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A SET OF PRINCIPLES FOR CONDUCTING AND EVALUATING INTERPRETIVE FIELD STUDIES IN INFORMATION SYSTEMS[1]

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Abstract

This article discusses the conduct and evaluation of interpretive research in information systems. While the conventions for evaluating information systems case studies conducted according to the natural science model of social science are now widely accepted, this is not the case for interpretive field studies. A set of principles for the conduct and evaluation of interpretive field research in information systems is proposed, along with their philosophical rationale. The usefulness of the principles is illustrated by evaluating three published interpretive field studies drawn from the IS research literature. The intention of the paper is to further reflection and debate on the important subject of grounding interpretive research methodology.

Keywords: IS research methodologies, interpretivist perspective, critical perspective, case study, field study, ethnography, hermeneutics

ISRL Categories: IB01, AI0802, AI0803, AI0102, AI0108, AI0112, AI0116

Introduction

In recent years, interpretive research has emerged as an important strand in information systems research (Walsham 1995b). Interpretive research can help IS researchers to understand human thought and action in social and organizational contexts; it has the potential to produce deep insights into information systems phenomena including the management of information systems and information systems development. As the interest in interpretive research has increased, however, researchers, reviewers, and editors have raised questions about how interpretive field research should be conducted and how its quality can be assessed. This article is our response to some of these questions and suggests a set of principles for the conduct and evaluation of interpretive field research in information systems.

Purpose and Motivation

The conventions for evaluating information systems case studies conducted according to the

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natural science model of social science are now widely accepted. One of the key contributions of the research methods stream in IS research has been the formulation of a set of methodological principles for case studies that were consistent with the conventions of positivism (Benbasat et al. 1987; Lee 1989; Yin 1994). As a result, case study research is now accepted as a valid research strategy within the IS research community. The principles proposed in this stream of work have become the de facto standard against which most case study research in IS is evaluated. However, while the criteria are useful in evaluating case study research conducted according to the natural science model of social science, the positivist criteria suggested are inappropriate for interpretive research. Several conferences (Cash and Lawrence 1989; Lee et al. 1997; Mumford et al. 1985; Nissen et al 1991), workshops (Baskerville et al. 1994; Davies et al. 1993; Lee at al. 1992; Orlikowski et al. 1991), journal contributions (Harvey and Myers 1995; Lee 1991; Walsham 1995a, 1995b), and a monograph (Walsham 1993) have addressed themselves to qualitative research and shown how the nature and purpose of interpretive research differs from positivist research (see also Orlikowski and Baroudi 1991). This paper takes this work further, and a set of principles are proposed for the conduct and evaluation of interpretive field research in IS.

This paper can be seen as a response to the call "to discuss explicitly the criteria for judging qualitative, case and interpretive research in information systems" (Lee et al. 1995, p. 367). Therefore, just as principles and guidelines for case studies were provided by analyzing them from the philosophical perspective of positivism (Lee 1989), so this paper will do the same for interpretive field research, but from the philosophical perspective of hermeneutics. Also, just as suggestions were made for researchers who wished to undertake research employing the case research strategy and offered "criteria for the evaluation of case study research" (Benbasat et al. 1987, p. 369), so this paper does the same, except that we focus on interpretive field research.

The set of principles proposed in this paper is derived primarily from anthropology, phenomenology, and hermeneutics. We readily acknowledge that there are many other forms of interpretivism that are not necessarily hermeneutic (such as postmodernism or deconstructionism). We caution, therefore, that the particular set of principles suggested here applies mostly to the conduct and evaluation of interpretive research of a hermeneutic nature. We leave open the possibility that other authors may suggest additional sets of principles; indeed, other voices representing the many different forms of interpretivism are welcome and needed.

Some readers may feel that, in proposing a set of principles for conducting and evaluating interpretive field studies, we are going too far because we are violating the emergent nature of interpretive research, while others may think just the opposite. In this debate, we have adopted a middle position. While we agree that interpretive research does not subscribe to the idea that a pre-determined set of criteria can be applied in a mechanistic way, it does not follow that there are no standards at all by which interpretive research can be judged. Our claim is simply that we believe our proposed principles are consistent with a considerable part of the philosophical base of literature on interpretivism and hence an improvement over the status quo. We believe that it is better to have some principles than none at all, since the absence of any criteria increases the risk that interpretive work will continue to be judged inappropriately. Ultimately the quality (and status) of interpretive research within IS will benefit from a lively debate about its standards. Therefore another important purpose in publishing these principles along with their philosophical rationale is to further debate on the important subject of grounding interpretive research methodology. We discuss our use of the word "principles" in more detail below.

This paper has two audiences. First of all, it should be of interest to all those who are directly involved with interpretive research, i.e., researchers, reviewers, and editors conducting, evaluating, or justifying interpretive research in information systems. Hopefully the principles offered in this paper will contribute to the raising of the aspirations for individual research projects. Second, many readers, while not doing interpretive research themselves, have become aware of

its importance and wish to better understand its methodological foundations and potential. Our paper provides one possible and concise answer to some of their questions.

The Nature of Interpretive Research

It is important to explicitly define what we mean by interpretive research. This is especially so given that often no clear distinction is made between "qualitative" and "interpretive" research. However, the word interpretive as used here is **not** a synonym for qualitative—qualitative research may or may not be interpretive, depending upon the underlying philosophical assumptions of the researcher (Myers 1997). For example, if one follows Chua's (1986) classification of research epistemologies into positivist, interpretive, and critical, qualitative research can be done with a positivist, interpretive, or critical stance. This implies that 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). A brief description of the three research philosophies is given below, although we acknowledge that the distinctions themselves are often contentious, and some research papers may be more difficult to classify than others (Walsham 1995b).

Generally speaking, IS research can be classified as positivist if there is evidence of formal propositions, quantifiable measures of variables, hypothesis testing, and the drawing of inferences about a phenomenon from a representative sample to a stated population (Orlikowski and Baroudi 1991). Examples of a positivist approach to qualitative research include Yin's (1994) and Benbasat et al.'s (1987) work on case study research.

IS research can be classified as critical if the main task is seen as being one of social critique, whereby the restrictive and alienating conditions of the status quo are brought to light. Critical research seeks to be emancipatory in that it aims to help eliminate the causes of unwarranted alienation and domination and thereby enhance the opportunities for realizing human potential (Alvesson and Wilmott 1992b; Hirschheim and Klein 1994). To make this possible, critical theorists assume that people can consciously act to change their social and economic conditions. They do, however, recognize that human ability to improve their conditions is constrained by various forms of social, cultural, and political domination as well as natural laws and resource limitations. Examples of a critical approach to qualitative research include Forester's (1992) and Ngwenyama and Lee's (1997) work.

IS research can be classified as interpretive if it is assumed that our knowledge of reality is gained only through social constructions such a language, consciousness, shared meanings, documents, tools, and other artifacts. Interpretive research does not predefine dependent and independent variables, but focuses on the complexity of human sense making as the situation emerges (Kaplan and Maxwell 1994); it attempts to understand phenomena through the meanings that people assign to them (Boland 1985, 1991; Deetz 1996; Orlikowski and Baroudi 1991). 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's (1991) and Walsham's (1993) work.

The Scope and Approach of This Paper

Keeping the above definition of interpretive research in mind, the scope of this paper is limited to addressing the quality standards of only one type of interpretive research, namely, the interpretive field study. Field studies include *in-depth case studies* (Walsham 1993) and *ethnographies* (Suchman 1987; Wynn 1979, 1991; Zuboff 1988). Although there is no hard and fast distinction between the two, their principle differences are the length of time that the investigator is required to spend in the field and the extent to which the researcher immerses himself or herself in the life of the social group under study. As Yin (1994, pp. 10-11) describes, "Ethnographies usually require long periods of time in the 'field' and emphasize detailed, observational evidence . . . . In contrast, case studies are a form of enquiry that does *not* depend solely on ethno-

graphic or participant-observer data." This paper is therefore concerned with addressing the evaluation criteria for both case studies and ethnographies, as long as the underlying philosophy is interpretive.

