigidity implied by recurrence (memory) is necessary but brings danger that field of possibilities tends be narrow and closed (hence want mult. persps.). Rigidity often apparent in support activities like MAINTENANCE and DATA-PROCESSING (tech. system?). 'The development means to achieve them may come to hide the purposes they were intended to serve' (150-51) (Need to reflect, for example using mult. persps, SSM; rigidity in Kuhn's scientific apparatus and anomalies.)

Decision making is part of recurrent activity; systems analysis has focused on routine structured processes rather than problems of communication (hence need combine socio-technical factors; also, regarding systems this links data collecting to networks of commitment)

Key elements 1) conversations among affected parties and 2) commitments to action that results from reaching resolution (151) Success attributed not to decision made by single actor, but to collective performance (hence system, whole is greater than sum of its parts)

Need participation in conversations for possibilities that open new backgrounds for the conversations for action (analysis of HAS, then again at ethics socio-technical phase before becomes rigid in technical system for collecting data) (151)

Key aspect of conversations for possibilities: 1) What is it possible to do? and What will be domain of actions in which we engage? This requires reinterpretation of past activity seen not as collection of past requests, but as interpretations of whole situations (151) (SSM problem situation; Ricoeur's understanding over explanation) need be open to possibilities che go beyond the previous horizon (152) (Expectations greater than memory, Ricoeur)

Keen and Scott-Morton: in semi-structured tasks goal not efficiency but effectiveness (relate to MVM's Es) (153)

Computer is not independent entity, but intermediary; once recognise it as such, is clear that commitment inherent in language use is made by those who produce the system. Without this view it's all too easy to interpret the machine as making commitments,

thereby concealing source of responsibility for what it does (155) (Hence IS as socio-technical and need to reflect explicitly on viewpoints that go into its design; also, this can relate to ethics in MVM as not wanting to obscure responsibility)

Background of assumptions make contexts: part can be made explicit, but part is implicit part of background of what is normally understood (155-6) (hence need to reflect on deconstructing concepts)

False belief in objectivity: one consequence of concealing commitment is illusion of objectivity; since FACTS stored by computer can't be associated easily with commitment by individual who asserted them, it's easy to be blind to nature of their origin (criticise MVM moving from conceptual to hard fact; whose interest does this reflect in an attempt to conceal? the analysts'? Think about it.)

Don't bother now, but note your critique of Winograd and Flores (158-159): Why want to avoid breakdowns if they open new possibilities for commitment? Collective work based on power which compromises individual freedom to act. So why want to conceal this by avoiding breakdowns? This reliance on structures contradicts thrownness. Also, in relating ethics to multiple perspectives, think of Mitroff and Linstone: individual, organisation, and technical perspectives. Breakdowns and recurrence: last two perspectives are rigid, and focus on recurrence; only individual can deal with breakdown; think of critique necessary in ethics, and ideology of organisations and technologies that support them. Only individual can critique: recognising an individual's perspective represents the beginning of ethical commitments: these begin in a recognition of and a respect for another's freedom to act. Democracy based on commitment to individual, not to organisations or technology.

Right: I'll look at MVM now. This detour will also have helped me finish off that presentation for the JOR conference.

For further work, think of commitments implied by Black's modelling activities.

### **Saturday and Sunday 4-5 September 1993**

I've noticed that sometimes writing a letter to my supervisor is a way of thinking something through in a slightly more critical way than I would in my diary because I'm writing with someone in mind. But because it's a letter, it's more informal than writing a paper; hence it's easier for me since I don't like the style that I must write in for formal papers. It's unnatural; it won't let me voice my voice. I've copied a section from that letter into my diary because it represents a record of thought on my thesis. I'm writing with reference to the JOR conference:

I've been thinking about that. This has probably already occurred to you, but one criticism to expect is Kuhn's belief that paradigms are incommensurable. One way out is to argue using Ricoeur's dialectic of distanciation and appropriation. (Hence meaning is always more than the author intended; that's a simple way out, but I always find it useful.) Another way is to use the more detailed sense and referential meaning argument that we did for MVM and that you'll be presenting in Australia. Another way is to argue that there aren't different paradigms in IS since they all rely on the notion of a system and to point out that *disciplinary matrix* is a more refined concept using Kuhn's own



Postscript explanation. And another way (an area for further research) would be to supplement these strands of argument by looking closely at Kuhn's own argument regarding incommensurability and change.

I've been reading and thinking about *The Structure of Scientific Revolutions* since I was eighteen because it's always attracted me in an irritating sort of way. Something just doesn't seem *right*. In explaining change, Kuhn talks about the structure of scientific revolution, which is very different from viewing it as a process. (I notice that these two concepts, structure and process, are also important in IS; you even discuss them re: MVM; and I see that process re-engineering is the theme of IFIP in Australia 1994.) I think that the concepts of structure and process are related to hard and soft views as well, and I've been experimenting with this through Ricoeur's dialectic of explanation and understanding, with the former referring to structure and the later referring to process. (Of course, you already know all about that.)

But there's another irritating thing. I don't know if it's just a coincidence, or maybe I'm attracted because it's a similar problem. You see, I've also been reading Derrida, and he talks about the divergent tendencies of form and force. (Is this similar to structure and process? and hard and soft?) If so, then it becomes interesting for MVM. Derrida argues that combining the divergent tendencies of form and force makes the system work because it does not work. (Is this why we've been arguing that combining hard and soft views in MVM opens possibilities for critique? And is this why theory differs from practice? And is this why ethics are important?) I won't go into too much detail, but Derrida explains that this combination of divergent tendencies sets up an element of play or non-finalisation in the system which is the condition for its survival: it makes the system open to environmental change, to unanticipated events, which offers the possibility of new structures and of evolution.

Remember how I was using Ricoeur to talk about methodology being a metaphorical description, with its only properties being linguistic practice (drawing on Black's scientific theoretical models)? Well, with Derrida, metaphor raises its ugly head again. (I say ugly because I've been struggling with metaphor since I was at school starting with the problem of how the most vivid metaphor, one that appears to breathe even on its own, can become a cliché, bloated and dead, with repeated, unreflective use. I always think that Medusa embodies this tendency. I really felt sorry for authors because this is completely out of their control and certainly contrary to their intentions. Hence, I love Blake and his mind forged manacles.)

Well, with Derrida, the logic of systems is dependent upon the model or metaphor of writing. (Now think in terms of what constitutes an intervention in ISD, for example, beginning with a rich picture.) The equivocal (that word's important) moment of determination (of intervention), upon which the system turns can be translated as the moment of inscription. This makes evident, this defines, what is different from the wider course of events (i.e., this separates what is an intervention from what is not an intervention). This difference is the condition of the system. However, it requires support; it must be written into some structure. (Derrida says that this must be a violent act, which I've never liked, but it could be a useful way of explaining why there is conflict in ISD, and it ties in nicely with Kuhn's scientific revolutions. Also, don't you see how it supports your argument in moving from a soft or loose definition to a hard technical specification?) Anyhow, this metaphor comes into play every time difference

and relation are irreducible. Again, this notion of ‘otherness’ of difference, of what is an intervention introduces the notion of determination (intervention), and this puts a system into motion, which is what? A process! (Think of the gestalt vase I used at Paisley: ambiguity arises because of the structure; we see faces and a vase; however, the one view cannot be finally reduced to the other; in this sense they are incommensurable, yet they are complementary since we cannot see one without the other.)

I’m wondering if this has the potential of being one way of explaining 1) why hard and soft approaches work in practice and 2) why paradigms based on the notion of a system are incommensurable because this difference is necessarily what sets the system into motion? I think somehow that incommensurable and complementary are mutually dependent in a systems metaphor. Of course, I need to have a little think about this, but I feel this way because Derrida argues that form (structure? hard?) has been emphasised over force (process? soft?), but then he deconstructs these notions to show how they are reciprocal. Moreover, Ricoeur, does a similar thing with his dialectics of explanation and understanding. And you do something kindred in combining different approaches in MVM. And it all links in with how meaning changes over time.

Well, I find it interesting.

Now getting back to Kuhn and to your JOR presentation, I re-read his *Postscript* several times this summer while on holiday. I wonder, does Kuhn say that approaches are incommensurable because 1) he views them as discrete structures, rather than as emergent processes, the forms of which are always changing? and 2) he continues to think in terms of discrete paradigms, rather than a disciplinary matrix (his own revision), which is a loose organisation that nonetheless functions as a whole?

I wonder in the field of IS, do most people think in terms of Kuhn’s original paradigm concept, rather than his revised disciplinary matrix? I have a feeling that they do. (This might be why it has been so difficult for you to articulate the theoretical basis for MVM?) There are so many papers written about paradigms, aren’t there? If so, then this might contribute to the confusion implicit in viewing approaches as incommensurable, while still being unable to account for how hard and soft views nonetheless continue to work in practice. In a sense they are incommensurable, but as Derrida explains, that’s what sets a system into motion, so they are complementary: difference (and its resulting ambiguity) leads to determination, to intervention, and hence to relation. This might also account for why the complementary camp argues that approaches work in practice, yet they have not provided a sound theoretical basis for this belief: a theory is, afterall, a structure, not a process. The important thing is that the views are irreducible, which is the theoretical starting assumption for the incommensurable camp’s argument and which is also implicit in an eclectic or complementary approach based on practice.

