

INTRODUCING QUALITATIVE METHODS


# Qualitative Research in Information Systems

*A Reader*

Edited by

MICHAEL D. MYERS  
AND DAVID AVISON

# QUALITATIVE RESEARCH IN INFORMATION SYSTEMS



INTRODUCING QUALITATIVE METHODS provides a series of volumes which introduce qualitative research to the student and beginning researcher. The approach is interdisciplinary and international. A distinctive feature of these volumes is the helpful student exercises.

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# QUALITATIVE RESEARCH IN INFORMATION SYSTEMS

A Reader

Michael D. Myers and David Avison



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## Preface

Since the mid-1980s there has been increasing interest in qualitative research within the information systems research community. Today qualitative research is accepted as being able to provide important insights into information systems phenomena. Qualitative research involves the use of qualitative data, such as interviews, documents and participant observation, to understand and explain social phenomena. Qualitative researchers can be found in many disciplines and fields, using a variety of approaches, methods and techniques. In information systems research, there has been a general shift away from issues that are purely technological to issues that additionally include the managerial and organizational, hence an increasing interest in the application of qualitative research methods.

There have been three 'inspirations' for this book. The first stems from the success of Michael Myers' web resource entitled 'Qualitative Research in Information Systems' at [www.auckland.ac.nz/msis/isworld/index.html](http://www.auckland.ac.nz/msis/isworld/index.html), a joint publication of *MISQ Discovery* and *ISWorld*. This book is intended as a supplement to that work. Michael's work received the Value-Added Site Award for 1996-1997 sponsored by the Academy of Management's Organizational Communication and Information Systems Division and *ISWorld*. The above work is published in two forms. First, an archival version of the work was published in *MISQ Discovery* in 1997 (Myers, 1997a). *MISQ Discovery* is a department of *MIS Quarterly*, and is intended to engender new forms of knowledge dissemination. The journal is available in electronic form on the Internet at [www.misq.org/discovery/index.html](http://www.misq.org/discovery/index.html). Second, a living version of the work continues to be updated as part of both *MISQ Discovery* and *ISWorld Net* (Myers, living). *ISWorld Net* is an international information infrastructure for information systems researchers and educators throughout the world. Having a living version means that the work is dynamic and as an example of living scholarship is able to take full advantage of advances in computer and communications technologies.

The second 'inspiration' is the work of the International Federation of Information Processing (IFIP) Working Group 8.2 of which David Avison is chair. IFIP 8.2 has long campaigned for qualitative research in information systems and has held a series of conferences on qualitative research methods. The proceedings can be found in (Lee, Liebenau et al., 1997; Mumford, Hirschheim et al., 1985; Nissen, Klein et al., 1991). David has seen the atmosphere change at the three conferences from the tentative, almost apologetic,



meeting in Manchester of people who argued that qualitative research had (possibly) a role to play in information systems to the most recent conference in Philadelphia by which time qualitative research in information systems (IS) had made a major impact. Many researchers wanted to hear more about our latest qualitative research work in IS.

The third inspiration is the perceived need for a book which brings together many of the best qualitative research articles in IS. Until now excellent articles on qualitative research in IS have appeared in many different places, for example in various journals and conference proceedings. In our international travels many colleagues have mentioned to us that a book which provided some of the 'classic' articles would be very useful, especially in the teaching of qualitative research methods and as a basic reader for PhD students in IS. The contribution of this book is to bring together many of these articles in one volume for the first time.

This book is therefore intended to satisfy the above needs and to complement the *MISQ Discovery/ISWorld* site. It provides many of the recommended readings in a readily accessible form. Following the introductory chapter, the book includes 12 chapters that discuss various approaches to qualitative research in IS. The authors are leading IS researchers from around the world.

The organization of this book is as follows: Part I provides a general overview of qualitative research in IS; Part II has chapters which introduce the reader to various philosophical perspectives; Part III includes chapters which discuss various qualitative research methods; and Part IV discusses modes of analysing and interpreting qualitative data.

We believe that providing a collection of articles such as this draws attention to the tremendous progress that has been made within the field of IS, particularly within the past decade. Our intention in bringing them together is to make them more accessible to IS scholars and students while at the same time making them available to qualitative researchers in other fields. We hope that this volume contributes to the further development of qualitative research in IS.

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## **Part I**

### **Overview of Qualitative Research**



# 1 An Introduction to Qualitative Research in Information Systems

*Michael D. Myers and David E. Avison*

Information technology and systems have now become ubiquitous in the developed world. Information systems are important to the private and public sectors, to individuals, organizations, nations and global institutions. Information systems pervade such diverse areas as agriculture, manufacturing, services, education, medicine, defence and government. Today, information systems affect almost everyone.

A number of fields, such as computer science and software engineering, concern themselves with information technology *per se*. However, the discipline which focuses on the development, use and impact of information technology in business and organizational settings is 'Information Systems' or IS for short. This area of study is quite new - it only emerged in the 1960s - however, the field has grown substantially. Most universities throughout the world now teach information systems, and the field has reputable scholarly journals, prestigious international conferences, and national and international associations.