The approach used in this paper was to analyze the literature on the philosophy of interpretivism for insights that could ground a methodology for the conduct and evaluation of interpretive field studies. We have summarized the key results of our analysis of this philosophical base in seven principles, which are discussed in the next section. We decided to concentrate on the hermeneutic philosophers, especially Gadamer and Ricoeur, for a few reasons. First, the complete literature of interpretive philosophy comprises so many varied philosophical positions that it is unlikely to yield one consistent set of principles for doing interpretive research. What has been called the interpretive paradigm (Burrell and Morgan 1979) is in fact a family of paradigms too large and diverse to tackle for this project. However, since hermeneutics is a major branch of interpretive philosophy with Gadamer and Ricoeur arguably being its most well known exponents, it made sense to focus primarily on them—as well as pay attention to phenomenology as suggested by Boland (1985). Second, hermeneutics has a relatively settled philosophical base and therefore lends itself to being used as a "bridgehead" for making a contribution to interpretive research methodology. Third, both authors are well versed in interpretive philosophy and hermeneutics in particular. One of the authors was trained as an anthropologist and has used hermeneutics (and especially critical hermeneutics) in his research work for over 20 years; the other has acquired a varied philosophical background in positivism, critical social theory, and hermeneutics. It was therefore natural to focus on a topic that was centred on the shared core of knowledge among the co-authors and allowed them to capitalize on their rather different formal education and life experiences.

Given the above, it should be clear that this is not an interpretive paper as such (let alone an interpretive field study). Rather, it is a conceptual paper drawing on work in anthropology and hermeneutics. Our paper discusses the nature of interpretive research and the philosophical rationale for how such research, which takes a hermeneutic stance, can be evaluated. Consequently, not all of the principles suggested below can apply to this paper by definition. For example, it is quite obvious that there are no "living" participants in this project.

Organization of This Paper

The paper is organized as follows. The next section suggests a set of principles for the evaluation of interpretive field research. The following section applies these principles to three published examples of interpretive field research to demonstrate their usefulness for authors and evaluators (reviewers and editors). The final section concludes that, while not all of the principles may apply in every situation, their systematic consideration is likely to improve the quality of future interpretive field research in information systems (especially that of a hermeneutic nature). We believe there is a need to stimulate further debate concerning whether and how the quality of interpretive research can be assessed.

A Set of Principles for Interpretive Field Research

In this section we propose a set of principles for the evaluation of interpretive field research in information systems. There are two sources for these principles: the practice of anthropological research and our understanding of the underlying philosophy of phenomenology and hermeneutics. As mentioned earlier, we wish to emphasize that the particular set of principles suggested here applies mostly to the conduct and evaluation of interpretive research of a hermeneutic nature. Interpretive research takes many different forms, not all of which are hermeneutic in orientation. We hope that our proposal will encourage others to advance additional sets of principles for alternative forms of interpretivism.

Our choice of the word "principles" requires some explanation. By the use of this word, we want to emphasize that the general principles we propose are offered in the spirit of being fundamental ideas that may be helpful to authors and reviewers. The ideas are "fundamental" because

they are derived from certain philosophical writings (as referenced below) that are considered classical contributions to interpretivism; the principles should be helpful because they summarize important insights in interpretivism which are (as yet) not embedded in the practice of interpretive field research. However, the principles are not like bureaucratic rules of conduct, because the application of one or more of them still requires considerable creative thought. This follows in part from the idiographic nature of interpretive field studies and in part from their philosophical grounding. Our use of the word "principles," therefore, guards against the idea that their use is mandatory; rather, it is incumbent upon authors, reviewers, and editors to exercise their judgement and discretion in deciding whether, how, and which of the principles should be applied and appropriated in any given research project. However, this does not mean that we advocate arbitrarily selecting some principles while ignoring others, since at the end of this section we shall argue that the principles are, to some extent at least, interdependent.

Table 1 summarizes the seven principles that we have identified together with illustrative examples from the IS research literature. These seven principles are discussed in more detail below. We begin with the assumption that the principles for the evaluation of interpretive research are not independent of the guidelines for its conduct. Therefore, our approach is to derive a set of principles for the conduct and reporting of interpretive research and then illustrate that the same principles can also be used for post hoc evaluation.

The Fundamental Principle of the Hermeneutic Circle

The most fundamental principle of hermeneutics is that of the hermeneutic circle. This principle is foundational to all interpretive work of a hermeneutic nature and is in effect a meta-principle upon which the following six principles expand. The idea of the hermeneutic circle suggests that we come to understand a complex whole from preconceptions about the meanings of its parts and their interrelationships. To clarify its generality it is best to relate to Gadamer's (1976b) example of how we are to translate the meaning of a sentence into a foreign language. As a case in question, consider the sentence "they are playing football." In order to understand the individual parts of the sentence (i.e., whether football is a round ball, an egg-shaped ball, or no ball at all), we must attempt to understand the meaning of the sentence as a whole. The process of interpretation moves from a precursory understanding of the parts to the whole and from a global understanding of the whole context back to an improved understanding of each part, i.e., the meanings of the words. The sentence as a whole in turn is a part of some larger context. If from this context it is clear that nobody is engaged in sport at all, then we can conclude that the meaning of "they are playing football" must be metaphorical. To apply the metaphor, one needs to interpret "football" as an issue which is contested which in turn involves a new understanding of the meaning of the term "playing" as involving something abstract which is being "thrown or kicked around." Also, "playing" no longer means physical movement on a grassy field.

> Thus the movement of understanding is constantly from the whole to the part and back to the whole. Our task is to extend in concentric circles the unity of the understood meaning. The harmony of all the details with the whole is the criterion of correct understanding. The failure to achieve this harmony means that understanding has failed (Gadamer 1976b, p. 117).

In Gadamer's description of the "hermeneutic circle," the terms "parts" and "whole" should be given a broad and liberal interpretation. They can be parts of a historical story, and then the whole is the proper perspective of the historical context. This interpretation should be used to apply the principle of contextualization discussed below. Alternatively, the parts can be the interpretive researchers' and the participants' preliminary understandings (i.e., preunderstandings) in the study. The whole consists of the shared meanings that emerge from the interactions between them. Note that participants appropriate (i.e., make their own) ideas from the researcher and vice versa. Hence, in a number of iterations of the hermeneutic circle, a complex whole of shared meanings emerges. This interpretation should be used in applying the principle of interaction between the researchers and subjects.

Table 1. Summary of Principles for Interpretive Field Research

1. The Fundamental Principle of the Hermeneutic Circle This principle suggests that all human understanding is achieved by iterating between considering the interdependent meaning of parts and the whole that they form. This principle of human understanding is fundamental to all the other principles. Example: Lee's (1994) study of information richness in e-mail communications. It iterates between the separate message fragments of individual e-mail participants as parts and the global context that determines the full meanings of the separate messages to interpret the message exchange as a whole.
2. The Principle of Contextualization Requires critical reflection of the social and historical background of the research setting, so that the intended audience can see how the current situation under investigation emerged. Example: After discussing the historical forces that led to Fiat establishing a new assembly plant, Ciborra et al. (1996) show how old Fordist production concepts still had a significant influence despite radical changes in work organization and operations.
3. The Principle of Interaction Between the Researchers and the Subjects Requires critical reflection on how the research materials (or "data") were socially constructed through the interaction between the researchers and participants. Example: Trauth (1997) explains how her understanding improved as she became self-conscious and started to question her own assumptions.
4. The Principle of Abstraction and Generalization Requires relating the idiographic details revealed by the data interpretation through the application of principles one and two to theoretical, general concepts that describe the nature of human understanding and social action. Example: Monteiro and Hanseth's (1996) findings are discussed in relation to Latour's actor-network theory.
5. The Principle of Dialogical Reasoning Requires sensitivity to possible contradictions between the theoretical preconceptions guiding the research design and actual findings ("the story which the data tell") with subsequent cycles of revision. Example: Lee (1991) describes how Nardulli (1978) came to revise his preconceptions of the role of case load pressure as a central concept in the study of criminal courts several times.
6. The Principle of Multiple Interpretations Requires sensitivity to possible differences in interpretations among the participants as are typically expressed in multiple narratives or stories of the same sequence of events under study. Similar to multiple witness accounts even if all tell it as they saw it. Example: Levine and Rossmore's (1993) account of the conflicting expectations for the Threshold system in the Bremerton Inc. case.
7. The Principle of Suspicion Requires sensitivity to possible "biases" and systematic "distortions" in the narratives collected from the participants. Example: Forester (1992) looks at the facetious figures of speech used by city planning staff to negotiate the problem of data acquisition.

During repeated cycles of the hermeneutic circle, all of the suggested principles can be applied iteratively, forming a complex web of interpretations.

