December 2002

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Abstract

A practitioner leaves behind the world of failed multi-million-dollar information systems projects to seek solutions in academe. Along the journey from IS practitioner to IS researcher, the author encounters two fundamental tensions regarding the conduct of social science. The first tension concerns the challenge of conducting research meeting the criteria of scientific rigor while addressing issues relevant to practitioners. The second tension centers on the debate concerning the suitability of positivist and non-positivist approaches to research in the social sciences. A review of the literature discussing these tensions led the author to the insight that the two tensions could be related and to the adoption of a multi-paradigmatic research framework as a means of reconciling the tensions. The essay takes the reader from genesis (the author's motivation for conducting practitioner-oriented research), through exodus (the intellectual journey made through the literature to acquire tools of the social science field), to revelation (discovery of the advantages of multi-paradigmatic research in the IS field).

Introduction

I was not surprised to learn that the journey from experienced practitioner to neophyte social scientist would be a challenging one. Experienced researchers know that such a transition entails serious thinking about the nature of reality and the production of knowledge. I was, however, surprised to discover the diversity of views regarding reality and knowledge: to learn there were multiple, and sometimes contradictory, goals and approaches to the conduct of social science.

Early in my studies, I observed two fundamental tensions in the conduct of information systems (IS) research. The first tension concerned the challenge facing IS researchers attempting to achieve acceptable levels of scientific rigor while conducting research relevant to practice. The second tension concerned the debate among proponents of traditional (positivist) social science research perspectives and social scientists espousing a wide variety of non-positivist[1] approaches to research. I labored to understand this debate so that I could select an appropriate perspective for conducting my research. In reading and thinking about these issues, it occurred to me that there may be a relationship between the methodological debate and the challenge of achieving both rigor and relevance in research. This paper shares the results of my investigation of these tensions and the influence that investigation had on the design of my research. I hope the insights gained in this effort will provide useful insights for other researchers wrestling with these tensions.

While this paper is not the product of ethnographic research, I have chosen to present my findings in a confessional narrative form (Schultze, 2000; Van Maanen, 1988). As Schultze explains, the *confessional* or *vulnerable* genre "exposes the ethnographer, rendering his/her actions, failings, motivations, and assumptions open to public scrutiny and critique (2000, p. 8). The confessional genre reveals personal motivations and assumptions underlying my thinking, thus helping readers to evaluate its relevance to their purposes.

[1] I am using the term *non-positivist* as a shorthand means of referencing a range of research traditions including: constructivism, critical theory, feminist theory, interpretivism, phenomenology, post-modernism, etc.

Genesis

My motivation for becoming an IS researcher was the result of a personal dissatisfaction with my career as an IS manager. Information system (IS) project failures are commonly thought to reflect management problems rather than problems with underlying technology (Keil, 1995). Accordingly, academicians and practitioners have invested considerable energy in developing policies and prescriptions to strengthen IS management practice (Van Schaik, 1985; Sambamurthy & Zmud, 1994; Strassmann, 1995; Rockart, Earl & Ross, 1996; Feeny & Willcocks, 1998; Lewis, 1999).

My dissatisfaction with IS management stemmed from my work with the Department of Defense, participating in the development of multiple failed IS projects, each of which resulted in the waste of hundreds of millions of dollars. While the average taxpayer may find this outrageous, what particularly struck me was that these failures occurred despite significant investments in project management and support from executive-level management. More to the point, significant effort and expense had gone into complying with federal and Department of Defense IT management policies: policies largely consistent with the types of IS management prescriptions found in private-sector and academic literature. While the work was intellectually challenging, I was discouraged to see my colleagues' and my efforts come to naught with the demise of each successive project.[2]

Ironically, even working on failed projects can prove financially rewarding. These two realities – failed projects and financial success – motivated and enabled me to return to graduate school. My goal was to better understand why, in the face of numerous and long-standing management prescriptions, IS management was so difficult. It did not seem that practitioners had the answers so, after 15 years in practice, I returned to academe to obtain a better understanding of practice.