I don’t know. But to say that something is incommensurable, definitively incommensurable, is an attempt to fix meaning, to reduce it to our current understanding. But just look in any etymological dictionary, and you will find evidence of how meaning has changed over time. Moreover, Wittgenstein, Ricoeur, and a host of others have argued well to establish the philosophical basis for the way that meaning changes over time according to context: specific theories are therefore not so discrete; they are interwoven with other beliefs and activities. Plus, if we return to the idea of a system that adapts to unanticipated events, that evolves through use, then it would lose

that ability if it were based entirely on the notion of ultimate incommensurability: it would be a dead metaphor. We need both the divergent (the incommensurable) and the convergent (the complementary) to set the system into play, to make it non-final, to offer the possibility of new structures and of evolution. Add an 'r', and you have revolution, which takes us back to Kuhn.

So, we're talking about types of changes. There's a long tradition for articulating this in literature and in philosophy. That's my own background, and I've been thinking about this in so many ways for so many years, that as you have pointed out, my vocabulary's become quite dense and sometimes inaccessible. I need to talk about it in a way that would appeal to you. This is very difficult for me because words are so important. But I think I have at last found a beginning. Maybe you can try it out at the JOR conference.

Now I don't know if anyone else has ever pointed this out, but I find Kuhn's title, *The Structure of Scientific Revolution* particularly attractive, again, in this ambiguous way, that just isn't *right*. In fact, maybe that's what set me off in the first place; maybe it was the title. Anyhow, that ambiguity is what makes it so immensely powerful, so hermeneutic; it just demands interpretation, at least to me. Until today, it was so familiar that I couldn't see it. However, Kuhn's argument turns in upon itself; it critiques, it deconstructs. Even in the title, paradigms are not incommensurable. In my dictionary (*The Concise Oxford*) the word, *revolution*, has two main meanings:

1. Kuhn emphasises the second: a 'complete change turning upside down, great reversal of conditions, fundamental reconstruction...' (What else could we expect; he is, after all, an American, the product of a not inconsequential *revolution*.)
2. However, the first definition of revolution is not so ultimate or dramatic, and conveniently, it's ever so hermeneutic; well, it's probably already occurred to you now, but revolution also means: 'revolving, motion in orbit or circular course or round axis or centre, rotation (time taken for) single completion of orbit or rotation, cyclic recurrence.'

I fear that Kuhn's argument is confused because he has a linear conception of change, yet the concept of revolution relies on iteration: that's what's absent or de-emphasised in his argument.

It's so obvious, isn't it? That's why it took me so long to articulate. In fact, I was only able to see it because I went on holiday to Edinburgh for my annual feast of culture. One of the plays I saw was based on The Beatles' *Revolver* album. That must have been what triggered my thinking. However, it was only in writing this letter that I was able to articulate. That's why it's so important for me to write something everyday; putting my thought into a structure makes it distant, and at times I am then able to reflect because something in that structure does not seem *right*.

### **Tuesday: 21st December 1993**

Went shopping today. I've been niggling about metaphor, and I couldn't help but look at MacCormac (1985) again.

I think that my interest in metaphor is not an entirely bad thing. It does relate to methodology in a very close way. Here's my research course: 1) methodology as

metaphor 2) further research: normative theory of metaphor based on ethics, theory of ethics as applicable to methodology (as metaphor), discipline needs develop an awareness of ethics due to the potential power it will wield.

My concerns above really do tie in with TWH's interest in methodology and ethics. Look especially on p.230:

When a poet suggests a possible new conception, we usually know that this metaphor is a speculative possibility and not an actuality because it is poetry. But when a scientist suggests a possibility, do we have the same awareness of the status of the metaphor?

That's it, that's my motivation in a nutshell. It relates my background to my current interest. MacCormac even discusses an effect of conceiving quarks as coloured in the way I'm talking of entifying concepts; of conceiving them as things<sup>34</sup>. Look on p.223:

using colours as labels for properties of quarks contributes to the researchers' tendency to think of quarks as definite objects. It remains difficult to conceive of things as coloured (even if colour is attributed on an analogical basis) without also conceiving of them as finite, definite, and available.

Why couldn't I have found that ages ago? I suppose in a sense I did though I wasn't quite ready for facing up to this, to name it or call it or use it because I've had that book for ages, and I've been thinking about it for months. I suppose that's why I've been reading about physics and scientific language, because I wanted to relate metaphor to science in its own terms (and look even how I talk of science as an entity, saying 'it'), and that's why I didn't like Kuhn thinking in terms of structure with scientists talking about different things (and that's been bothering me since I was eighteen although I didn't have the words to say why)!

### Monday: 3rd January 1994

I re-read last month's diary entries and printed them out. Now I'll go over Culler again putting notes in their places. However, it's half past four already, so I won't get far. I keep thinking that MacCormac thing was yesterday, but it really occurred so long ago. I'm loathe to think of that *Systems Practice* paper. I wish that this holiday season would end. It drags on and on with one dark rainy day stretching indistinguishably into another. I don't even bother opening the curtains anymore. I want to get back to work. I need an end to begin. Until then I just keep sputtering about, and I am running out of time.

One thing over Christmas. I can't remember the day because they're all alike: dull, dark, and damp. However, it occurred to me to view methodology as a frame, as a border with two edges in the sense that Derrida discusses. I need a centre, a simple starting point, for organising the explanation of my research, a centre with two centres for organising a hermeneutic ellipse, not circle. Something that everyone can imagine, yet that does not separate the dance from the dancer. This is so damned obvious.

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<sup>34</sup> Think of how this might relate to ideology.

We talk of methodologies as frame-works,<sup>35</sup> and the title of my *Systems Practice* paper is *Between Theory and Practice*. However, between is just a special case of within. (Think of that in relation to taxonomies.) It's to do with language as a system of differences. That's why hard and soft work in practice. This relates to my interest in articulation, to both separate and to join. And it relates to my focus on conceptual triangulation: the naming of an unknown point in relation to two known extremes, theory and practice, like the inside and outside of a border. And the gestalt vase works because of the border: it separates a context within from a more general context without; the relationship between them makes us see how parts relate to wholes, and how this relationship changes and is maintained over time. It's this activity of perceiving difference that differs in Derrida's sense of differance, not the resulting description that's important to interpretation. Bear metaphor and MacCormac in mind and quarks. Hence the mistake of focusing on the gap between theory and practice; it's not the gap, it's the between. Focus not on the present thing or the absent gap, but the edges it separates and joins because this points both in and out in ways that are not precisely, ultimately defined.

If meaning is the product of language rather than its source, how does this affect the description of methodology in use? The problem is, of course, the divided character of meaning<sup>36</sup>, as Culler says, for example, 1) between meaning as a property of text and 2) meaning as the experience of the reader. (p132). Experience also has a divided character: 1) it has already occurred and 2) yet it is still to be produced (i.e., described) (p.63). It is an indispensable point of reference, but it is never simply there. (Relate this to conceptual triangulation: 1) the experienced situation 2) the experienced methodology as an emerging text and 3) the unknown, yet indispensable point of reference, the readers of the situation, for example, the systems analyst, and the resulting perspectives.) In language we are presented with a situation of deferral.

#### **Tuesday: 1st February 1994**

What is *wrong* with me? Why can't I write? That's all I want to do, and yet I fail, fail, fail. Why is it that I am so cursed? I have been trying so hard, and there it is again popping up in a drooping sway, swaggering a face like some infernal jack-in-the-box. It's so cruel, so viciously cruel because I'm trying so hard, and it's just not good enough, and I want to reach out and twist its springy little neck, stretch it out of shape so that it won't fit so neatly into its home, homely little box.

But I can't do that.

#### **Saturday: 26th February 1994**

I feel calm. I fell calm. That was a typo, but it's so right. I can't help but wonder if it's a delusion, but I don't feel that way. I'm going through Locke, who I first read in

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<sup>35</sup> Note also that Ricoeur views discourse as work. So even in this notion, the two philosophers, the two faces of post-structuralism converge.

<sup>36</sup> Relate this to Ricoeur's sense and reference from Frege and from structure to depth interpretation.

December. Where I've written notes in the margins I'm looking again and collating. I can't help but wonder why I wasn't able to do this earlier. It's all there in black and white and red and blue. The text and my notes. I'm so happy now to have this outline for my thesis. I can order it now. I'm not frightened any more, but I don't think this will last. I have two; I still need a third. That's an area for further research. I have to think about that for a very long time, I know. But never for two days in a row have I felt this way. When I come back to my work it's still there, whereas before it was all in flux so that I could barely recognise it. Please let me finish. Please let me finish on time. That's what I need.

#### **Thursday: 3rd March 1994**

Went over last year's research diary and collated the following notes:

I wrote these from paper onto computer on 9th March:

10/12/92 Representation and how interpretation is represented. have static rep and interpretation is activity currently rep statically. This main limit of rep (Look at Rosenau postmodernism and limit of rep) Hypertext/media overcome (Think in relations we already try overcome limit: perspective, question assumptions etc., power, hierarchy since most power views get most rep. CATWOE)

Self-reflection: reinforce pattern as well as break it: be more self-conscious of patterns (OUTCOME OF RESEARCH APPROACH AS WELL)

PROBLEM: MVM 'grab-bag' How overcome limits of each method on own (synthesis of inquiry not well-rep in books; also confusion...MVM based on theory of differences. Not try to overcome; instead take seriously wide range of approaches and critique them not by banishing but by juxtaposing experiences)

PROBLEM: Mitroff/Linstone Kantian Problem 'choosing' range (not matter of choice; link to Kuhn's Postscript on perception and definition of interpretation as appears in your thesis outline)

FURTHER RESEARCH: 8/Jan/93 Structuralism has most obvious input/output from which knowledge built up (Hypertext/Critiquing Systems/CBR) Study structures at work

PROBLEM: View of each method affects view of MVM (divided meaning between author/user and text/reader)

FURTHER RESEARCH: approach deal with conflict (decon) (Lesson for research Approach)

FURTHER RESEARCH: look back on other methodologies and decon (Lesson for T&P)

FURTHER RESEARCH: Methodologies as systems of interpretation. Look at assumptions in interpretation in hermeneutics, structuralism, postmodernism assumptions need make clear, but can't always do so, so decon (Lesson for research approach and T&P)

FURTHER RESEARCH: 19 Jan 93 Relationship oriented programming. Not see object itself, only indirectly in relation to background when make relationship, figure/ground. Theory of I useful since about how I establish relationships Object arise only via relationships

how/why: RESEARCH QUESTION: is posited as how. Therefore, in sig prior establish WHY work: matrix of critical concepts.