In the IS literature, an example of how the hermeneutic circle can help broaden the understanding of IT is given by Lee's (1994) study of information richness in conventional e-mail communications. Lee's study iterates between the separate message fragments of individual e-mail participants as parts and the global context that determines the full meanings of the separate messages to interpret the message exchange as a whole. In so far as conventional e-mail is limited to the exchange of textual information, our preunderstanding is that "electronic mail is a lean medium that does not readily support the level of communication richness associated with, for instance, a face-to-face meeting" (Lee 1994, p. 143). However, if this partial understanding is related to the larger whole of the literature on the conceptual and empirical weaknesses in information richness theory, contradictions arise, because these studies include empirical findings in which e-mail supports a level of richness comparable to some "rich" media (for detailed references see Lee 1994). If we merely concentrate on the contradiction between information richness theory and the empirical findings, this also fits the pattern of the principle of dialogical reasoning. However, this becomes the starting point for a second hermeneutic circle focusing on the interpretive processes that impart meaning to e-mail communications. By guiding the collection of detailed records with concepts from the hermeneutic theory of Ricoeur (1981), Lee can show that a complex world of social constructions may be evoked through e-mail communications in a way that is not unlike what happens through face-to-face meetings with subsequent phone calls, memos, etc.

The Principle of Contextualization

The principle of contextualization is based on Gadamer's insight that there is an inevitable difference in understanding between the interpreter and the author of a text that is created by the historical distance between them. The hermeneutic task consists, not in covering up the tension between the text and the present, but in consciously bringing it out (Gadamer 1976b, p. 133). In interpretive research in IS, therefore, one of the key tasks becomes one of seeking meaning in context. Various contexts can be explored (e.g., those associated with the informants or the researchers), the choice largely depending upon the audience and the story the author wants to tell. For some research purposes it may be fruitful to extend Gadamer's viewpoint with a clarification of the power bases which over time have privileged certain beliefs as legitimate truths. This kind of analysis can be based on Foucault's (1972) archaeology of knowledge.

The contextualization principle requires that the subject matter be set in its social and historical context so that the intended audience can see how the current situation under investigation emerged. The spirit in which this is done differs from a positivist account of history. Positivist researchers also study the way the organization has been in the past, but then presume that patterns observed in the past will repeat themselves in the future. Positivist researchers tend to ignore the fact that people think and act, that people are active makers of their physical and social reality (Orlikowski and Baroudi 1991). Positivist studies

> are premised on the existence of a priori fixed relationships within phenomena . . . . Such studies serve primarily to test theory, in an attempt to increase predictive understanding of phenomena (Orlikowski and Baroudi 1991, p. 5).

In distinction to this, interpretive researchers insist that any observable organizational patterns are constantly changing because, as Parmenides observed, "you cannot swim in the same river twice." Interpretivists argue that organizations are not static and that the relationships between people, organizations, and technology are not fixed but constantly changing. As a consequence, interpretive research seeks to understand a moving target. In so far as each instance is treated as a unique historical occurrence, interpretive research is idiographic. From this it has sometimes mistakenly been concluded that interpretive research cannot generalize—this claim will be taken up shortly under the principle of abstraction. When the researcher does the field research, the results of his or her work are influenced by the total history of the organization and the research itself becomes a part of the organi-

zation's future history. The principle of contextualization requires that this be explicitly reflected. The researcher needs to see people as the producers and not just as products of history and the description of the historical context should reflect this in the write-up of the research study.

An IS example illustrating the principle of contextualization is Ciborra et al.'s (1996) study of Fiat's new assembly plant where the Punto, 1995 "European Car of the Year," is manufactured. The authors discuss the historical forces that led to Fiat establishing the new assembly plant as an "integrated factory." At the beginning of the 1980s, Fiat

> embarked resolutely into the so-called high-tech factory concept, which privileged intense automation to yield high productivity and quality, while reducing the role of human work drastically (Ciborra et al. 1996, p. 405).

The results, however, were disappointing, with management learning that quality cannot be the outcome of sophisticated technology only, with little involvement of the workforce. The new assembly plant represented the first example of the new production concept adopted by Fiat in the 1990s: the integrated factory. Despite radical changes in work organization and operations in the new factory, however, the authors show how Fiat's earlier history of applying old Fordist production concepts still had a significant influence.

The Principle of Interaction Between the Researcher(s) and the Subjects

Whereas the principle of contextualization places the object of study in context, this principle requires the researcher to place himself or herself and the subjects into a historical perspective. In social research, the "data" are not just sitting there waiting to be gathered, like rocks on the seashore. Rather, interpretivism suggests that the facts are produced as part and parcel of the social interaction of the researchers with the participants.

Within the discipline of anthropology, this principle has become more widely recognized in recent years. For example, Kahn argues for a reflexive anthropology where it is recognized that the interpretation of culture(s) "is in fact part of a process of construction" and says that anthropologists themselves "are similarly part of a broader socio-historical process" (Kahn 1989, p. 22).

> To put the argument in another way, when I, or any other anthropologist, produces in text an account of another culture, what I am in fact doing is engaging in a process with a history. That history is the cultural product of a longstanding relation between "us" and "them" within which I and my "informants" are embedded. At the same time, the knowledge which I/we produce out of that relation—in my case for example the knowledge I might choose to term "Minangkabau culture," or "the meaning of mosque symbolism in a West Sumatran village," or whatever—is new knowledge in the sense that it does not pre-exist in West Sumatra, hardwired as it were in the brains of the Minangkabau from time immemorial. It exists, and can only exist, in the relationship between Minangkabau and the West (Kahn 1989, p. 16).

It follows from this that interpretive researchers must recognize that the participants, just as much as the researcher, can be seen as interpreters and analysts. Participants are interpreters as they alter their horizons by the appropriation of concepts used by IS researchers, consultants, vendors, and other parties interacting with them, and they are analysts in so far as their actions are altered by their changed horizons. This effect is lessened if the researcher is not interacting with the participants, i.e., relies solely on historical secondary data or a concealed one-way window. Even in this case, however, the researcher's preconceptions about the participants still affect the construction, documentation, and organization of the material.

Read's (1965) account of his fieldwork in Papua, New Guinea was one of the first anthropological studies to fully reflect this principle. Read succeeds in giving the reader an extraordinarily vivid insight into the life and character of the people. But the story is told "as it appeared through my own eyes, filtered through my own

background, my likes and dislikes, qualified by my own strengths and weaknesses" (Read 1965, p. 247).

In information systems, an example of this principle is Trauth's (1997) discussion of the lessons she learned over the course of conducting three field studies. The three research projects were concerned with the education of IS professionals, the societal influences and impact of the emerging information economy in Ireland, and the influence of societal factors on the diffusion of information technology in the Netherlands. She explains how her understanding of all three situations improved as she became self-conscious and started to question her own assumptions. While making an effort to "embrace the contexts" in which she was conducting her research, she also attempted to "bring into consciousness the emotional and intellectual reactions to experiences and observations" (Trauth 1997, p. 241).

The Principle of Abstraction and Generalization

The two previous principles emphasize those features unique to the particular situation under study. Whereas it is true that interpretive research values the documentation of unique circumstances and is highly suspicious of any claim that human affairs are governed by natural laws that are culturally independent, this is not the whole story. One outcome of the extensive debates in philosophy is that there is a philosophical basis for abstraction and generalization in interpretive field studies.

Interpretive philosophers such as Heidegger (1962) and Husserl (1970, 1982) attempted to articulate the essence (the most basic characteristics) of the human condition in terms of a number of elementary categories. Examples of such categories which have been used in information systems research are "embodiment," or "breakdown" (Madsen 1989). What is important here is the recognition that these types of concepts were extracted from common, everyday experiences such as hammering, or misunderstandings in everyday language (breakdowns). Therefore, intrinsic to interpretive research is the attempt to relate particulars as may be described under the principle of contextualization to very abstract categories; unique instances can be related to ideas and concepts that apply to multiple situations.[2] This does not mean that it is appropriate to test theory in any simple or direct manner (Deetz 1996), as is suggested for positivist case study research (Benbasat et al. 1987). Nevertheless, it is important that theoretical abstractions and generalizations should be carefully related to the field study details as they were experienced and/or collected by the researcher. This is so readers can follow how the researcher arrived at his or her theoretical insights.