Whereas much of the early research in the field had a technical focus (for example, on automating the back office or optimizing decisions), in the 1980s the focus shifted to the *management* of information systems. Then in the 1990s the focus broadened considerably, from the management of information systems to the relationship between IS and *organizations as a whole*. IS, as a field of study, has now expanded to include issues such as communication and collaboration between people and organizations, inter-organizational systems, electronic commerce and the Internet.

Given the tremendous scope of the field, it is perhaps not surprising that there is also great diversity in the research methods and approaches used to study IS phenomena. Both qualitative and quantitative research are welcomed in our top journals, as long as the research itself is of a high quality.

The purpose of this book is to bring together for the first time many of the best, indeed 'classic', articles illustrating the use of qualitative research in IS. The authors are leading IS researchers from around the world. A collection of articles such as this draws attention to the tremendous progress that has been made within the field of IS, particularly within the past decade.

This book is also intended to complement Michael Myers' web resource entitled 'Qualitative Research in Information Systems' (originally found in Myers, 1997a) (see also Myers, 1997b). The living version of this work can be found at [www.auckland.ac.nz/msis/isworld](http://www.auckland.ac.nz/msis/isworld) (Myers, living). This book provides many of the recommended readings in a readily accessible form. Following this introductory chapter, the book includes 12 chapters that discuss various approaches to qualitative research in IS.

As an aside, these articles also evidence the richness of the topics in the IS domain and provide a good overview of the subject matter. We hope that you will use this book as only a starting point and that readers will wish to delve further, for example by looking into many of the references used (see bibliography). Our EndNote file of references in qualitative research can be downloaded from Myers (living).

The organization of this book follows the same structure as that of the web resource mentioned above. This structure is as follows: Part I provides a general overview of qualitative research in IS; Part II has chapters which introduce the reader to various philosophical perspectives; Part III includes chapters which discuss various qualitative research methods; and Part IV discusses modes of analysing and interpreting qualitative data. We have omitted a discussion of the use of qualitative techniques for data collection; this is because there are exemplars of their use readily available and their use is the same in IS research as it is in other disciplines. Good discussions of qualitative techniques for data collection can be found in Denzin and Lincoln (1994), Miles and Huberman (1984), Rubin and Rubin (1995) and Silverman (1993).

## **Overview of qualitative research**

Research methods can be classified in various ways; however, one of the most common distinctions is between qualitative and quantitative research methods.

*Quantitative research methods* were originally developed in the natural sciences to study natural phenomena. Examples of quantitative methods now well accepted in the social sciences include survey methods, laboratory experiments, formal methods (for example, econometrics) and numerical methods such as mathematical modelling.

*Qualitative research methods* were developed in the social sciences to enable researchers to study social and cultural phenomena. They are designed to help us understand people and the social and cultural contexts within which they live. Examples of qualitative methods are action research, case study research and ethnography. Qualitative data sources include observation and participant observation (fieldwork), interviews and questionnaires, documents and texts, and the researcher's impressions and reactions.

Part I of the book contains three chapters that provide an overview to qualitative research. The article by Galliers and Land (Chapter 2) was one of the first articles in IS to argue for greater diversity in the use of research methods. Along with this present chapter, this sets the scene for the rest of the book. It is

particularly interesting to read the technical correspondence that followed the article one year later (Galliers and Land, 1988; Jarvenpaa, 1988). We suspect that there would be more a meeting of minds today, with all authors agreeing IS researchers should choose research methodologies that are appropriate to the subject matter.

One of the classic (and most cited) empirical examples of qualitative research in IS is the article by Markus (Chapter 3). In a well-crafted article, she discusses how various theories help to explain power and politics in the implementation of Management Information Systems.

For a more in-depth look at the different methods being used by IS researchers, we recommend the following books edited by Galliers (1992), Mingers and Stowell (1997), Mumford, Hirschhiem et al. (1985), Nissen, Klein et al. (1991) and Lee, Liebenau et al. (1997). The latter three books were published under the auspices of the International Federation for Information Processing (IFIP) Working Group 8.2 (see <http://istweb.syr.edu/~ifip/>).

### Philosophical perspectives

All research (whether quantitative or qualitative) is based on some underlying assumptions about what constitutes 'valid' research and which research methods are appropriate. In order to conduct and/or evaluate qualitative research, it is therefore important to know what these (sometimes hidden) assumptions are.