Panofsky: controlling principle of interpretation is a history of tradition

METAPHOR: 1/feb/93 works by being like but not like. how m'p works, not specific details-- ambiguous opposition that not be resolved: no final resolution

1/feb/93 shared meaning: points where break off discourse AS dialogue and discourse as meaningless, unapproachable, trivial, even

FURTHER RESEARCH: 1/feb/93 IS say what can't be considered; make these boundaries specific (gestalt) disagree over figure/ground (Derrida frame)

2/feb/93 paper: methodology in use: trope for reasoning as critique (TWH thought this main outcome of my research) LOOK AT IT AGAIN

4/feb/93 T&P: T OUTCOME: framework explain how M I in P

P OUTCOME: tools for I. HTEXT rep (CBR-- since P structured via case)

Wartofsky (p137) T no more che reflective P (closer link: theory addresses what practice can't and vice-versa)

17/feb/93 closure of Derrida's frame: system not be conceived of without boundaries

in theory mutually exclusive, but in practice all depend on reading context of situation (divided charc of exper) Since contexts is infinitely extendible, can't know definitively whether exclusive.

FRAME: closure and ability exercise power (and choice) in putting system in motion

GET REF: Oz and ETHICS

9/mar/93 boundaries: hard make cross boundary changes. However, source of problem is rarely the perceived problem. It's usually somewhere in environment (DECONSTRUCTION CAN HELP) Need with methodology that combines approaches (overlap boundaries at 'right' places)

in DIFFERENCES lie crucial things, not in sims. Computer is general tool, but people use for specific purposes (Derrida's differance) Gestalt vase

statement of problem themes as perception of risk

11/mar/93 DECONSTRUCT HERMENEUTIC FRAMEWORK argue against reifying epistemological devices

critique of ideology (bound by individual perspective; avoid reifying this as knowledge (relate to ethics)

SEE TWH, PHD, CHAPTER 7 ON METAPHOR Further area of research (look at in relation part 3 of proposal)

experience and knowledge (not want experience to become knowledge)

26/mar/93 WHY DECONSTRUCT things not noticed until break down (Heidegger)

26/mar/93 MVM based on THEORY of DIFFERENCE; graft/embed HARD AND SOFT Miles; form flickers and ceases to be trope only when it becomes a topos (when it's construed as place of intervention) and this understanding depends on breaking the form (THEORY AND PRACTICE) why so many METHODOLOGIES in INFORMATION SYSTEMS Breaking allows freedom for INTERPRETATION, freedom of meaning, freedom construe meaning of one's own in PRACTICE (divided character of meaning and experience) Freedom (relate to Jackson emancipation) is illusory unless achieved against prior plenitude, a polysemy of meaning and against language (WHY DECONSTRUCT USING OWN LANGUAGE)

approaches proliferate in individual practice, but structure in communications

want to show activity as we experience it (but there is always this lag) and tendency for description to become knowledge

read between the lines (CONTEXT, don't be conned by the text)

Methodology keeps getting in way when read situation (divided character of experience) Also relate to history in general and why need to work within a tradition that I question.

THE DIVIDED CHARACTER OF EXPERIENCE: GAP BETWEEN LIVING AND RECOUNTING (USING METHODOLOGY AND DESCRIBING IT IN USE) THIS DIFFERENCE INVESTIGATED IN THREE WAYS: 1) THEORY AND PRACTICE OF METHODOLOGY 2) APPLICATION OF METHODOLOGY AND ITS REPRESENTATION IN CASE HISTORY 3) SYSTEMS ANALYSIS. AND REPRESENTATION IN AN INFORMATION SYSTEM

Past unverifiable (hence importance of replication (in lab) and reconstruction of events) Link with fiction crucial since reconstruction of the past is a work of imagination. In methodologies the role of imagination in reconstructing the past is investigated through specifics of reflection in action research as represented through case histories that alter the theory of a methodology.

**Wednesday: 16th March 1994**

Up last night until half past three. Sad: Sad staring into a dying fire late at night. Finding myself there again, still staring after all this time. I have never felt such sadness dripping, falling from my eyes.



It is time to end.

## APPENDIX II

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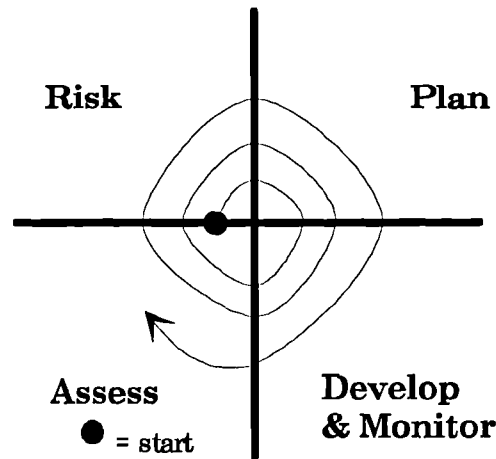
### Project Management

While a descriptive/interpretive approach allows for unanticipated exploration and reflection to determine the most appropriate course of action, a limitation is that it is potentially never ending.<sup>1</sup> Consequently, the most appropriate course of inquiry was additionally viewed explicitly within constraints imposed by the time available for the research, the topic, and my experience and skills. Because of the degree of risk involved in scoping a descriptive/interpretive approach, Boehm's (1989) spiral model for managing software development was adapted to scope and manage the research project while preparing a proposal for formal assessment at the end of the first year.

In relation to criticisms raised in Chapter 3 concerning the limitations of linear development, Boehm's (1989) spiral model represents a revision of his earlier work on the waterfall model, a prescriptive linear approach to software development. Boehm's spiral model is divided into four quadrants as follows:

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<sup>1</sup> Nonetheless, this also reasserts the appropriateness of a descriptive/interpretive perspective in light of criticisms raised in Chapter 3 of this thesis with regard to limitations of a means/end problem-solving focus and the linearity of traditional practice.



In the first quadrant, **Risk**, a list of risks is compiled, and then each is assessed using a rating such as, LOW, MEDIUM, and HIGH.<sup>2</sup> Next, options to reduce risk in high areas are determined, and each object is then considered in turn against the project's known constraints. This process removes options that are impractical and in doing so leaves options that could benefit the project.

In the second quadrant, a **Plan**, is prepared for the next cycle. This includes new options decided upon in the Risk quadrant. The resulting plan outlines the targets for the cycle, including deliverables, which results in a new plan to guide the project. During the third quarter, **Development and Monitor**, work was assessed on a monthly basis or more frequently as required. On monthly **assessments** this quadrant concluded with a progress report as well as any deliverables specified in the project plan, and these were submitted for review by my supervisor.

Additionally, a diary was maintained to scope the research while developing a proposal for submission at the end of the first year. Following acceptance of this proposal the diary was used to reflect on the course of the research including the development and recurrence of ideas that resulted through my own process of inward-forming. In returning to Boland's (1987) comment that processes of inward-forming are elusive since they are not directly observable, the diary was also intended to impose a degree of rigour to an approach that addresses matters not readily amenable to empirical investigation. The diary was ended when the research began to take on a the formal structure of an argument that was then developed for submission as a thesis.

Excerpts from this diary are given in Appendix I.

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<sup>2</sup> While the subjectivity in defining *low*, *medium*, and *high* is recognised, it was thought inappropriate and potentially misleading to attempt to quantify perception of risk since it would then be tempting to subject my initial judgements to statistical manipulations thereby implying some form of objectivity in resulting numerical output.

## APPENDIX III

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### Speech and Writing

This appendix includes a further explanation concerning a deconstructive understanding of the relationship between speech and writing.

Derrida (1977a) explores the supplemental relation between speech and writing as oppositional terms. For example, as early as Plato's dialogues speech as a mode of communication has been privileged over writing. Writing has been seen as the supplement to speech, which is primary and transparent to meaning. Writing, by contrast is secondary and more deliberate. It uses rhetorical and literary artifices so that the thought, meaning or ideas that are to be transferred are in fact mediated through and therefore affected by writing. This is the 'common-sense' approach to the relationship between speech and writing, which Derrida (1977a) describes as *phonocentrism*, or privileging the spoken over the written. In returning to Chapter 4 of this thesis, this may be understood as an example of suppressing the first aspect of meaning as a general structure in favour of the second aspect of meaning as a specific instance.

However, Derrida (1977a) argues that the difficulties associated with writing are already present in speech. That is, language is already permeated with rhetorical figures and metaphors which are not the property of texts alone but also occur in daily conversations. Further evidence for this is suggested by Lakoff and Johnson's (1980) *Metaphors We Live By*, and by research in information systems development methodologies that explicitly draw on metaphors in analysis and design (e.g., Walsham, 1991; Kendall and Kendall, 1993, 1994; Flood and Jackson, 1991b).

Derrida (1977a) argues that this hierarchical arrangement of speech over writing is rooted in the myth of origins. We assume that speech came before writing and that writing was simply a convenient way of transcribing and recording speech. However, Derrida (1977a) argues that such origins can never be located in reality. We cannot know for sure the historical moment, first, when language originally became articulated in speech, and second, when writing first emerged and was differentiated from speech. All we have is a belief based on fragmentary evidence, and even this cannot be proven conclusively.