The principle of abstraction with its philosophical backing in the works of Heidegger and Husserl supports Walsham's argument that the validity of the inferences drawn from one or more cases does not depend on the representativeness of cases in a statistical sense, "but on the plausibility and cogency of the logical reasoning used in describing the results from the cases, and in drawing conclusions from them" (Walsham 1993, p. 15; see also Lee 1989). Walsham argues that there are four types of generalizations from interpretive case studies: the development of concepts, the generation of theory, the drawing of specific implications, and the contribution of rich insight (Walsham 1995a). The key point here is that theory plays a crucial role in interpretive research, and clearly distinguishes it from just anecdotes. However, theory is used in a different way than is common in positivist research; interpretive researchers are not so interested in "falsifying" theories as in using theory more as a "sensitizing device" to view the world in a certain way. Interpretive researchers in information systems tend not to generalize to philosophically abstract categories but to social theories such as structuration theory or actor network theory.

An example of this principle in information systems is Monteiro and Hanseth's (1996) article, which focuses on general theoretical relationships between technological and organizational issues. Drawing mostly on Latour's actor-network theory, they discuss the development of an

[2]Not all anthropologists agree with this position, advocating cultural relativism instead. However, even cultural relativists use some abstract general concepts, e.g., the concepts of culture and enculturation.

information infrastructure for the Norwegian healthcare sector. The project involved defining the Norwegian standard for drug prescription exchange, the main task being the definition of an EDI message representing a prescription. The authors show how the identifiers for prescription drugs were defined by the pharmacies, without considering the needs of GPs. What is usually considered a mere "technical detail" (the defining of identifiers) in fact represented the political interest of the pharmacies.

In this article, the idiographic details revealed by the data interpretation were thus related to theoretical, general concepts drawn from actor-network theory. According to this theory, humans and non-humans are linked together into actor-networks. The theory assumes that actors pursue interests, and that these interests can become inscribed in technical or social arrangements. In Monteiro and Hanseth's case, their findings are used to show how organizational behavior is inscribed into "technical" details of standards and how adoption and diffusion of a standard involves making it irreversible.

The Principle of Dialogical Reasoning

This principle requires the researcher to confront his or her preconceptions (prejudices) that guided the original research design (i.e., the original lenses) with the data that emerge through the research process. The most fundamental point is that the researcher should make the historical intellectual basis of the research (i.e., its fundamental philosophical assumptions) as transparent as possible to the reader and himself or herself. As a minimum, the researcher should identify what type of interpretivism s/he prefers, identify its philosophical roots, and relate the particular strengths and weaknesses of the preferred philosophical direction to the purpose of the work.

The intellectual basis of the research design provides the lenses through which field data are construed, documented, and organized. It could be that the research findings do not support these preconceptions. Therefore, they may have to be modified or abandoned altogether. This process is one instance of the hermeneutic rule that "prejudice," prejudgement, or prior knowledge plays an important part in our understanding. In positivist social science, "prejudice" or prejudgement is seen as a source of bias and therefore a hindrance to true knowledge; objectivity, according to positivism, is best attained if a social scientist adopts a value-free position and does not let biases interfere with his or her analysis. By contrast, hermeneutics recognizes that prejudice is the necessary starting point of our understanding. The critical task of hermeneutics then becomes one of distinguishing between "true prejudices, by which we understand, from the false ones by which we misunderstand" (Gadamer 1976b, p. 124). Of course, the suspension of our prejudices is necessary if we are to begin to understand a text or text-analogue. But as Gadamer points out, this does not mean that we simply set aside our prejudices. Rather, it means that we, as researchers, must become aware of our own historicity (Gadamer 1976b, p. 125).[3]

The above rule can be applied several times in sequence so that the improved understanding of one stage becomes the prejudice for the next. An example of this is the six-stage process summarized by Lee (1991, p. 356). Lee describes how Nardulli (1978) came to revise his preconceptions of the role of caseload pressure as a central concept in the study of criminal courts several times. Beginning with the "legal man" notion that the court system is a due process system where impartial judges seek to serve justice based on truth finding through adversarial debate, several revisions of this basic notion are confronted with conventional empirical and participant observational records. Eventually this rationalistic "legal man model" of the court has to be dismissed. The court system functions more like a clubhouse in which the collective efforts of the court room elite (judges, prosecutors, and defense lawyers) are guided by the common interest to process cases expeditiously (Lee 1991, p. 359).

Interestingly enough, in this particular example some of the preconceptions came from positivist research. It shows that hermeneutic theory can

[3]This awareness of the dialogue between the text and the interpreter is peculiar to contemporary hermeneutics. The earlier hermeneutic philosophers such as Dilthey ignored this dialogical relationship between the text and the interpreter and attempted to understand the objective meaning of a text in its own right.

embrace meanings that originate from both positivist and interpretivist types of research.

The Principle of Multiple Interpretations

Whereas it is possible to apply the previous principles to texts from only one source, this would ignore that human actions are conditioned by a social context involving multiple agents. The principle of multiple interpretations requires the researcher to examine the influences that the social context has upon the actions under study by seeking out and documenting multiple viewpoints along with the reasons for them. The analysis of reasons may include seeking to understand conflicts related to power, economics, or values. Moreover the researcher should confront the contradictions potentially inherent in the multiple viewpoints with each other, and revise his or her understanding accordingly. This follows from Ricoeur's (1974) work, *The Conflict of Interpretations.* These revisions are similar to the application of the hermeneutic rule referred to in the principle of dialogical reasoning, except that it is not a confrontation of the researcher's preconceptions and the data, but a confrontation of conflicting interpretations of the participants in the field. In either case, revisions of the researcher's preconceptions may be the outcome.

Examples of the fruitfulness of this principle in IS are most common in ethnographic studies of system requirements formulation. One example is the requirements for the Threshold system in the study of Bremerton Inc. (BI), an integrated financial services company (Levine and Rossmore 1993). Threshold was an IT initiative that should have made BI more competitive, by not only replacing its bread and butter core applications, but also by expanding into new products and market services to place BI at a competitive advantage. However, as the planning for Threshold moved into the second year, conflicting interpretations among the participants became apparent. There were disagreements as to whether Threshold was supposed to be "a systems project with major business implications" or a "business project with major systems implications" (Levine and Rossmore 1993, p. 64). A third group argued that "work on Threshold was premature since the overall strategic vision for Bremerton was still evolving" (p. 65). The ethnographic study documented the factors that allowed this situation to arise.

Of course, it is not mandatory that such conflicting interpretations be present. This is exemplified by the ethnographically informed systems design for air traffic control as reported by Bentley et al. (1992). The ethnographic record documented in detail the consensual teamwork character of cooperation in flight control among various professional specializations (one chief controller, two radar controllers, two assistants with military liaison officers) via flight strips. However, we would argue that the possibility of conflicting interpretations among the participants themselves of what an air control system *should* be doing was dismissed too easily in this study, as the reader is left wondering why no such conflicting interpretations exist in this case. Even if eventually none are found, the principle of multiple interpretations is of heuristic value because it leads to probing beneath the surface. Such probing is strengthened further with the principle of suspicion discussed next.

The Principle of Suspicion

Even though the above principles already encourage various forms of critical thinking, on the whole they are more concerned with the interpretation of meanings than with the discovery of "false preconceptions." We therefore adapt the principle of suspicion from Ricoeur (1976). In what he describes as a "hermeneutics of suspicion," Ricoeur argues that it is possible in certain circumstances to see consciousness as "false" consciousness (Ricoeur 1976, pp. 194-203). Ricoeur illustrates the operation of the principle of suspicion with examples of critical analysis from Marx and Freud. The idea is to reveal the effects of socially created distortions (Marx) and psychopathological delusions (Freud). Fromm (1955) and Adorno et al. (1950) provide many examples for the operation of false consciousness and its recognition.

In subsequent literature, Critical Social Theory has pursued this idea more vigorously than interpretivism. As Deetz describes,

> Either explicit or implicit in critical work is a goal to demonstrate and critique forms of domination, asymmetry, and distorted

> communication through showing how social constructions of reality can favor certain interests and alternative constructions can be obscured and misrecognized (Deetz 1996, p. 202).

It is therefore not surprising that examples of interpretive field studies implementing the principle of suspicion tend to be influenced by the writings of critical theorists, especially Habermas and Foucault (Alvesson and Wilmott 1992a, 1992b; Forester 1992; Lyytinen 1992; Mingers 1981; Myers and Young 1997; Ngwenyama 1991).