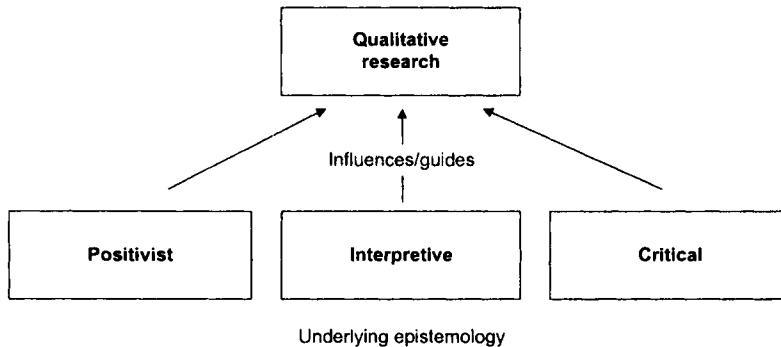
Part II of the book contains four articles looking at philosophical perspectives for qualitative research. For our purposes, the most pertinent philosophical assumptions are those that relate to the underlying epistemology which guides the research. Epistemology refers to the assumptions about knowledge and how it can be obtained (for a fuller discussion, see Hirschheim, 1992).

The article by Orlikowski and Baroudi (Chapter 4) develops some of the discussions of Chapters 1 and 2 and provides an excellent overview of the various research approaches and assumptions in IS research. Following Chua (1986), the authors suggest three distinct epistemological categories: positivist, interpretive and critical. This three-fold classification is the one that is adopted here. However, it needs to be said that, while these three research epistemologies are *philosophically* distinct (as ideal types), in the practice of social research these distinctions are not always so clear-cut. There is considerable disagreement as to whether these research 'paradigms' or underlying epistemologies are necessarily opposed and there is further debate about whether they can be accommodated within the one study.

It should be clear from the above that the word 'qualitative' is not a synonym for 'interpretive'. Qualitative research may or may not be interpretive, depending upon the underlying philosophical assumptions of the researcher. Qualitative research can be positivist, interpretive or critical (see Figure 1.1). It follows from this that the choice of a specific qualitative research method (such as the case study method) is independent of the underlying philosophical position adopted. For example, case study research can be positivist (Yin, 1994), interpretive



(Walsham, 1993) or critical, just as action research can be positivist (Clark, 1972), interpretive (Elden and Chisholm, 1993) or critical (Carr and Kemmis, 1986). These three philosophical perspectives are discussed below.



**Figure 1.1** Underlying philosophical assumptions

### **Positivist research**

Positivists generally assume that reality is objectively given and can be described by measurable properties, which are independent of the observer (researcher) and his or her instruments. Positivist studies generally attempt to test theory, in an attempt to increase the predictive understanding of phenomena. In line with this, Orlikowski and Baroudi (Chapter 4) classify IS research as positivist if there is evidence of formal propositions, quantifiable measures of variables, hypothesis testing, and the drawing of inferences about a phenomenon from the sample to a stated population.

The article by Benbasat, Goldstein and Mead (Chapter 5) is a good example of a positivist approach to doing case study research in IS.

### **Interpretive research**

Interpretive researchers start out with the assumption that access to reality (given or socially constructed) is only through social constructions such as language, consciousness and shared meanings. Interpretive studies generally attempt to understand phenomena through the meanings that people assign to them and interpretive methods of research in IS are 'aimed at producing an understanding of the context of the information system, and the process whereby the information system influences and is influenced by the context' (Walsham, 1993, pp.4-5).

Examples of an interpretive approach to qualitative research include Boland (1991) and Walsham (1993). Klein and Myers (1999) suggest a set of principles for the conduct and evaluation of interpretive research.

The article by Walsham (Chapter 6) is a good example of an interpretive approach to doing case study research and therefore makes an interesting comparison with Chapter 5.

### **Critical research**

Critical researchers assume that social reality is historically constituted and that it is produced and reproduced by people. Although people can consciously act to change their social and economic circumstances, critical researchers recognize that their ability to do so is constrained by various forms of social, cultural and political domination. The main task of critical research is seen as being one of social critique, whereby the restrictive and alienating conditions of the status quo are brought to light. Critical research focuses on the oppositions, conflicts and contradictions in contemporary society, and seeks to be emancipatory; that is, it should help to eliminate the causes of alienation and domination.

The article by Ngwenyama (Chapter 7) is a good example of a critical approach to IS research. Further examples are Ngwenyama and Lee (1997) and Hirschheim and Klein (1994).

### **Qualitative research methods**

In Part III, we turn to qualitative research methods. Just as there are various philosophical perspectives that can inform qualitative research, so there are various qualitative research methods. A research method is a strategy of enquiry which moves from the underlying philosophical assumptions to research design and data collection. The choice of research method influences the way in which the researcher collects data. Specific research methods also imply different skills, assumptions and research practices. The four research methods that will be discussed here are action research, case study research, ethnography and grounded theory.

#### *Action research*

There are numerous definitions of action research; however, one of the most widely cited is that of Rapoport, who defines action research in the following way:

Action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework (Rapoport, 1970, p. 499).

This definition draws attention to the collaborative aspect of action research and to possible ethical dilemmas that arise from its use. It also makes clear, as Clark (1972) emphasizes, that action research is concerned with enlarging the stock of knowledge of the social science community. It is this aspect of action research that distinguishes it from applied social science, where the goal is simply to apply social scientific knowledge but not to add to the body of knowledge.