If writing is indeed a way of reproducing or repeating speech, we must accept that speech itself contains structures by which it can be reproduced and repeated. In this view, the downgrading of writing as simply a mode of transcription, i.e., of repeating that which is original, is consequently a misrepresentation of speech itself, which is also capable of transcription, from one moment, context or voice to another. For example, in conversation we often ask such questions as, “What did John say about me?” and the speaker can reply by transcribing John’s speech (including an imitation of his American accent) to this new context, “He said that gee, you’re *totally* cool!”

Derrida ascribes this preference of speech over writing to the *logocentrism* that characterises Western culture. Logos, as defined in the *Concise Oxford English Dictionary* (1988, p. 594), signifies both ‘word’ and ‘reason.’ Thus both word and the person saying it are bound up in the meaning of this sign. Derrida argues how this has produced a *metaphysics of presence* in the way we think about language. That is, the linguistic utterance has become identified with the presence of the one who utters. So when we hear or read a text of any kind we automatically assume a speaker or writer of that text, no matter how difficult this might prove. Logocentrism is thus the motivating principle behind phonocentrism.

Thus writing, in which meaning becomes elusive, according to the general culture myths which oppose writing and speech, reflects the real nature of language since it demonstrates the problems of language itself -- e.g., that it mediates thought, that it is elusive in meaning, that it uses metaphorical language that distorts or obscures ideas even as they are conveyed. For Derrida (1977a), the opposition speech/writing disguises what he calls *archi-écriture* or *archewriting*. Both speech and writing may be seen as manifestations of a third linguistic term, a kind of *archewriting* which he takes as a definition of language itself.

# APPENDIX IV

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## MVM Case Study and Diagrams

This appendix includes a photocopy of an action research case study from the Avison and Wood-Harper (1990) text. It has been copied with Wood-Harper's permission. It also includes diagrams of the process of SSM from Checkland and Scholes (1990, p. 29) and recent developments in MVM from handouts received on an advanced M.Sc. course on systems analysis.

## Chapter 10

### Case Study 3: The Freight Import Agency

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The import agency was a small freight agent situated at a local airport. The purpose of the study was to identify the systems requirements and postulate solutions. Because the information modelling phase of the DLU case study was discussed in great detail in Chapters 8 and 9, we have only outlined these stages in case study 3. However, we hope that the outline of the problem situation using the background provided in the narrative and the diagrams is clear. It would be a useful larger exercise for you to develop this case by developing the models provided and thereby constructing the missing aspects, such as the function/event matrix, a description of the entities and relationships, the lists of attributes, the entity-life cycle, through to the process of testing the system. Obviously you will have to make assumptions. Some of these may have to be made because of flaws in the models provided!

The two main actors within the company were an ex-freight manager of a large local freight company and his secretary, both of whom had broken away from their previous company to set up a rival company. The operational function of the company was well-defined and both people were familiar and skilful with the necessary tasks required to fulfil this function, including such activities as receiving goods and filling in complex customs forms. Other auxiliary functions, however, were not well-defined; for example, the marketing and planning functions were run on a 'gut feeling' ad hoc basis. At the time of the study, the import agency was doing well and was confident in its affairs. With the unstructured and uncertain future strategy, the real state of the company was unknown.

Neither person involved had had previous experience with systems analysis and design. A major task in the study was to develop a degree of mutual understanding between the analysts and the users.

Problems identified included uncertainty about the rate of expansion. For example, should they keep a low profile in the midst of powerful competitors who had not yet taken action to combat the new competition? The company, however, was expanding, with a backlog of accounts and plans to provide other services that would further expand not only their customer base, but also the paperwork.

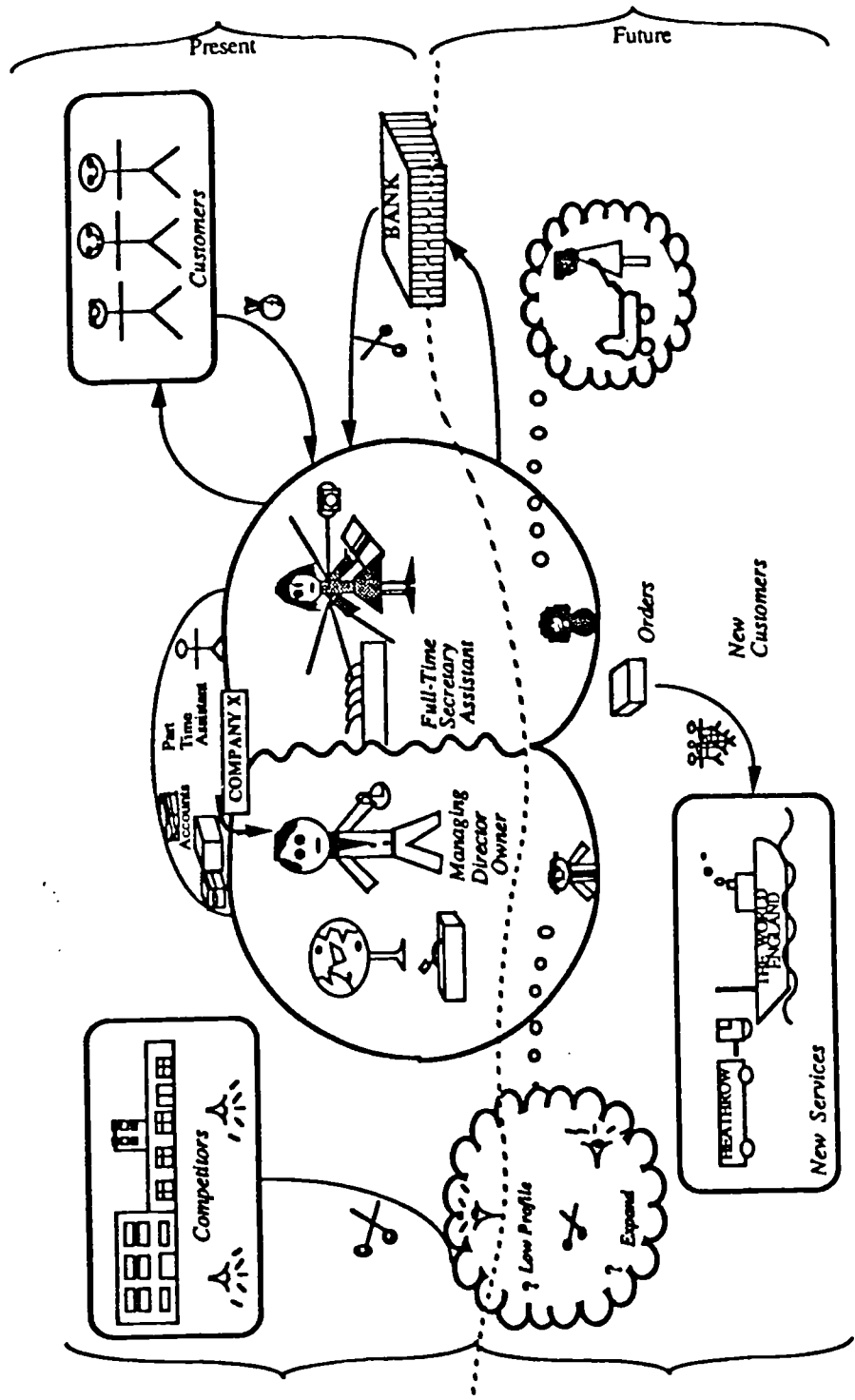


Fig. 10.1 Rich picture of the freight import agency



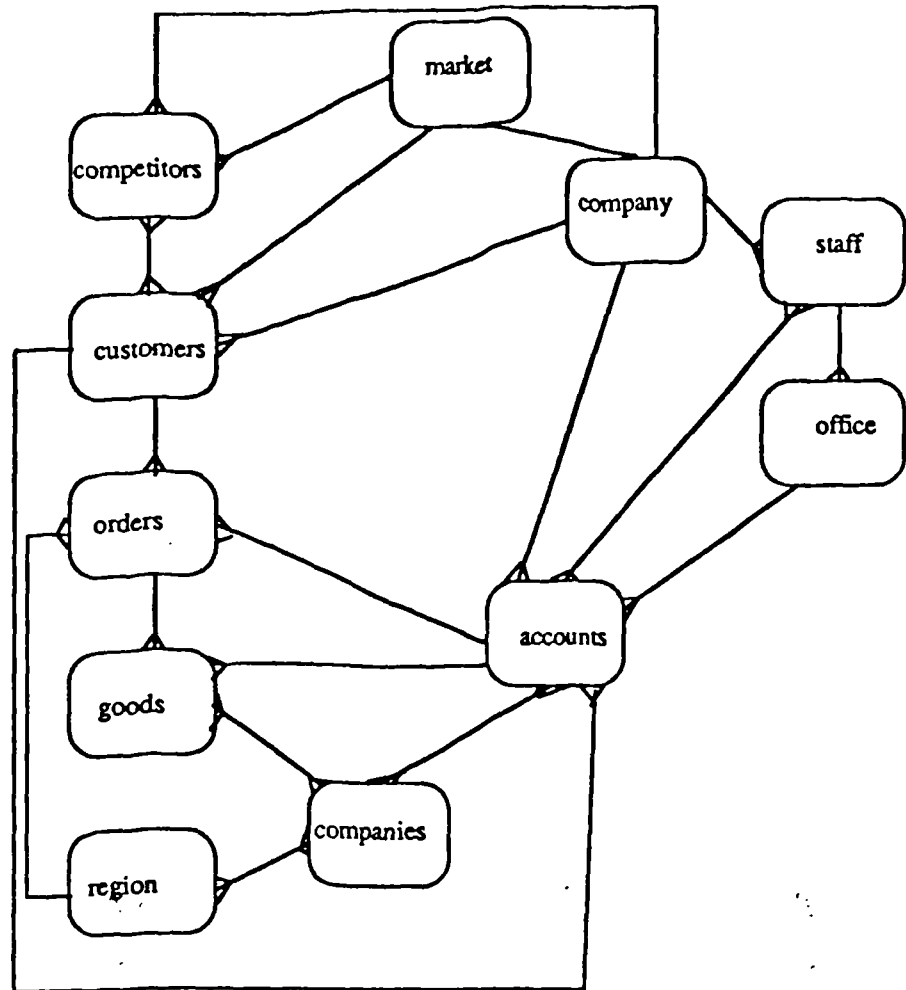


Fig. 10.2. Entity model of the import agency (part completed)

Staffing was expected to be a problem, since the full-time secretary wished to leave and start a family in the near future. Because of her skill and knowledge of the company this could mean a major restructuring of the business in terms of staff and technology. With an increasing work load, this problem would get worse. A part of the rich picture of the situation can be seen in Figure 10.1.