A possible method to reveal distortions in conversations is presented by Forester (1992) in his brief study of an interaction between city planning staff. After brainstorming a long list of information needed to create a developmental plan for a small city, one of the planners raises the tricky question of how this information is to be obtained without having the resources to pay for it. By carefully analyzing the figures of speech employed (like "that's a minor detail"), it is shown how the five people involved negotiated the difficult situation by making obviously false claims and facetiously consenting to them. What is at stake here is not the truth or untruth of the claims, but the world of social relations between the planning staff and the other departments of city government. By questioning the surface meaning of what is being said in a systematic way, Forester can

> explore a four-layered practical structure of social and political interactions shaping (more or less true) beliefs, (more or less appropriate) consent, (more or less deserved) trust, and (more or less aptly focused) attention. In so doing, we can identify subtle, yet powerful pragmatic moves of social actors who seek ends instrumentally **and** yet continually reproduce social and political relations too (Forester 1992, pp. 61–62).

This kind of approach clearly goes beyond understanding the meaning of the data because it points the researcher to "read" the social world behind the words of the actors, a social world that is characterized by power structures, vested interests, and limited resources to meet the goals of various actors who construct and enact this social world.

The application of the principle of suspicion appears to be one of the least developed in the IS research literature. However, since there is considerable disagreement among interpretive researchers concerning the extent to which social research can (or should be) critical (Deetz 1996), we leave open the possibility that some interpretive researchers may choose not to follow this principle in their work.

The Interdependence of the Seven Principles

We began this section with the suggestion that the principle of the hermeneutic circle is the overarching principle upon which the other six principles expand. Having considered each of the principles separately, we now wish to come back full circle and consider the interdependence of the principles and the "whole" that they create; this whole needs to guide the researcher's judgement with regard to the application of each principle individually.

For instance, a researcher's deciding on what relevant context(s) should be explored (principle two) depends upon the following: how the researcher "creates data" in interaction with the subjects (principle three); the theory or concepts to which the researcher will be abstracting and generalizing (principle four); the researcher's own intellectual history (principle five); the different versions of "the story" the research unearths (principle six); and the aspects of the "reality presented" that he or she questions critically (principle seven). It is obviously infeasible and distracting to describe every aspect of the context. The researcher has to choose what to say depending upon the audience and the story that he or she wants to tell. Clearly, the whole (the final published story) affects the parts (how each individual principle is applied), and the application of each part affects the whole.

This means that, while we believe that none of our principles should be left out arbitrarily, researchers need to work out themselves how (and which of) the principles apply in any particular situation. On the other hand, we do not believe that the principles can be used *a la carte,* since the importance and relevance of each principle is derived in part from the manner in which the others are applied to

the collection and interpretation of the field materials. We argue that qualified readers can judge if any of the principles have been left out arbitrarily by finding "holes" in the researcher's story. The reason for this is that neglect of the interdependence among the applicable principles would render the account less cogent and trustworthy. The basic rationale for this claim seems to have been intuitively recognized by Prasad (1997), when she suggests that an ethnography is ultimately judged on its ability to offer convincing explanations of action in a particular culture or subculture—i.e., it has to be "plausible."

> Plausible accounts refer to ethnographic writings that are convincing not only because they pay attention to detail, but because the overall narrative incorporates the viewpoints of multiple actors and ties these together in a culturally coherent and articulate fashion . . . . Many features can contribute to the plausibility of the research narrative including the development of a strong story line, evidence of the researcher's involvement in the field, a sense of historical context and a coherent weaving of disparate events within the field (Prasad 1997, p. 108).

We would like to think that our seven principles are a more detailed and useful description of the "features" to which Prasad refers that make a research story plausible and convincing to its target audience. We therefore conclude this section by reiterating the point that the whole story resulting from the application of the individual principles is greater than the sum of the parts, i.e., the separate application of each principle. Interpretive researchers need to write an account that is not only interesting, but also plausible and convincing. Our suggested set of principles is designed to help interpretive researchers improve the plausibility and cogency of their accounts.

Three Examples of Interpretive Field Research in Information Systems

Three published examples of interpretive field research from the IS research literature are evaluated in this section. The articles are evaluated in the light of our proposed set of principles for interpretive field research in order to demonstrate how authors, reviewers, and editors can apply the principles. The three examples are as follows: Orlikowski's (1991) ethnographic study of the changes in forms of control and forms of organizing in a large, multinational software consulting firm; Walsham and Waema's (1994) analysis of the IS strategy formation and implementation process in a medium-sized UK building society; and Myers' (1994) examination of the failed implementation of a centralized payroll system by the New Zealand Education Department. Whereas the ethnographic research method was used in Orlikowski's study, the case study method was used in the other two studies. The three articles are summarized in Table 2.

We selected these three particular papers because we consider them to be very good examples of interpretive field research; they exemplify most of our suggested principles of interpretive field research, even though some principles are better exemplified than others. Also, they were among the first interpretive papers to be published in information systems journals, which meant that they were available to us for analysis at the early stages of our project.

The Fundamental Principle of the Hermeneutic Circle

The first principle, the hermeneutic circle, is fundamental in the sense that it should guide the application of the other six to the interpretation of the field study material. Each of the following six principles will guide the researcher to reveal specific aspects of the case, none of which, when taken by themselves, are necessarily complete. Hence, each principle may help the researcher to discover or better understand a significant part of the case that contributes to an understanding of the field study as a whole. At the same time, as the understanding of the parts becomes clearer, they themselves help to codetermine the meaning of the whole (Gadamer 1976b, p. 117). This process is not unlike putting the pieces of a puzzle together, except that the pieces are not all given but have to be partially fashioned and adjusted to each other.

Table 2. Summary of Three Interpretive Field Studies in Information Systems[4]

	1. Orlikowski (1991)	2. Walsham and Waema (1994)	3. Myers (1994)
Research Method	Ethnography	Case study	Case study
Research Site	A large, multinational software consulting firm	A medium-sized UK building society	A New Zealand government department
Theoretical Focus	Implications of IT for forms of control and forms of organizing	IS strategy formation and implementation process	Implementation of information systems
Key Findings	Instead of facilitating a more flexible organization, IT enabled existing forms of control to be intensified and fused	The IS strategy formation and implementation process is a dynamic one, involving time-varying relationships, multilevel contexts, and cultural and political aspects	Most theories of IS implementation are too narrow and mechanistic; IS implementation can only be understood as part of the broader social and organizational context

In all three articles, the principle of the hermeneutic circle is implied, but only Myers gives it brief, explicit recognition (Myers 1994, pp. 188–9).[5] We suggest this could be because the application of the first principle depends on the application of the other six. Given that the other principles were only applied to a varying degree, it is perhaps to be expected that this first principle cannot be clearly identified in these articles. Therefore, the value of this principle lies more in guiding future work than in evaluating work already published.

Having said this, however, we can suggest how the principle of the hermeneutic circle could be applied in future. A researcher could use the principle to move back and forth between the different interpretations of the field study material to which he or she was led in the application of the remaining six principles. This activity would be guided by the goal to fill in any gaps or unresolved contradictions in the field study material that may persist, and would continue until the "pieces of the puzzle" fit together (at least in the researcher's mind).

The Principle of Contextualization

All three articles set the subject matter in its historical, political, and economic context, although the manner and degree in which this is done varies. One of the articles (Myers) places the contextualization toward the end of the analysis section, which is somewhat unusual. This is done as a rhetorical device to explain to the reader certain surprising aspects of the case presented earlier. For example, one of the surprising aspects is the government's decision "to scrap the system despite the fact that it was working correctly" (Myers 1994, p. 194). Myers' description of the sequence of events that led to the government's decision provides the explanation of this puzzle. He shows how all decisions

[4]The abstract of each of the three papers is included in the Appendix.

[5]Walsham discusses the way in which his research was informed by hermeneutics elsewhere (Walsham 1993).

regarding the centralized payroll system make sense in the light of political changes surrounding government strategy to restructure educational administration in New Zealand.

The other two papers place the context earlier in the presentation of the case, which is more common. Of the two, Walsham and Waema's paper is the most comprehensive, providing a discussion of the multi-level analysis of the British financial services sector and an overview of the events and actions over the whole period in the UK building society from 1981 to 1989. Orlikowski's realization of the principle of contextualization is the weakest of the three papers. She discusses the increasing formalization and standardization of the software firm's disciplinary practice since the early 1960s, along with the firm's current political structure and overall objectives. The reader's understanding could benefit, however, by a better description of the social and historical context that would explain why the management of the consulting company committed to CASE tools "to streamline as much of the software development process as possible" (Orlikowski 1991, p.14). It is not clear to the reader why the company chose to limit its range of options this way.