Action research has been accepted as a valid research method in applied fields such as organization development and education. In IS, however, it is only within the last decade that action research has started to make an impact.

A brief overview of action research is the article by Susman and Evered (1978). Avison et al. (1999) and Baskerville and Wood-Harper (Chapter 8) provide an overview of the use of action research in IS.

### *Case study research*

Case study research is the most common qualitative method used in IS (Alavi and Carlson, 1992; Orlikowski and Baroudi, 1991). Although there are numerous definitions, Yin (1994) defines the scope of a case study as follows:

A case study is an empirical inquiry that:

- Investigates a contemporary phenomenon within its real-life context, especially when
- The boundaries between phenomenon and context are not clearly evident (p.13).

Clearly, the case study research method is particularly well suited to IS research, since the object of our discipline is the study of information systems in organizations, and 'interest has shifted to organizational rather than technical issues' (Benbasat et al., Chapter 5).

Case study research can be positivist, interpretive or critical, depending upon the underlying philosophical assumptions of the researcher.

A standard text for anyone wanting to do positivist case study research is the book by Yin (1994). Whereas Chapter 5 provides a good example of a positivist approach, the article by Lee (Chapter 9) suggests a scientific methodology for IS case studies. Lee argues that a case study is able to satisfy positivist criteria for scientific research. Interestingly, Lee cites Markus (Chapter 3) as being exemplar of positivist case study research.

For interpretive case studies, Walsham (Chapter 6) provides an excellent overview. Two good empirical examples of the interpretive case study method in IS are the articles by Myers (1994) and Walsham and Waema (1994). The article by Klein and Myers (1999) suggests a set of principles for the conduct and evaluation of interpretive case studies (and ethnographies) in IS.

### *Ethnographic research*

Ethnographic research comes from the discipline of social and cultural anthropology where an ethnographer is required to spend a significant amount of time in the field. The ethnographer 'immerses himself in the life of people he studies' (Lewis, 1985, p.380) and seeks to place the phenomena studied in their social and cultural context.

After early groundbreaking work by Wynn (1979), Suchman (1987) and Zuboff (1988), ethnography has now become more widely used in the study of information systems in organizations, from the study of the development of information systems (Hughes, Randall et al., 1992; Orlikowski, 1991; Preston, 1991) to the study of aspects of information technology management (Davies, 1991; Davies and Nielsen, 1992). Ethnography has also been discussed as a method whereby multiple perspectives can be incorporated in systems design (Holzblatt and Beyer, 1993).

The article by Harvey and Myers (Chapter 10) provides an overview of the use and potential use of ethnography in IS research.

### *Grounded theory*

Grounded theory is a research method that seeks to develop theory that is grounded in data systematically gathered and analysed. According to Martin and Turner (1986), grounded theory is 'an inductive, theory discovery methodology that allows the researcher to develop a theoretical account of the general features of a topic while simultaneously grounding the account in empirical observations or data'. The major difference between grounded theory and other methods is its specific approach to theory development. Grounded theory suggests that there should be a continuous interplay between data collection and analysis.

Grounded theory approaches are becoming increasingly common in the IS research literature because the method is extremely useful in developing context-based, process-oriented descriptions and explanations of the phenomenon.

The article by Orlikowski (Chapter 11) is a good example of the use of grounded theory in IS research.

### **Modes of analysis**

Although a clear distinction between data gathering and data analysis is commonly made in quantitative research, such a distinction is problematic for many qualitative researchers. For example, from a hermeneutic perspective it is assumed that the researcher's presuppositions affect the gathering of the data - the questions posed to informants largely determine what you are going to find out. The analysis affects the data and the data affect the analysis in significant ways. Therefore it is perhaps more accurate to speak of 'modes of analysis' rather than 'data analysis' in qualitative research. These modes of analysis are

different approaches to gathering, analysing and interpreting qualitative data. The common thread is that all qualitative modes of analysis are concerned primarily with textual analysis (whether verbal or written).

In Part IV, we look at modes of analysing and interpreting qualitative data. Although there are many different modes of analysis in qualitative research, just two approaches or modes of analysis will be discussed here: hermeneutics and approaches which focus on narrative and metaphor. Other approaches used in IS includes semiotics, and Klein and Truex (1995) provide a good example. It could be argued that grounded theory is also a mode of analysis, but since grounded theory has been discussed earlier, that discussion will not be repeated here.

### *Hermeneutics*

Hermeneutics can be treated as both an underlying philosophy and a specific mode of analysis (Bleicher, 1980). As a philosophical approach to human understanding, it provides one philosophical grounding for interpretivism (see above). As a mode of analysis, it suggests a way of understanding textual data. The following discussion is concerned with using hermeneutics as a specific mode of analysis.