The company chairman participated at least partially in the design process. Although not particularly pleased with the entity model (Figure 10.2 shows the part completed version with the main entities and some of the relationships), the functional model (Figure 10.3) was appealing to the Chairman, and he got involved in altering and redefining the model himself. This improved his understanding of the data flow diagrams at a later step (Figure 10.4).

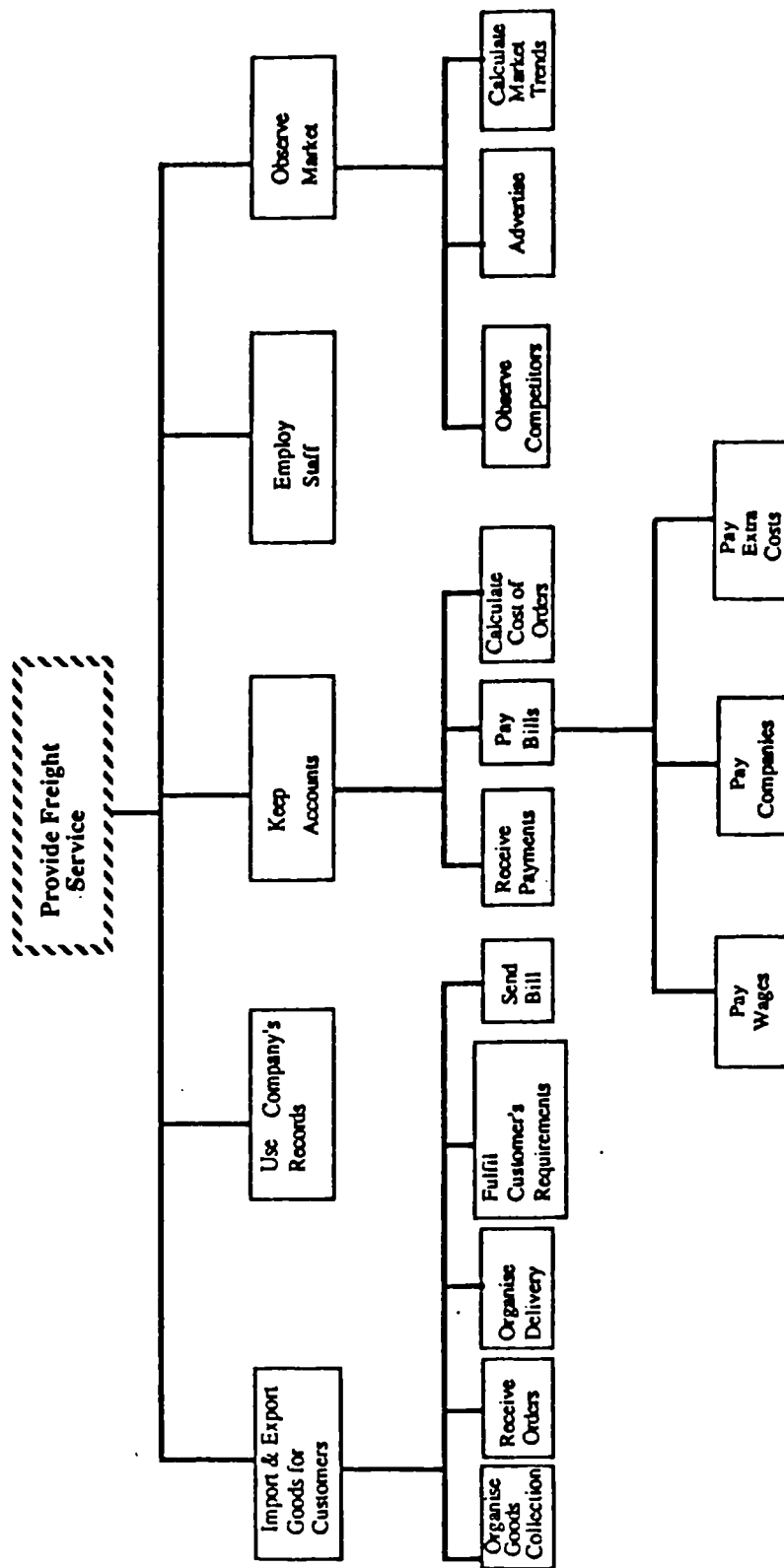


Fig 10.3. Functional Model of the Freight Import Agency

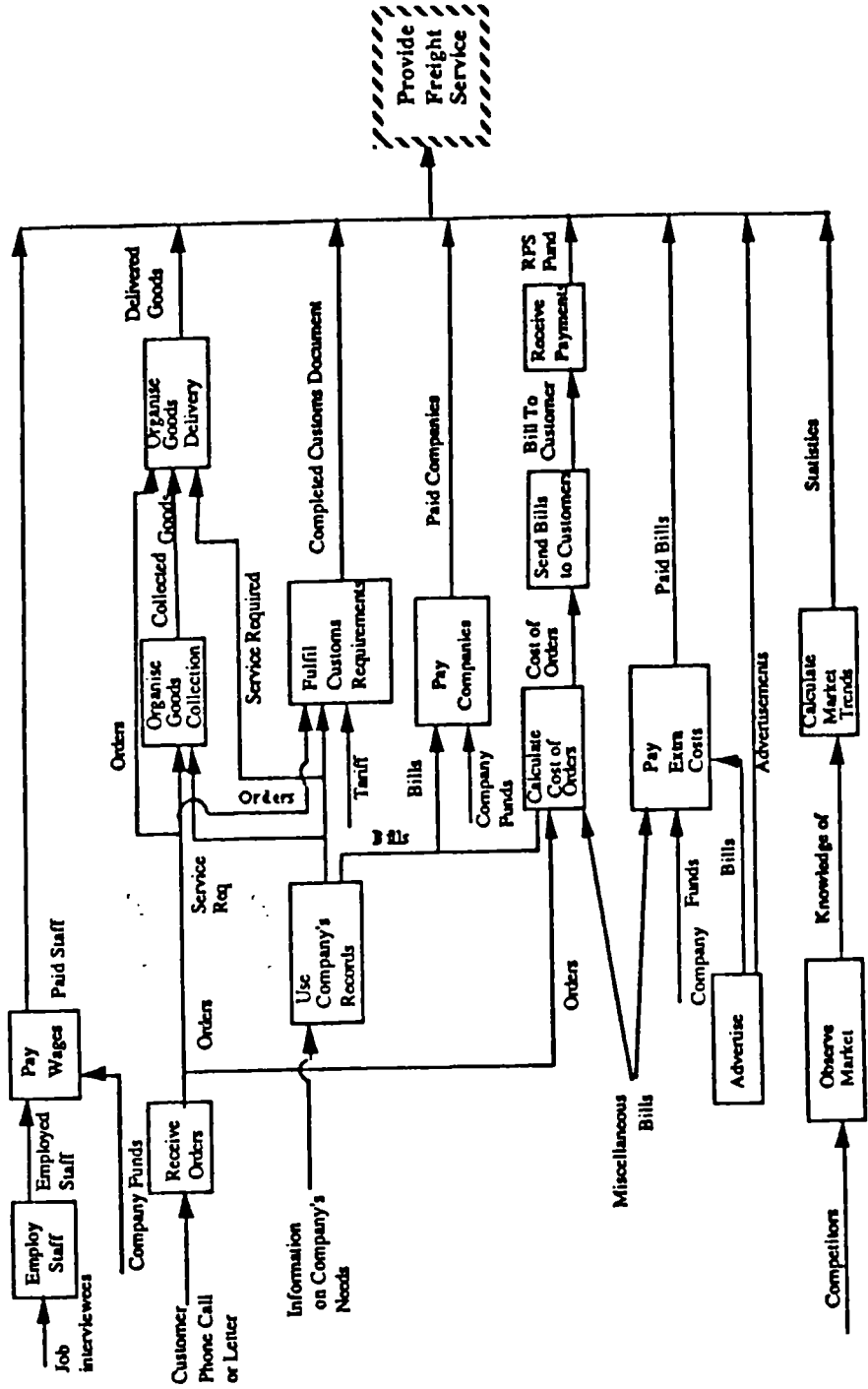


Fig 10.4. Simplified data flow diagram of freight import agency

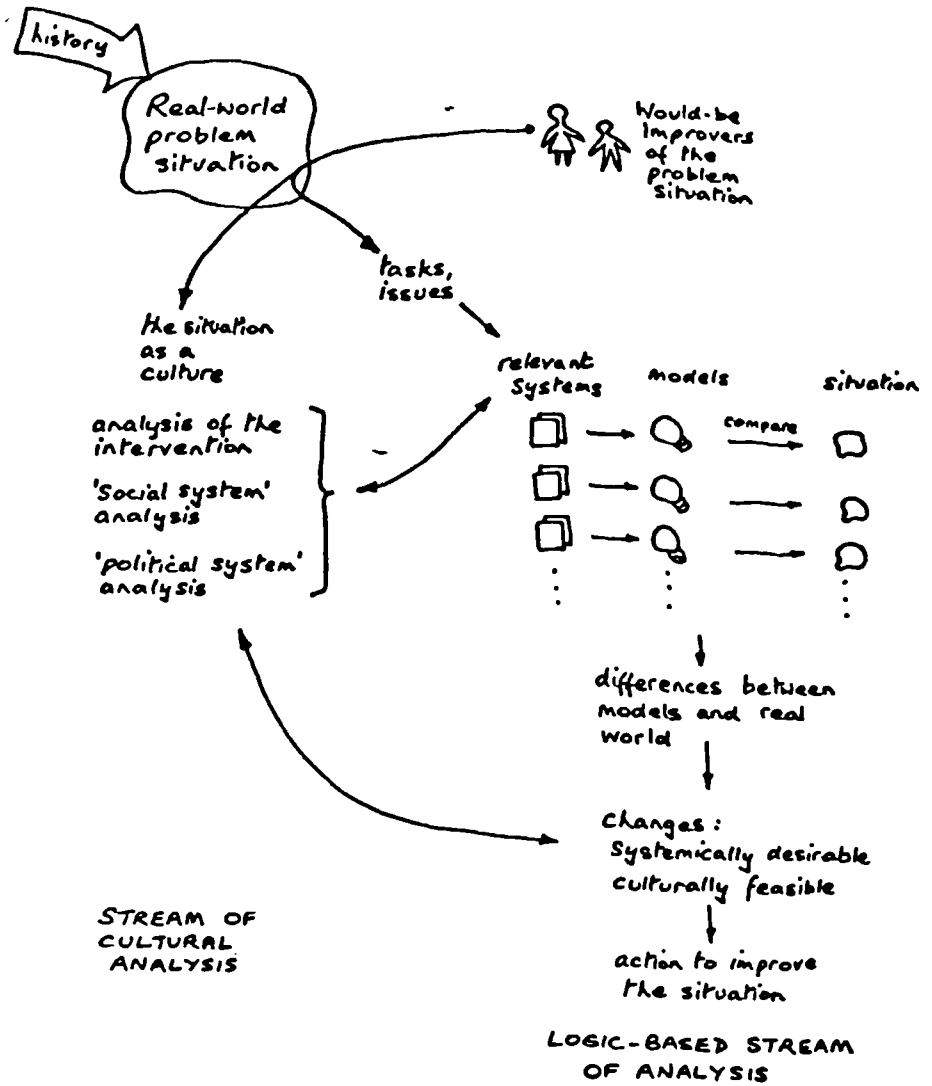
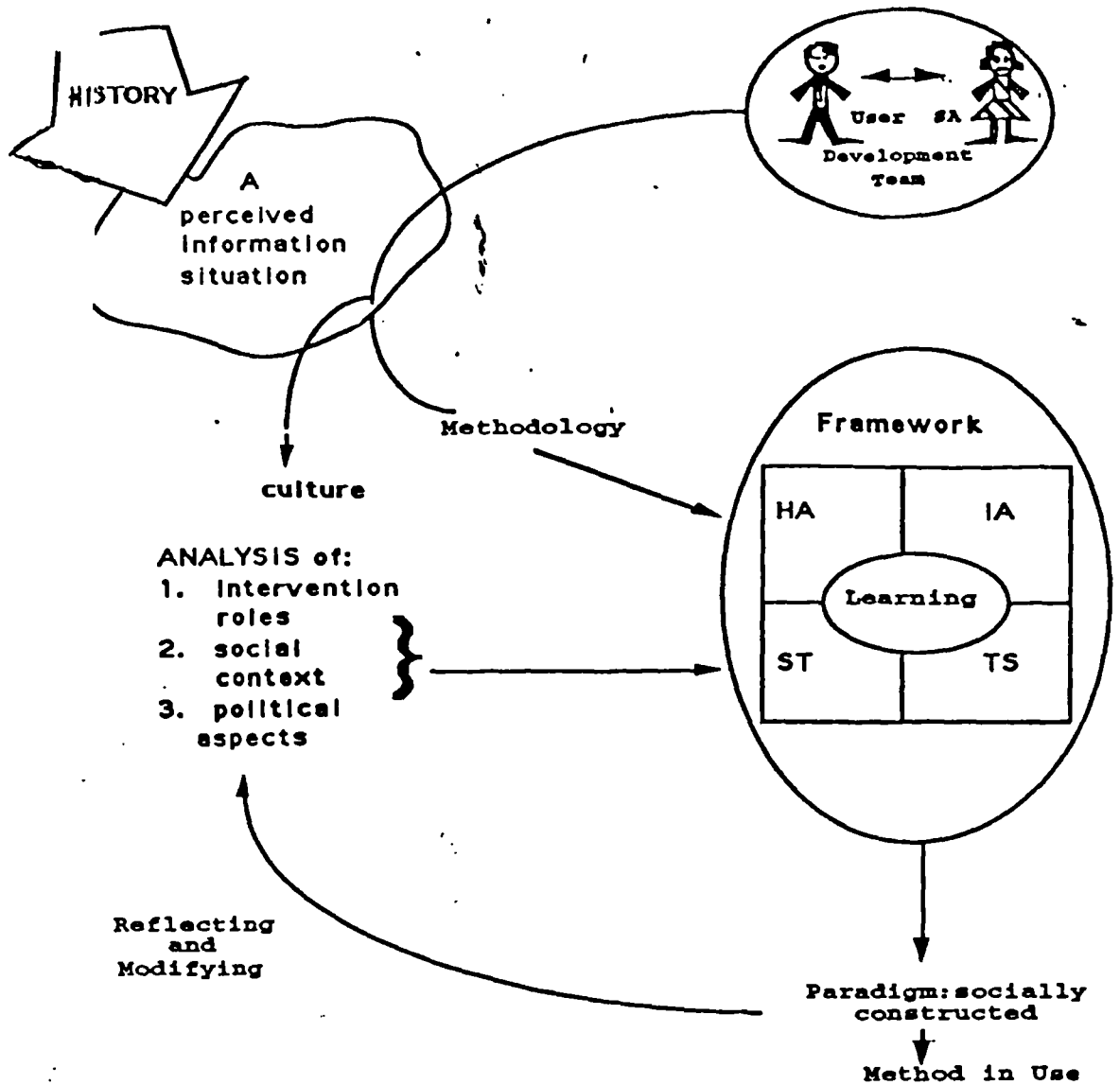