All three articles contribute to an overall understanding of the historical forces affecting the organizations under study. At the same time, they see the subjects of their research as the producers and not just as products of history. The subjects are portrayed as actors and not simply as passive respondents to a situation over which they have no control.

For instance, Walsham and Waema discuss the differences in management style between two chief executives. One of the chief executives (Mr. Brown) is described as "the key actor attempting to manage strategic change over this period" (p. 163). Through specific quotes from Brown and those working with him, the authors are able to document Brown's conviction that he can make a difference through his commitment and actions. They give numerous examples for this, one of which involved Brown manipulating the organization to apply prototyping in the implementation of an information system. In Brown's own words, "So what I did in Sky . . . was to introduce a half-baked system which was then modified by a lot of feedback (from branch staff)—trying it on and polishing it until it fits the business" (p. 164). The article explores in some depth this chief executive's background and his relationship with senior management and other interest groups. The authors are therefore able to explore the social and historical context within which Brown and the organization as a whole operated, while at the same time showing that Brown was an actor who himself significantly influenced the organization.

In a similar way, Orlikowski describes the software consultants as "agents." She says that the exercise of control is never one-sided; on occasion SCC consultants "are able to refuse to conform to the tools and the culture, and do things the way they see fit" (p. 32). While the consultants are thus subject to institutional controls (and significantly influenced by the tools, the culture, and the organizational context within which they work), they are nevertheless portrayed as actors and not simply as passive respondents to a situation over which they have no control.

The Principle of Interaction Between the Researcher and the Subjects

In all three articles, this principle is followed to a much lesser extent than any of the other principles. The authors tend to focus on the organizations as if their account is the only possible one and gloss over the social interaction between the participants and the researcher through which the data were constructed and recorded. For example, Walsham and Waema acknowledge that their particular perspective on organizational culture developed at a fairly late stage, after analyzing participants' perspectives, and after seeing the importance attached to symbolic elements. To some extent, this indicates how the researchers' interpretations emerged as their understanding of the case improved. A critical reviewer, however, could point out that if the principle of interaction between the researcher and subjects had been applied more forcefully, they could have taken this further by more fully describing the ways in which data collection and interpretation activities affected each other.

With regard to this principle, Myers' article is the weakest of the three, since only a brief summary of the research methodology is given (Myers 1994, p. 186). Orlikowski improves upon this by having a slightly more extensive discussion of research methods and the ways in which data were collected. However, how the data were created through the interaction between the researcher and participants is not revealed (Orlikowski 1991, p. 14).

If the authors of the three papers had acknowledged this principle in conceiving and conducting their studies, they might also have given more attention to the effects that their research produces on the participants. Clearly, informal contacts, interviews, requests for specific documents, and conversations will affect how the subjects view their own affairs and how they present that to the researcher. This in turn will have an effect on the kind of data that the researcher obtains. In none of the papers are these kinds of effects of the researcher on the participants and vice versa acknowledged or analyzed.

The Principle of Abstraction and Generalization

All three articles generalize their findings to theoretical constructions of interest to the wider information systems research community. Orlikowski draws on Giddens' structuration theory as a vehicle to derive abstractions and generalizations from her findings. She focuses on the forms of control adopted in organizations and provides an understanding of the possible control and organizing consequences of deploying information technology in work processes. Walsham and Waema generalize their findings using concepts from contextualism, a type of organizational change framework proposed by Pettigrew (1987) and his colleagues. The Pettigrew framework focuses the researcher on the concepts of content, context, and process (the interconnectedness of actions and events over time). This framework is used by the authors to develop some general implications about the process of IS strategy formation and implementation.

An additional dimension of abstraction is provided by Myers in that his case description is used for two purposes: to reflect on some general principles of research methodology (i.e., critical hermeneutics) and to generalize to key concepts in IS implementation theory such as IS success and power. The broader social and historical context is introduced as a cause for implementation failure (p. 197) and discussed in the context of different IS implementation models. Myers suggests that the lack of progress in IS implementation research may be due to

> an underlying mechanistic view of the relationship between information technology and organizational change. That systems development is conducted within a complex, intertwined set of social and political interactions is generally ignored (p. 188).

Using the critical hermeneutics of Gadamer and Ricoeur, the case analysis then proceeds to show in some detail how concepts such as IS "success" and "user satisfaction" are matters of interpretation. The idiographic details revealed by the data interpretation are thus related to theoretical, general concepts; Myers uses the case to generalize to concepts from IS implementation theory.

The Principle of Dialogical Reasoning

As explained earlier, this principle requires the researcher to confront his or her preconceptions (prejudices) which guided the original research design (i.e., the original lenses) with the data that emerge through the research process. The most fundamental point is that the researcher should make the historical intellectual basis of the research as transparent as possible to the reader. In all three papers, the intellectual basis of the research is made clear. Orlikowski acknowledges that her research was informed by assumptions about organizations and information technology which draw on Giddens' theory of structuration. Contrary to the theoretical position of much of the IS research literature, which assumes that information technology will transform existing bureaucratic organizational forms and social relations, Orlikowski shows how the use of new information technology led to the existing forms of control being intensified and fused. Walsham and Waema propose a content, context, and process framework derived from a number of social science and IS researchers, especially Pettigrew. Myers proposes the critical hermeneutics of

Gadamer and Ricoeur as an integrative framework for researching IS implementation.

However, the dialogical aspect of the research is not discussed explicitly in any of the three articles to be little awareness of the researchers' own historicity; we are presented with a complete, polished theoretical framework with little information provided regarding the way in which these theoretical perspectives emerged. Why this may have been the case is discussed later.

The Principle of Multiple Interpretations

Although Orlikowski's (1991) article mostly emphasizes the uniformity of the software firm's methodology and culture, alternative viewpoints are presented, including the views of those who occasionally undermine the workings of the control mechanisms. For example, Orlikowski says that some consultants deliberately bypassed the CASE tools they were supposed to use if they believed that the technology was slowing their work. Walsham and Waema (1994) also offer alternative perspectives within the organization under study. Although the focus of their article is on senior management and in particular the differences in management style between two chief executives, they do document the views of other interest groups.

Of all three articles, Myers (1994) has the most extensive discussion and analysis of the viewpoints of the various stakeholders. He shows how the centralized payroll project was characterized by conflicting interpretations among the participants about what happened, who was to blame, and how successful the project was. For example, while the system received very bad publicity in the media and was seen as a failure by teachers,

> the Director of Management Services proclaimed some 4 months after implementation that the system was successful in that it was now on target to meet its main financial goal of saving the government millions of dollars in interest payments (Myers 1994, p. 196).

Despite this apparent "success," Myers explains the continued opposition of the teachers' union to the payroll system and the government's decision to scrap it just a few months later.

The Principle of Suspicion

All of the authors adopt a critical perspective and do not take their informants' views at face value. The articles provide informative examples of how this principle can be implemented in different ways. In Orlikowski's case, the firm is described as a "quintessential 'knowledge-based' firm," where all employees are referred to as "professionals." It is our expectation that "professional practitioners apply significant discretion" over their own work. However, Orlikowski shows how the firm exercised a number of systematic and personal forms of control, and how IT enabled the existing forms of control to be intensified and fused. She says that the "objectivity," "integrity," and "independence" expected of professionals "would appear to be undermined by the short-term focus on profits evident in SCC and its emphasis on standards, routines, methodologies, and tools that shape the reality they purport to serve" (p. 38).

Walsham and Waema's critique emerges mostly though the juxtaposition of alternative viewpoints of the participants, and by adopting a cultural and political perspective on the IS strategy and implementation process. For example, they note that the dominance of one chief executive officer over other members of the senior management group "was a conscious political act on his part, at least if we accept his own testimony after the event" (p. 164). He believed this approach was necessary to get things done. Rather than merely accept the words of the CEO, however, Walsham and Waema exhibit suspicion by considering the views of other staff. "Less charitable" interpretations were put forward by them, with some staff claiming that he "only took actions likely to produce improved financial results in the relatively short term, but not necessarily best for Sky in the long term" (p. 165).

In Myers' case, a critical perspective is taken by examining the statements and actions of the various stakeholders in terms of the political and economic interests of the actors. For example, the payroll system itself is seen as "one of the means by which the government intended to restructure educational administration in New Zealand" (p. 197). The opposition of the teachers' union and others to the system is explained (at least in part) by noting that "the system

became in effect a symbol of the government's resolve to push through sweeping changes to education administration" (p. 197). Many of them opposed this government initiative.