Hermeneutics is primarily concerned with the *meaning* of a text or text-analogue (an example of a text-analogue is an organization which the researcher comes to understand through oral or written text). The basic question in hermeneutics is: what is the meaning of this text (Radnitzky, 1970)? Taylor (1976) argues that:

Interpretation, in the sense relevant to hermeneutics, is an attempt to make clear, to make sense of an object of study. This object must, therefore, be a text, or a text-analogue, which in some way is confused, incomplete, cloudy, and seemingly contradictory - in one way or another, unclear. The interpretation aims to bring to light an underlying coherence or sense (p.153).

The idea of a hermeneutic circle refers to the dialectic between the understanding of the text as a whole and the interpretation of its parts, in which descriptions are guided by anticipated explanations (Gadamer, 1976a). It follows from this that we have an expectation of meaning from the context of what has gone before. The movement of understanding 'is constantly from the whole to the part and back to the whole' (ibid.). As Gadamer explains, 'It is a circular relationship...the anticipation of meaning in which the whole is envisaged becomes explicit understanding in that the parts, that are determined by the whole, themselves also determine this whole.' Ricoeur suggests that 'Interpretation...is the work of thought which consists in deciphering the hidden meaning in the apparent meaning, in unfolding the levels of meaning implied in the literal meaning' (Ricoeur, 1974, p.xiv).

There are different forms of hermeneutic analysis, from 'pure' hermeneutics through to 'critical' hermeneutics; however, a discussion of these different forms is beyond the scope of this section. For a more in-depth discussion, see Bleicher (1980), Palmer (1969) and Thompson (1981).

If hermeneutic analysis is used in an IS study, the object of the interpretive effort becomes one of attempting to make sense of the organization as a text-analogue. In an organization, people (for example, different stakeholders) can have confused, incomplete, cloudy and contradictory views on many issues. The aim of the hermeneutic analysis becomes one of trying to make sense of the whole, and the relationship between people, the organization and information technology.

Boland's article (Chapter 12) is a good example of a research article in IS which explicitly uses hermeneutics. Other examples are those by Lee (1994) and Myers (1994).

### *Narrative and metaphor*

Narrative is defined by the *Concise Oxford English Dictionary* as a 'tale, story, recital of facts, especially story told in the first person'. There are many kinds of narrative, from oral narrative through to historical narrative. Metaphor is the application of a name or descriptive term or phrase to an object or action to which it is not literally applicable (for example, a window in the Windows PC operating systems).

Narrative and metaphor have long been key terms in literary discussion and analysis. In recent years there has been increasing recognition of the role they play in all types of thinking and social practice. Scholars in many disciplines have looked at areas such as metaphor and symbolism in indigenous cultures, oral narrative, narrative and metaphor in organizations, metaphor and medicine, metaphor and psychiatry.

A good introduction to the use of metaphor in organizational theory is Morgan (1986). Polkinghorne's (1988) book on narrative has been extremely influential in the social sciences.

In IS, the focus has mostly been on understanding language, communication and meaning among systems developers and organizational members. In recent years narrative, metaphor and symbolic analysis have become regular themes in the International Federation of Information Processing (IFIP) 8.2 Working Group conferences.

The article by Hirschheim and Newman (Chapter 13) is an excellent example of the use of metaphor in information systems development.

### **Conclusion**

We believe that providing a collection of articles such as this draws attention to the tremendous progress that has been made within the field of IS,

particularly. We believe that providing a collection of articles such as this draws attention to the tremendous progress that has been made within the field of IS, particularly within the past decade. Our intention in bringing them together is to make them more accessible to IS scholars and students while at the same time making them available to qualitative researchers in other fields. We hope that this volume contributes to the further development of qualitative research in IS.

## 2 Choosing Appropriate Information Systems Research Methodologies

*Robert D. Galliers and Frank F. Land*

We believe we should draw attention to two disturbing tendencies in information systems research. The first relates to the primacy of traditional, empirical research more suited to the natural sciences at the expense of less conventional approaches that nevertheless provide important contributions to our search for improved knowledge. Although the experimental design of traditional IS research may well be academically acceptable and internally consistent, all too often it leads to inconclusive or inapplicable results. The second relates to the tendency of some of our most respected institutions to advocate a particular mode of IS research irrespective of the particular IS topic being studied. Evidence for both these contentions can be found in the results of a study undertaken by Vogel and Wetherbe (1984). For example, they suggest that as much as 85 percent of published IS research undertaken by leading U.S. institutions is of the traditional kind.

In order to gain some insight into what constitutes appropriate research in the field of IS, it is advisable first to consider the nature of information systems themselves and then to look at what we hope to gain from undertaking research in the area. Traditionally, the topic has often been viewed as residing, for the most part at least, within the province of technology. Increasingly, however, both IS academics and practitioners have begun to realize it is more appropriate to extend the focus of study to include behavioural and organizational considerations. This is explained by our wish to improve the effectiveness of IS implementations in organizations and to assess that impact on individuals or organizations.