Figure 2.6 The process of SSM

systems are named, modelled and used to illuminate the problem situation. This is done by *comparing* the models with perceptions of the part of the real world being examined. These comparisons serve to structure a debate about change.

What is looked for in the debate is the emergence of some changes which could be implemented in the real world and which would represent an *accommodation* between different interests. It is wrong to see SSM simply as

# Muliview In Use



An attempt to depict a Multiple Perspective Methodology In use ( described in SSM nomenclature)  
 (amended from Checkland 1988, Davies 1989 and Wood-Harper 1989)

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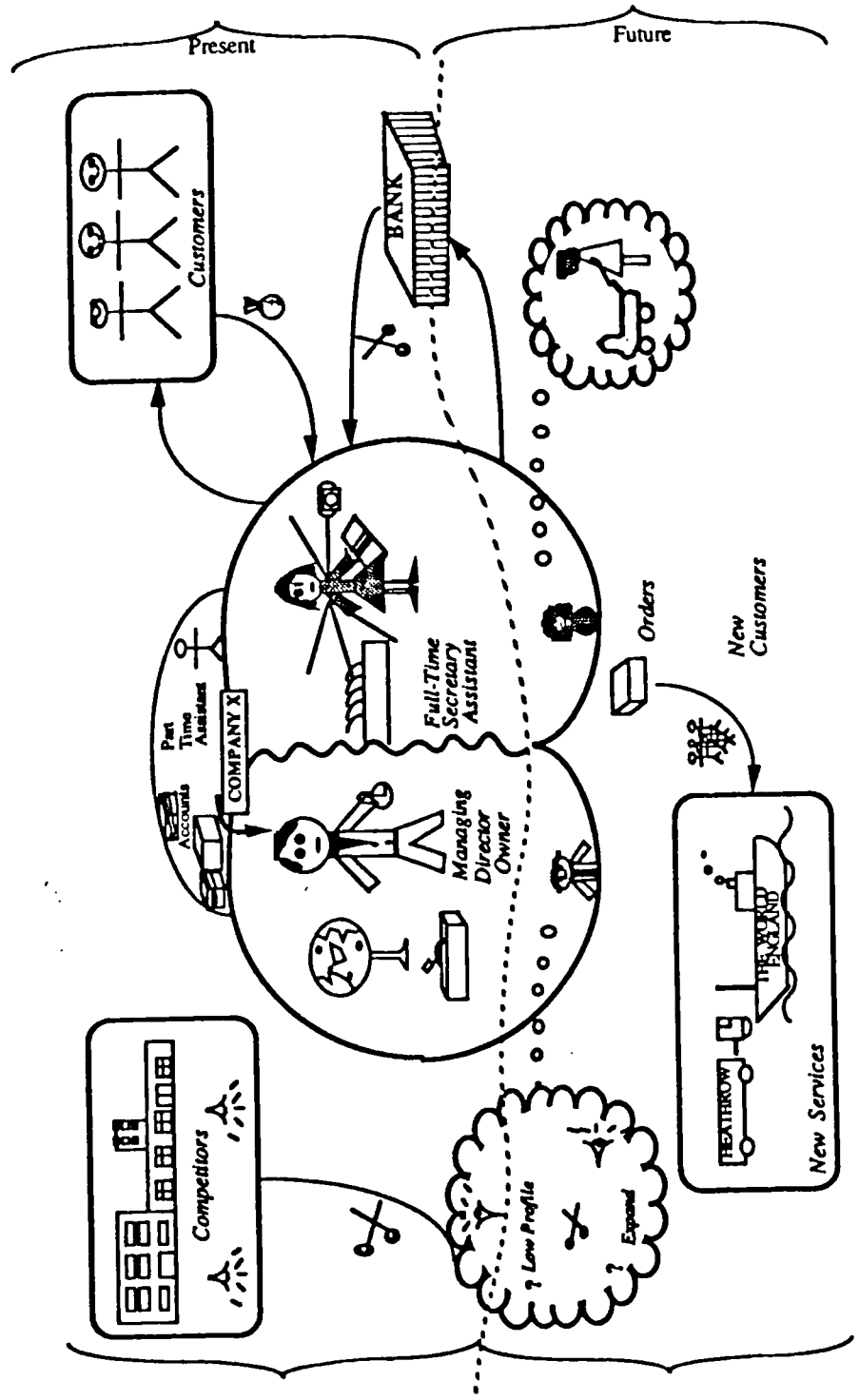