The Interdependence of the Seven Principles

Since we have argued that all seven principles depend upon each other and form an interdependent whole, at least to some extent, we now need to return full circle to discuss each paper as a whole in relation to the principles as a whole. From our overall assessment of the three papers in Table 3, we can see that all three articles are remarkably similar with respect to the way in which they exemplify our suggested principles. Four of the principles are clearly illustrated, while one of the principles (that of the hermeneutic circle) is explicitly recognized in one paper and implied in the others.

Our overall assessment, therefore, is that all three papers can be considered exemplars of interpretive field research in information systems. They are plausible and convincing, and clearly illustrate the principles of contextualization, of abstraction and generalization, of multiple interpretations, and of suspicion.

It is striking, however, that all three papers are especially weak in relation to the third and fifth principles of interpretive research (of interaction between the researcher(s) and subjects, and of dialogical reasoning). We are given little understanding of how the researchers' analysis developed over the course of the project. As it stands, we are presented with a finished piece of interpretive research with few indications given of its emergent nature.

A possible explanation for this is that all three authors may have been conforming to normative pressures for writing up their research as if the researcher was an unobtrusive, objective researcher. However, by (consciously or unconsciously) conforming to positivist criteria for valid research, the quality of all three papers was affected from an interpretive perspective. This highlights the importance of explicit recognition by the IS research community of the differences between the evaluation criteria for positivist and interpretive research. Our proposed principles for interpretive research should help in this regard. If some consensus emerges that our proposed principles are useful, interpretive researchers will no longer feel the need to justify their work by the use of inappropriate criteria.

With regard to the interdependence among those principles that are actually applied in the three papers, we were surprised to discover the pivotal influence exerted by principle four. In the case of Myers (1994), the principal purpose is to demonstrate the usefulness of critical hermeneutics as a theoretical frame of reference for implementation research. Critical hermeneutics provides the paper's constructs for abstraction and generalization. This particular perspective guides the researcher to investigate the roles of different stakeholders and their multiple interpretations with the distortions in their viewpoints resulting from social conflicts. It also encourages the researcher's "suspicion" not to take anything at face value. It is, therefore, not surprising that Myers focuses on the wider social and historical context to help explain the multiple viewpoints and conflicting social interests that he saw as driving the sequence of events that occurred.

Since we have access to the field notes and recollections of the original researcher, we can confirm that in the Myers' (1994) article, principle four had an overwhelming influence in giving priority to principles six and seven, which then in turn drove the application of principle two (contextualization). This suggests that if the theoretical ideas used for generalization and abstraction emphasize a critical viewpoint, then principle six is naturally connected to principle seven (if there are multiple interpretations, none can be taken at face value). The connection between principles six and seven provides the key point for Myers' conclusions. In trying to plausibly explain the reasons why the implementation of payroll system failed, he writes:

> On the surface there are many reasons why the implementation of this system was so fraught with problems. While some of them can be easily discounted (e.g., a journalist suggesting that the problem was a "computer jinx"), many of the reasons suggested by the participants are perfectly legitimate. However, none of these reasons on their own really explain what happened; the

Table 3. Overall Assessment of the Three Interpretive Field Studies

	1. Orlikowski (1991)	2. Walsham and Waema (1994)	3. Myers (1994)
1. The Fundamental Principle of the Hermeneutic Circle	Implied, but no explicit recognition given to it	Implied, but no explicit recognition given to it	Applied and brief recognition given to it
2. The Principle of Contextualization	Discusses the firm's current political structure and overall objectives	Provides a multi-level analysis of the British financial services sector and an overview of key historical events	Uses the political context to explain some surprising aspects of the case
3. The Principle of Interaction between the Researchers and the Subjects	Ignores the social interaction between the participants and the researcher	Ignores the social interaction between the participants and the researcher	Ignores the social interaction between the participants and the researcher
4. The Principle of Abstraction and Generalization	Uses Giddens' structuration theory and focuses on forms of control in organizations	Uses Pettigrew's content, context, and process framework and focuses on IS strategy formation and implementation	Uses the critical hermeneutics of Gadamer and Ricoeur and focuses on IS implementation
5. The Principle of Dialogical Reasoning	The intellectual basis of the research is made clear, but the dialogical aspect is not discussed	The intellectual basis of the research is made clear, but the dialogical aspect is not discussed	The intellectual basis of the research is made clear, but the dialogical aspect is not discussed
6. The Principle of Multiple Interpretations	Alternative viewpoints are presented including the views of those who occasionally undermine the control processes	Focuses mostly on senior management, but the views of other interest groups are also presented	Has an extensive discussion of the viewpoints of various stakeholders
7. The Principle of Suspicion	Criticizes the short-term focus on profits at SCC and demonstrates the way in which IT has enabled existing forms of control to be intensified and fused	Juxtaposes alternative viewpoints and suggests that one CEO failed to take a longer term view	Examines the views and actions of various stakeholders in terms of their political and economic interests

> scrapping of this system by the government only makes sense if we come to understand the broader social context within which the implementation of this system took place (Myers 1994, p. 197).

The principle of suspicion expressed in this passage ("on the surface," "none of these reasons on their own") clearly motivates the selection of items to be included in the characterization of the "broader social and historical context." Hence principle seven also had a strong influence. The key interdependencies among the principles exemplified by Myers (1994) are summarized in Figure 1.

In the Myers (1994) example, it is relatively easy for us to reconstruct the interdependencies among the principles, because we have access to the original research notes. In the case of the other two examples we can only guess. However, we may expect some similarities, as the other two papers also place principle four high on their research priorities and, like Myers, ignore principles three and five.

Orlikowski's research is concerned with "the extent to which information technology deployed in work processes facilitates changes in forms of control and forms of organizing" (p. 9). While the relationships between forms of control and organizational forms could be explored on the basis of many theories, Orlikowski chose structuration theory for that purpose. As far as we can tell from the paper, key constructs from structuration theory have driven the application of principle two, i.e., the selection of material that explains the firm's current political structure and overall objectives. Furthermore, the pivotal theoretical distinctions introduced in the paper deal with systemic forms of control and their changes. These distinctions appear to be related to key constructs of structuration theory, called mediation of structure through human action, which draw on the rules and resources provided by the organization. If these rules and resources are embodied within IT, then the use of IT will not change the existing forms of control, but reaffirm their importance (unless exceptional circumstances upset the whole organizational structure). Orlikowski illustrates these ideas in her telling of the story. Hence it appears to us as if the main influence is directly from principle four to two, with some consideration of six at the same time. In comparison to Myers (1994), principle seven receives much less attention. It is used primarily to explain why the principle actors have relied on IT to intensify the existing forms of control (i.e., to meet short-term profit goals).

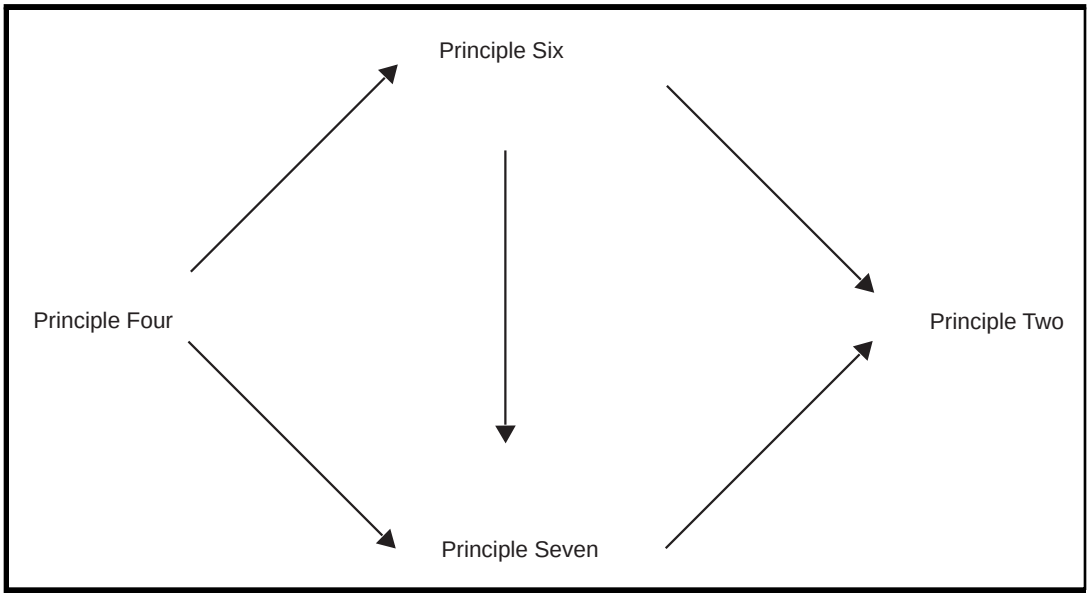

Figure 1. Interdependencies Among the Principles Exemplified in Myers (1994)

The research goal in Walsham and Waema's paper is to provide "an example of a more detailed perspective on processes in IS strategy and implementation then [sic] typically available in the literature" (p. 150). To this end, they draw on Pettigrew's contextualism as a theoretical foundation. When applied to IS strategy, contextualism suggests tracing the dynamic interlinking among the following components of IS strategy: content, context, and process. Through their interpretation of the case, Walsham and Waema explore these ideas as they relate to the case details. Hence, once again, we see a clear dominant influence from principle four to two and six in order to depict the evolving story. At the core of their interpretation are the views and actions of senior management to deal with IS strategy issues in the building society and the reactions of others to these actions. As in Orlikowski's research, principles six and seven receive less attention than in Myers (1994), but are still clearly visible.