This view of IS requires us to place computer-based information systems within the broader category of designed IS, which is itself just one component of our subject matter. Indeed, our field of study is much broader since it is concerned with IS and their relations with the organization and the people they serve (Land, 1986). This wider view brings with it added complexity, greater imprecision, the possibility of different interpretations of the same phenomena, and the need to take these issues into account when considering an appropriate research approach.

The problems inherent in IS research arising from this view of the subject matter and that call for new approaches are now well documented (McFarlan, 1984a; Mumford et al., 1985). Despite this, the focus remains for the most part on the scientific paradigm, the argument being that:



The empirical-analytical method is the only valid approach to improve human knowledge. What cannot be investigated using this approach, cannot be investigated at all scientifically. Such research must be banned from the domain of science as unresearchable' (Bleicher, 1982, p.141).

Rather than be banned 'from the domain of science' (or at least academic respectability!), the approach has been to treat IS research as a science, with as much as 50 percent of the effort being placed on laboratory-based experimentation or on field surveys (Vogel and Wetherbe, 1984). In both cases, heavy emphasis is placed on the use of statistical analysis, with the consequent need for exact measurement of the factors being studied; for example, x percent of a measured variance is due to factor y. Two major limitations of this style of research immediately surface:

1. There are only a limited number of factors that can be studied under laboratory conditions, and it is difficult to reproduce a 'real-world' environment in these circumstances. For example, a study of decision-making aids on the decision-making behaviour of a manager can only be properly studied in the real world decision-making environment (for example, one which is noisy, stressful and lacking in complete information). Studies that do not reproduce that environment may select as 'best' a technique that would be ineffective in the real world.
2. The need to apply values to variables often leads to the elimination of factors that, although they may have relevance, are difficult to value: thus applying to them zero value - which is probably the one value they do not have!

There are also grave dangers that arise from these limitations. The use of statistical tests implies a preciseness of measurement that is often not sustainable and could actually be misleading. The need to limit the number of factors studied could also lead to conclusions being drawn that again could mislead the unsuspecting. In this case, the problem is we are left not knowing whether different results could be obtained if other variables had been considered. Indeed, many researchers take pains to include caveats and disclaimers in papers arising from this kind of experimentation. And further research is invariably proposed with a view to discovering whether different results emerge from the study of different variables, thus compounding the fiasco.

Surely the measure of the success of research in an applied topic such as IS is whether our knowledge has been improved to the extent that this improved knowledge can be applied in practice. If, as a consequence of our experimentation, we mislead or produce conflicting or confusing results with little or no applicability, one is left wondering whether the experiment was worth undertaking in the first place and, more generally, whether much of this style of research is at all applicable to the IS field.

We would ask for greater diversity in the kind of IS research approach that is considered valid. IS is a meta-subject that spans many disciplines in the social sciences, in business, and, only occasionally, in the natural sciences.

Consequently, research that is appropriate in the latter is likely to be inappropriate in the IS field. IS, as we have defined the term, is also an applied discipline, not a pure science. It follows, therefore, that if the fruits of our research fail to be applicable in the real world, then our endeavours are relegated to the point of being irrelevant. Our research methods must take account of the nature of the subject matter and the complexity of the real world. The simple transference of research suited to the science laboratory to the study of IS is almost always doomed to fail.

A range of approaches is available to us, not simply the more traditional ones. Each has its own strengths and weaknesses (see Galliers, 1985) and will be more or less applicable in different circumstances. If greater thought is given to the choice of approach to take into account contextual factors, there is a far greater chance our endeavours will not be in vain. The research itself is likely to be more complex and difficult to pursue as a consequence, but the results are likely to make the effort worthwhile.

Unfortunately, due to the tendency to publish research of a more traditional kind, there are few published accounts of the successful application of the newer approaches. One well-documented exception to this rule relates to action research, for example in the application of so-called 'soft systems methodology' (Checkland, 1981).

To assist the IS researcher in making an appropriate choice, we propose a taxonomy of IS research methods (see Table 2.1). The taxonomy is based on those previously proposed by Galliers (1985) and Vogel and Wetherbe (1984). It differs from these earlier efforts, however, in that it does not suffer from the problem of overlapping categories by ensuring the *object* on which the research effort is focused and the *mode* by which the research is carried out are differentiated.

Most of the categories included in the proposed taxonomy require no introduction, given their common usage and the fact that detailed definitions have been provided in the literature already cited. However, two of the newer approaches, the subjective/argumentative and descriptive/interpretive categories, may require further explanation. The former is defined by Vogel and Wetherbe as capturing 'creative MIS research based more on opinion and speculation than observation' (Vogel and Wetherbe, 1984) and may therefore include some future research. The latter is illustrated by a number of papers in Mumford, Hirschheim et al. (1985), including one by Boland who classifies the approach as being in the tradition of phenomenology (that is, concerned with description). In addition, he recognizes the bias of the researcher in his/her observations, or rather interpretations, and hence the approach falls within the hermeneutical tradition as well. The simulation, or game/role-playing category, has been placed on the boundary of the traditional and newer approaches. This is to indicate that these kinds of approaches range from the positivistic (simulation) to the subjective (role playing).