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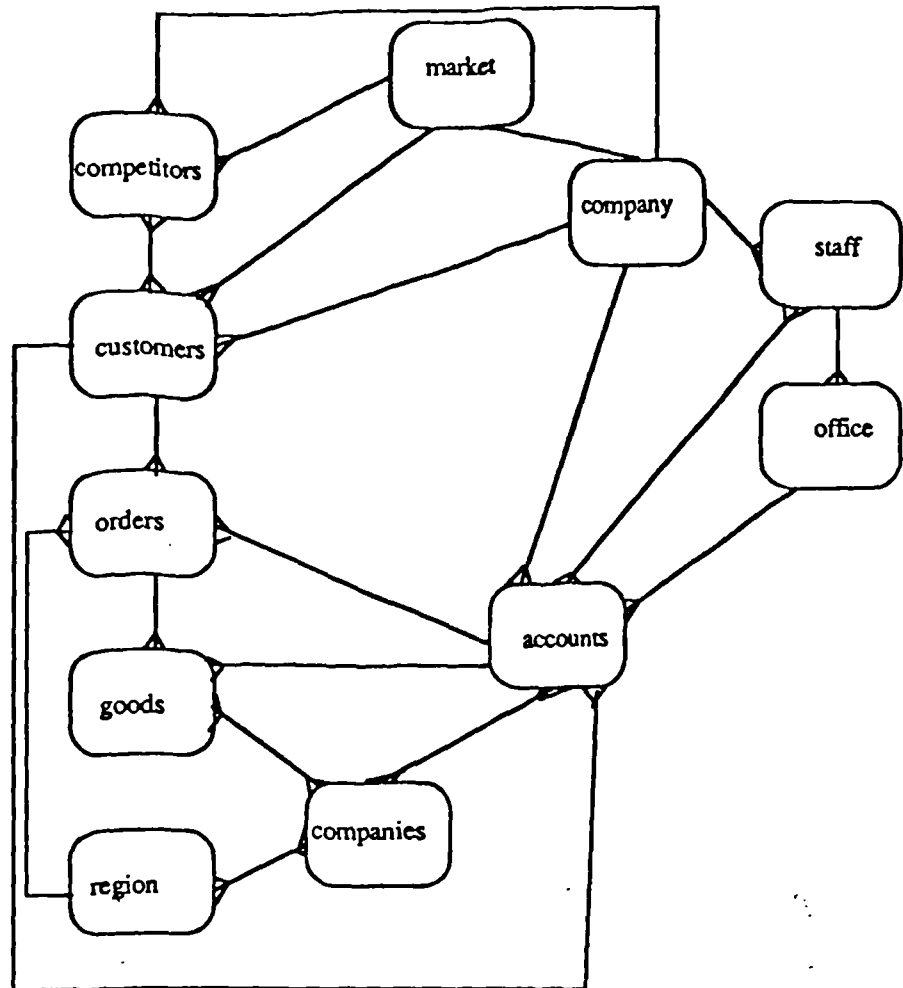


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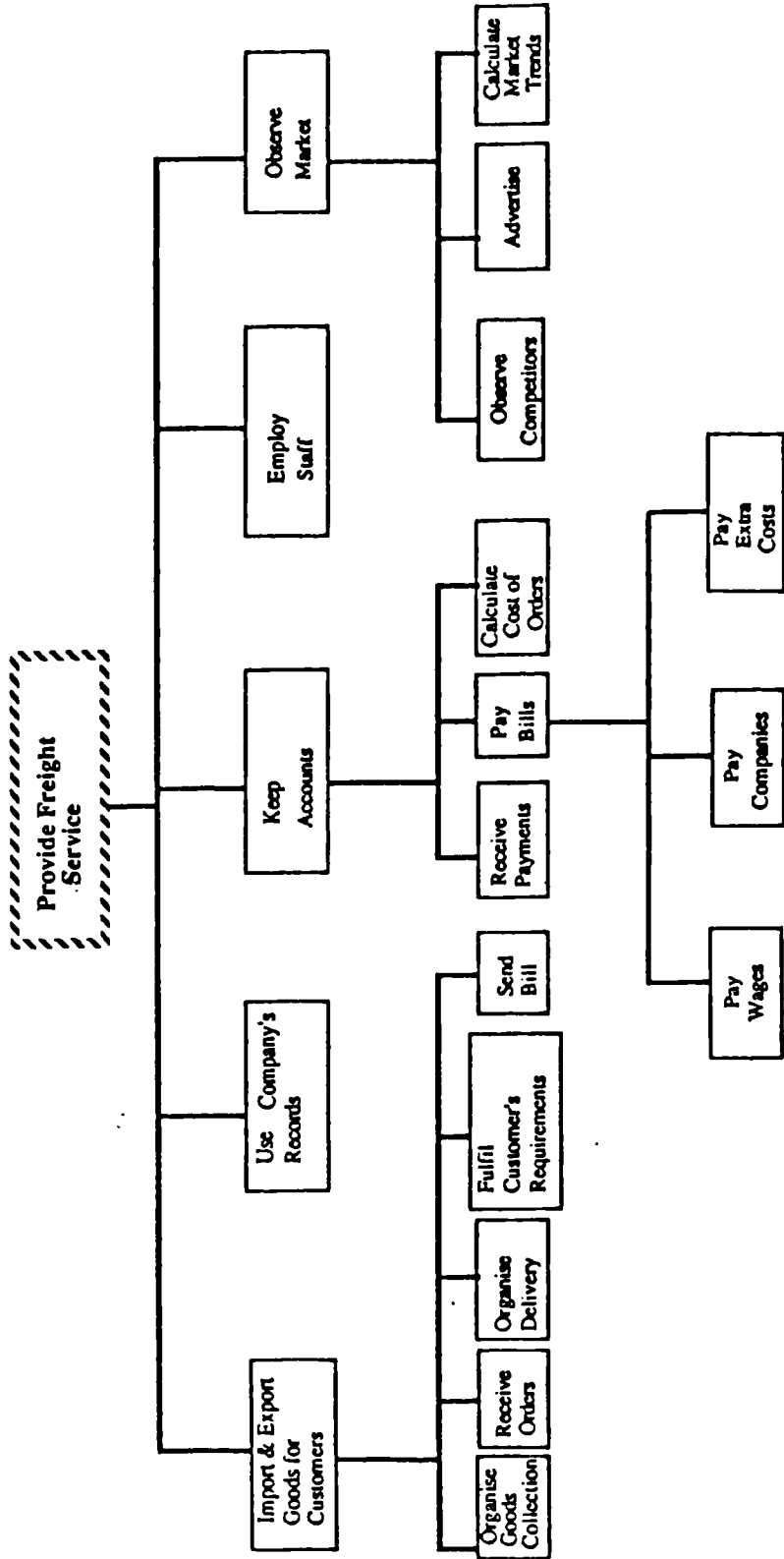