In summarizing the interdependence of the principles in all three papers, it is interesting to note that all three are strong theoretically. It appears that principle four played a dominant role in them, and that this drove the application of the others. The three papers that we analyzed would therefore support the conjecture that principle four assumes a leading role in all interpretive field studies of a hermeneutic nature. This is so because hermeneutics makes the philosophical case that no understanding of new "data" is possible without relying on some pre-understanding. However, this raises the question of whether more attention to some of the other principles (especially principles three and five, which were neglected in these papers) by other researchers in the future will affect the interrelationships among the principles. At this point, we leave open the possibility that many other combinations of the principles are possible; these new combinations might well lead to other types of interpretive field studies with patterns different from those exhibited in our three examples. However, it is difficult for us to see how an interpretive field study could be meaningfully conducted without some sort of theoretical filter.

Discussion and Conclusions

Interpretive research has emerged as a valid and important approach to information systems research. Most mainstream IS journals now welcome interpretive research and significant groups of authors are working within the interpretive tradition (Walsham 1995a). With this growing interest in interpretive research, however, questions have been raised about how its quality can be assessed. This article has suggested a set of principles for the conduct and evaluation of interpretive field research in information systems derived primarily from anthropology, phenomenology, and hermeneutics.

Earlier we emphasized the point that our suggested set of principles for interpretive field research is just one among many plausible and useful sets of principles for interpretive research. We readily acknowledge that not all interpretive work is hermeneutic in orientation and therefore we leave the door open for other interpretive researchers to suggest a different set (or sets) of principles. We do believe, however, that explicit articulation of the principles is a contribution to improving interpretive field research methodology in information systems in the following ways.

First, we have managed to crystallize a diffuse literature into a manageable set of principles for those who accept philosophical hermeneutics as a foundation for interpretive research. This should help those interpretive researchers who wish to concentrate on fieldwork, as opposed to the study of philosophical foundations, to design their investigations more systematically. Without the principles proposed in this paper, each and every interpretive researcher would have to spend considerable time deriving the theoretical foundations for their research from diverse literature sources. This would be true even if they wished to limit themselves to the same subset on which this paper is based, i.e., key ideas in anthropology, phenomenology, and hermeneutics. Second, researchers can now defend their work by appealing to principles that are firmly grounded in at least one major direction of interpretive philosophy. Authors no longer need to justify their work by the use of inappropriate (positivist) criteria. In fact, authors may find it useful to refer to the principles when their work

is submitted for peer review. Third, the introduction of a set of principles encourages researchers to consider each one of the principles systematically and ensures that none has been left out arbitrarily. It may well be that researchers would have otherwise neglected an important principle in their work. The corollary of this is that the principles can also help reviewers and readers to check the selective judgements of researchers. Reviewers and editors can ask for clarifications and explanations when some of the principles appear appropriate to them but were not applied by the researcher.

We caution, however, that our proposed set of principles cannot be applied mechanistically. It is incumbent upon interpretive scholars to appropriate them and use their own judgement as to their specific application. We do not absolve authors, reviewers, and editors of the effort of working out whether, how, and which of the principles should be applied in any given research project.[6]

As well as being a contribution to improving interpretive field research methodology in IS, we believe our paper is a contribution in other ways. First, the introduction of this set of principles should help those readers who do not conduct interpretive research themselves to better appreciate its nature. We hope that this paper will lead to interpretive research being better understood and more widely accepted, even though the underlying philosophical assumptions are distinctly different from those of positivism. Second, our proposed principles provide an important stimulus for the advancement of interpretive research approaches. The introduction of this set of principles potentially creates a visible target and thereby a challenge for others to articulate their disagreement in a constructive way. Without continuing debate on matters methodological, research methods and standards will stagnate. Compared to the historical debate on the core assumptions of positivist research methods, the advocates of interpretivism have been relatively silent.[7] We hope that our paper will stimulate further reflection and debate concerning whether and how the quality of interpretive research can be assessed.

[6]In fact, a particular study could illustrate all of our suggested principles and still not come up with interesting results. However, a discussion of appropriate and "interesting" substantive research topics is outside the scope of this paper.

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[7]Interpretive researchers should take to heart an important lesson from the history of positivist research methods. The current conventions regarding methods and standards of empirical research as codified in the modern handbooks of empirical research emerged out of heated debate over three centuries. In the 16th century, Bacon and Galileo started this debate with their controversial claims on the nature of truth and human inquiry followed by Locke and Hume in the 17th and 18th centuries. This debate continued well into the 20th century, with the polemics between the Vienna Circle and Popper and the post-Popperian revisionists (i.e., Kuhn and Lakatos). It seems to us that interpretivism needs a similar debate about its core assumptions if it is to prosper. Any major school of thought can only advance through continuing debate. Compared to the heated controversy about the nature of the scientific method in positivism and its claim to supremacy (in the Popper-Adorno and Habermas-Popper controversies), the philosophical advocates of interpretivism have been relatively silent.

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APPENDIX

Abstracts of the Three Interpretive Field Studies Discussed in the Third Section

Orlikowski (1991). "Integrated Information Environment or Matrix of Control: The Contradictory Implications of Information Technology."

Abstract: This paper examines the extent to which information technology deployed in work processes facilitates changes in forms of control and forms of organizing. A field study of a single organization that implemented information technology in its production process is presented as an empirical investigation of these issues. The findings indicate that information technology reinforced established forms of organizing and facilitated an intensification and fusion of existing mechanisms of control. While debunking the technological imperative once again, the results also provide a number of insights into the contradictory implications of computer-based work and control in organizations. In particular, this paper shows that when information technology mediates work processes, it creates an information environment, which, while it may facilitate integrated and flexible operations, may also enable a disciplinary matrix of knowledge and power. These findings and their implications for forms of control, forms of organizing, and professional practice are discussed.

Walsham and Waema (1994). "Information Systems Strategy and Implementation: A Case Study of a Building Society."

Abstract: The formation and implementation of strategy with respect to computer-based information systems (IS) are important issues in many contemporary organizations, including those in the financial services sector. This paper describes and analyzes an in-depth case study of the strategy formation and implementation process in one such organization, a medium-sized UK building society, and relates the process to its organizational and broader contexts; the organization is examined over a period of several years and under the contrasting leadership of two different chief executives. The case study is used to develop some general implications on IS strategy and implementation, which can be taken as themes for debate in any new situation. The paper provides an example of a more detailed perspective on processes in IS strategy and implementation than typically available in the literature. In addition, a new framework for further research in this area is developed, which directs the researcher toward exploring the dynamic interplay of strategic content, multilevel contexts, and cultural and political perspectives on the process of change.

Myers (1994). "A Disaster for Everyone to See: An Interpretive Analysis of a Failed IS Project."

Abstract: The New Zealand Education Department attempted to implement a centralized payroll system in 1989. The difficulties that the department experienced were broadcast on national radio and television and publicized on the front page of The New Zealand Herald. In the end, the centralized payroll system was scrapped by the government. This paper examines this case study using the critical hermeneutics of Gadamer and Ricoeur. Critical hermeneutics, as an integrative theoretical framework, combines both interpretive and critical elements, and addresses those social and organizational issues which are key to the successful implementation of information systems. This paper suggests critical hermeneutics as a conceptual foundation for information systems implementation research.