Table 2.1 A taxonomy of IS research approaches

Object	Modes for traditional empirical approaches (observations)					Modes for newer approaches (interpretations)				
	Theorem proof	Laboratory experiment	Field experiment	Case Study	Survey	Forecasting <sup>a</sup>	Simulation <sup>a</sup> and Game/role playing <sup>a</sup>	Subjective/argumentative <sup>a</sup>	Descriptive/interpretive	Action research
Society	No	No	Possibly	Possibly	Yes	Yes	Possibly	Yes	Yes	Possibly
Organisation group	No	Possibly (small groups)	Yes <sup>b</sup>	Yes <sup>b</sup>	Yes <sup>b</sup>	Yes	Yes	Yes	Yes <sup>b</sup>	Yes <sup>b</sup>
Individual	No	Yes	Yes	Possibly	Possibly	Possibly	Yes	Yes	Yes	Possibly
Technology	Yes	Yes	Yes	No	Possibly	Yes	Yes	Yes	Possibly	No
Methodology	No	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes

<sup>a</sup>Includes future research<sup>b</sup>Includes longitudinal field studies

The extended taxonomy for IS research hopefully illustrates the point that the scientific paradigm is not the only, nor indeed always the most appropriate basis for our research. Greater thought regarding the choice of research method is required as is a wider interpretation of what is seen as acceptable research. Hopefully, the proposed taxonomy assists on both counts.



### 3 Power, Politics, and MIS Implementation

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No one knows how many computer-based applications, designed at great cost of time and money, are abandoned or expensively overhauled because they were unenthusiastically received by their intended users. Most people who have worked with information systems encounter at least mild resistance by those who are designated to input data or use the output to improve the way they do their jobs.

Many explanations have been advanced to account for people's resistance to change in general, to technological change in particular, and most specifically to management information systems (MIS) implementation efforts. Some of these explanations are informal rules of thumb that practitioners rely on in the heat of action; others are purportedly based on social scientific theories or research findings. Some are said to apply in every situation; others are contingent upon a variety of prevailing conditions. Some are mental models that form the basis for actions but are rarely articulated or explicitly examined for consistency and completeness; others are more formal models with clearly spelled-out connections. Familiar comments regarding resistance are:

1. To avoid resistance, get top management support and obtain user involvement in the design process (Lucas, 1974)
2. Technically sound systems are less likely to be resisted than those with frequent downtime and poor response time (Alter, 1975)
3. Users resist systems that are not 'user friendly' (assertions by IT equipment vendors)
4. All other things being equal, people will resist change (received wisdom)
5. People will resist an application when the costs outweigh the benefits (received wisdom).

Explanations of resistance are important because, however informal or implicit, they guide the behaviour and influence the actions taken by managers and systems analysts concerned with implementing computer-based applications. The premise of this chapter is that better theories of resistance will lead to better implementation strategies and, hopefully, to better outcomes for the organizations in which the computer applications are installed. This suggests the need to examine commonly used explanations and the assumptions underlying them in some detail.

Critical examination of implementers' theories regarding the causes of resistance is a process that, according to at least one view of resistance (cost versus benefits), implementers themselves may be expected to resist. Such examination is hard work, and the examiner runs the risk of discovering (a) that his or her mental models are just fine, in which case the effort appears wasted, or (b) that the explanations need changing, which is uncomfortable and requires more hard work. In addition, it is not likely that the commonly held heuristics mentioned earlier (for example, top management support) can be very far from wrong: in the first place, there is some academic research to support each one of them, and second, many analysts and managers have found that the heuristics have prevented them from making blunders in everyday situations. Consequently, many readers may decide that the uncertain benefits of examining their personal models of resistance are outweighed by the costs of doing so. This chapter is written either for those who compute the costs and benefits differently or for those whose behaviour is describable by a different explanation of resistance to change.

The argument of the chapter follows the following format: Three basic theories of resistance are presented and contrasted in terms of their underlying assumptions about information systems, organizations, and resistance itself. Several bases for evaluating the theories are enumerated, including the applicability of basic assumptions, the accuracy of predictions drawn from the theories, and the utility for implementers of the strategies and prescriptions derived from the theories. The chapter then proceeds to evaluate the theories using logic and the limited data of a single case. The chapter concludes with recommendations for implementers.

### Types of theories

Kling (1980) has provided a very helpful starting point for examining theories of resistance. He identified six distinct theoretical perspectives: Rational, Structural, Human Relations, Interactionist, Organizational Politics, and Class Politics. Kling shows how these perspectives differ on a variety of dimensions, such as their view of technology and of the social setting into which it is introduced, their key organizing concepts, their ideologies of the workplace and of 'good' technology, and their implied theories of the dynamics of technical diffusion. For ease of comparison, he groups the first three perspectives into the category of Systems Rationalism and the latter three into Segmented Institutionalism.