Fig 10.3. Functional Model of the Freight Import Agency

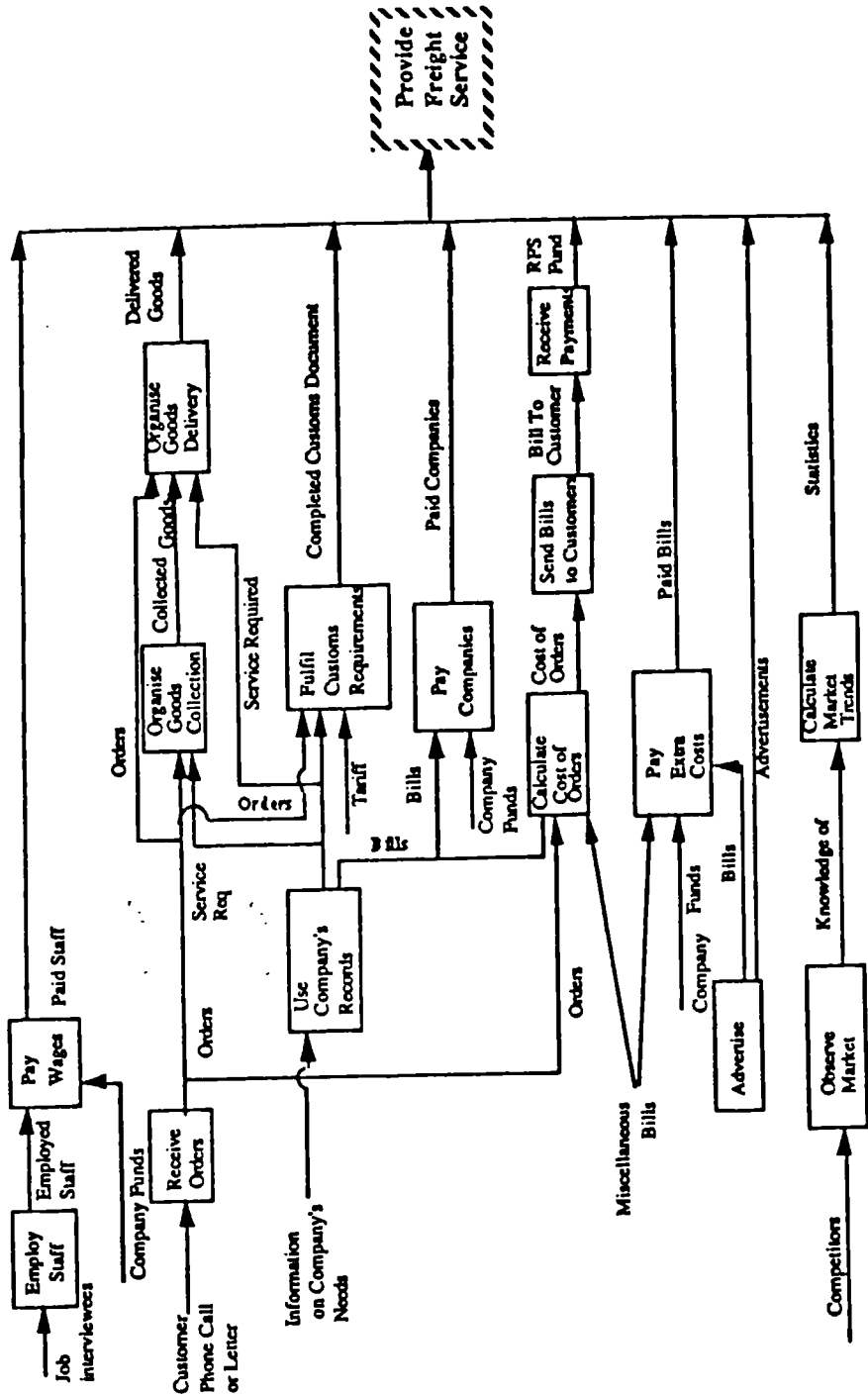


Fig 10.4. Simplified data flow diagram of freight import agency

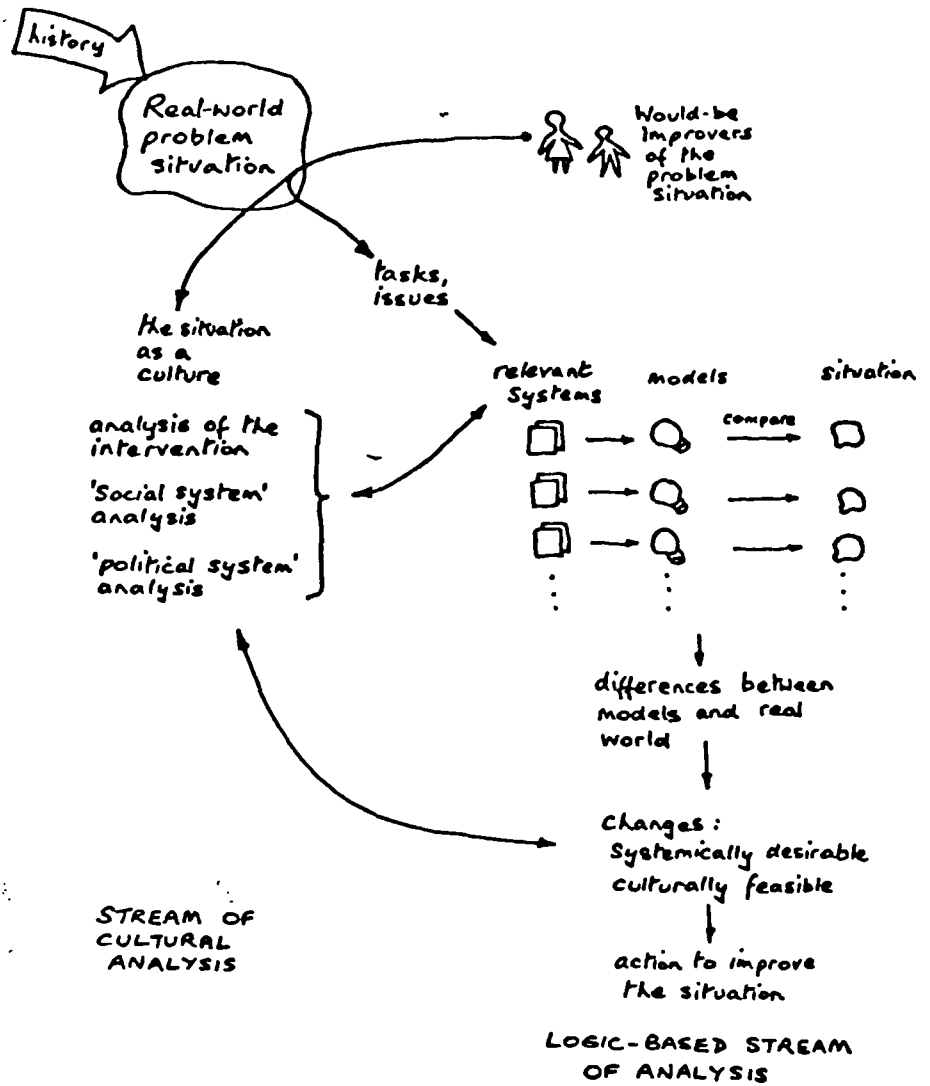
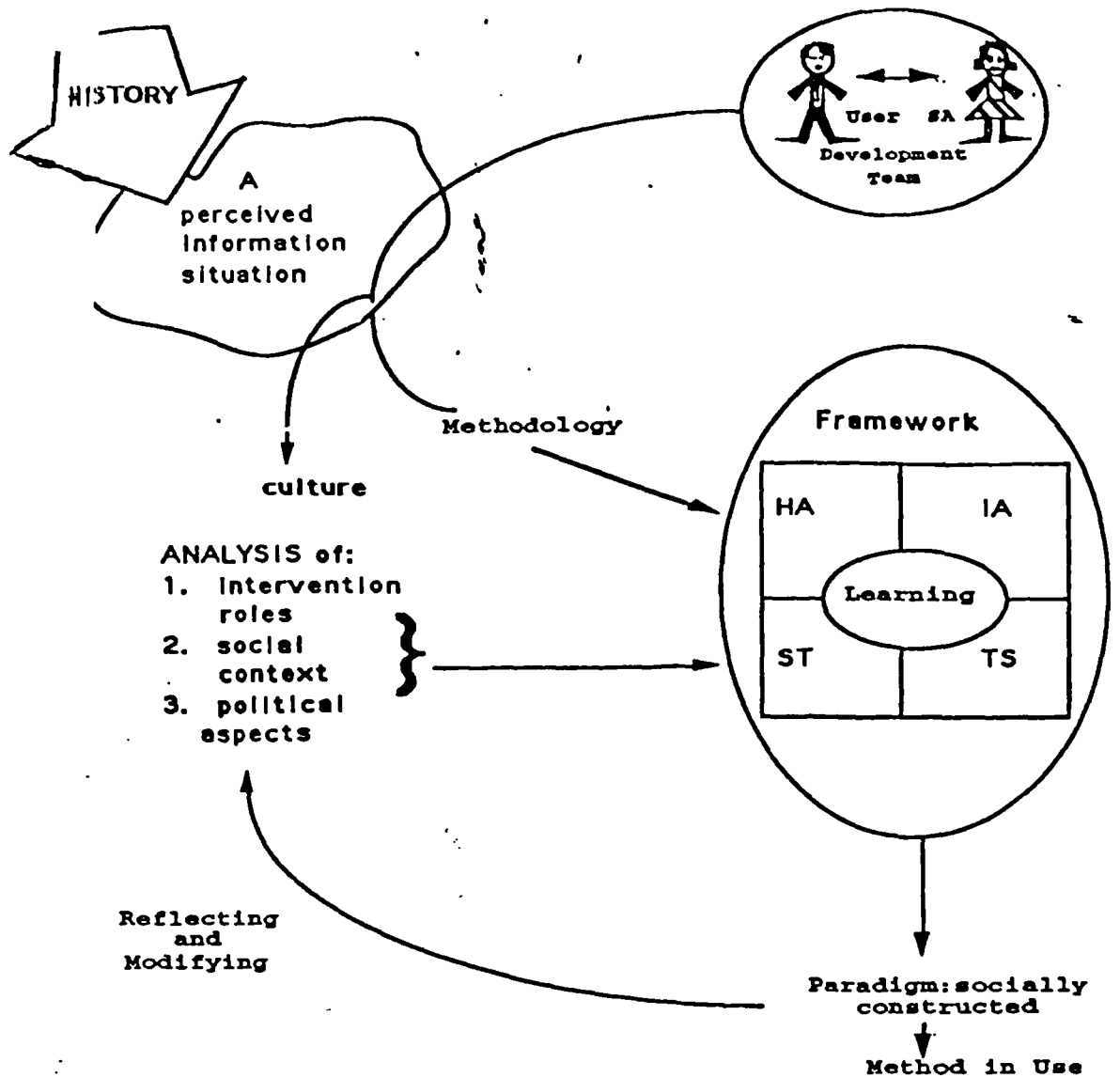


Figure 2.6 The process of SSM

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