This chapter builds upon Kling's work by exploring different theoretical perspectives as they relate to one small aspect of computing in organizational life - the introduction and implementation of computer-based information systems, and the human resistance that so often accompanies them. Since this chapter emphasizes the perspectives from the viewpoint of their implications for action, that is, for the implementation strategies of managers and systems analysts, rather than of their theoretical differences *per se*, this chapter may group Kling's perspectives differently while liberally drawing on his insights.

### Three theories

An implementer trying to decide what to do about resistance of individuals or organizational subunits may hold one of three divergent theories about why that resistance occurred. First, the person or subunit may be believed to have resisted because of factors internal to the person or group. These factors may be common to all persons and groups or unique to the one being examined. Examples of explanations compatible with this theory are: people resist all change; and people with analytic cognitive styles accept systems, while intuitive thinkers resist them.

Second, the person or group may be believed to have resisted because of factors inherent in the application or system being implemented. Examples of compatible explanations are that people resist technically-deficient systems, systems that are not ergonomically designed, and systems that are not user friendly. A fair amount of research has been done to support the contention that technical and human factors problems are associated with resistance and system failure. For example, Ginzberg (1974) reviewed much of the (then) existing literature on OR/MS/MIS research and noted that several studies identified technical problems as a factor related to system failure (over 100 factors were mentioned at least once in the studies reviewed). Alter (1975) studied 56 systems and reported that technical problems were related to implementation problems in several cases.

These two theories are clearly divergent, because the first assumes that a person's (group's) behaviour is determined internally, and the second assumes that behaviour is determined externally by the environment or by technology. Nevertheless, implementers often implicitly hold both theories simultaneously, believing that behaviour is determined both from within and from without. An example of such a compound theory is: there is always a tendency for people to resist systems, but, other things being equal, they are less likely to resist ones that are well designed.

The third theory holds that people or groups resist systems because of an interaction between characteristics related to the people and characteristics related to the system. This theory is difficult to define, but easier to describe. The theory is *not* the same as a simultaneous belief in the two previously mentioned theories. The operant word in the definition is 'interaction'. Examples of explanations derived from the interaction theory are: systems that centralize control over data are resisted in organizations with decentralized authority structures, systems that alter the balance of power in organizations will be resisted by those who lose power and accepted by those who gain it, and resistance arises from the interaction of technical design features of systems with the social context in which the systems are used.

Several distinct variations of the interaction theory can be identified. One, which may be called the socio-technical variant, focuses on the distribution of responsibility for organizational tasks across various roles and on the work-related communication and coordination around this division of labour. New information systems may prescribe a division of roles and responsibilities at variance with existing ones; they may structure patterns of interaction that are at



odds with the prevailing organizational culture. In this light, systems can be viewed as a vehicle for creating organizational change. The greater the implied change, the more likely the resistance. Similar articulations of a variant of the interaction theory can be found in Keen (1980), Ginzberg (1975), and Kling (1980).

It should be noted that this explanation identifies neither the system nor the organizational setting as the cause of resistance, but their interaction. The system-determined theory would predict that a given system be accepted or resisted in every setting because of its design features. The interaction theory can explain different outcomes for the same system in different settings. Similarly, the people-determined theory would predict the rejection of all systems in a setting in which any one system is resisted. The interaction theory can explain different responses by the same group of users to different settings. Compared with a concatenated people-plus-system-determined theory, the interaction theory allows for more precise explanation and predictions of resistance.

A second variant of the interaction theory can be called the political version. Here, resistance is explained as a product of the interaction of system design features with the intra-organizational distribution of power, defined objectively, in terms of horizontal or vertical power dimensions, or subjectively, in terms of symbolism. The appendix provides additional details on the political variant of the interaction theory and compares it briefly with other variants. The case analysis given in this chapter employs the political variant exclusively.

How are we to evaluate these theories? This is a difficult thing to do, if for no other reason than that there are several ways to do it, each of which may yield different results. Scientists are generally agreed that theories cannot be tested directly, which in our case means that it is impossible to say without doubt that people resist computer applications because of internal factors, external factors, or interaction effects. But the basic assumptions underlying the theories can be examined and compared with facts in the 'real world', predictions derived from theories can be tested against observed occurrences, and the implications for action derived from theories can be tested for their usefulness to implementers. This last test may be conducted independently of the first two, and implementers may prefer this. Because this chapter assumes that good implementation strategies derive from good theories, we attempt to address all three types of evaluations.

### **Basic assumptions of the theories**

In order to perform the first type of evaluation, it is necessary to identify the assumptions that underlie the theories. Kling's list of theoretical perspectives yields two that are especially relevant for comparing theories of resistance with computer-based applications: assumptions about the nature of technology (in this case, information systems) and assumptions about the nature of the setting in which the applications are introduced. A third assumption can be added - beliefs about the nature of resistance. The first two dimensions, the people-determined