Unfortunately, as Benbaset and Zmud have argued, the academic literature was mostly irrelevant to my needs (Benbaset & Zmud, 1999). I found myself literally nodding in agreement while reading Strassmann's assertion regarding the study of information management policy: "academics tend to shun this topic because it is too difficult to collect research data about policy-making that meet the publishing criteria of academic journals" (Strassmann, 1995, p. 5).

My introduction to the philosophical issues concerning the conduct of research came when I enrolled in a class on research methods required for a master's degree program. The professor assigned Orlikowski and Baroudi's (1991) paper *Studying Information Technology in Organizations: Research Approaches and Assumptions*. This work introduced me to such terms as ontology, epistemology, positivism, critical theory and interpretivist philosophy. The paper was disconcerting, largely because some of the arguments severely challenged my assumptions regarding the way the world works. Frankly, the article expressed some ideas that I did not like. However, it did not seem quite fair to discount something I did not fully comprehend, so I decided to do more reading. It turned out to be a lot more reading: I entered a Ph.D. program.

Exodus

The journey from practitioner to social scientist began in earnest upon my acceptance into a doctoral program. In attempting to satisfy the curiosity stimulated by the Orlikowski and Baroudi paper, I discovered abundant literature discussing competing philosophies of science, the notion of research paradigms, and what has been referred to as the "paradigm war" (Gage, 1989). While it is not practical in this short paper to comprehensively reference the literature I reviewed, two sources were particularly helpful. Denzin and Lincoln's (1994) *Handbook of Qualitative Research* provided a comprehensive treatment of the variety of philosophical foundations informing qualitative research performed under multiple paradigms. Hammersley summarized research paradigms in his exploration of political dimensions of the "paradigm debate"[3] in *The Politics of Social Research*.

The literature surrounding the paradigm debate is extensive, not only in terms of sheer volume but also in that the debate has been conducted in many disciplinary domains. As I suspect many other budding researchers before me have done, I made a non-systematic excursion through this vast literature, chasing citations whose titles caught my eye and taking the unmanly step of occasionally stopping to ask directions from professors and peers.

Following are some highlights I observed along the way:

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[2]Actually, the term *demise* may not be entirely correct. Within the Department of Defense, old projects rarely die. More often, contracts are cancelled, the acronym is changed and a new approach is attempted.

[3]While emotions may run high on both sides, I am not comfortable using the "war" metaphor to describe this debate.

- I was not alone in my doubts regarding the relevancy of academic research. It turns out that academicians had been expressing similar concerns regarding research relevancy for some time (Churchman, 1971; Mitroff & Pondy, 1978; Miner, 1984). While some researchers are comfortable viewing research primarily as a means of increasing disciplinary knowledge, others clearly feel an obligation to produce practical or instrumental knowledge.

- The paradigm debate had political as well as philosophical dimensions. Hammersley claims that positivism is rejected "not just in intellectual but in moral and political terms…" (Hammersley, 1995, p. 1). Not surprisingly, the response from those engaged in traditional research can be harsh: "The unbalanced and unquestioned equation of ethnographic or qualitative methods with phenomenological or hermeneutical non-science contributes to an unfortunate reinvention of social science precepts…" (Sandstrom & Sandstrom, 1995, p. 163).

- There appeared to be similarities in the criticisms of published research proffered by those concerned with the issue of relevancy and those who found positivist methods inappropriate to the study of social phenomena. Essentially, both groups are concerned that in the pursuit of methodological rigor, many of the contingent and situated factors relevant to social behavior are stripped away (Miner, 1984; Walsham, 1995).

- I found it ironic that non-positivists were arguing that positivist research was too focused on prediction and control, overly emphasizing managerialist values. Conversely, critics concerned with relevancy worried that researchers were too focused on increasing disciplinary knowledge (knowledge for the sake of knowledge) without properly attending to practitioner (manager or corporate) needs (Miner, 1984; Hammersley, 1995; Zmud, 1996; Guba & Lincoln, 1994).

As the time to start my dissertation research approached, I was still unable to select an appropriate paradigmatic approach to addressing my substantive research topic. The reader will recall that my objective was to obtain a better understanding of the effectiveness (or more accurately, the ineffectiveness) of accepted policies and prescriptions for addressing IS management problems. Furthermore, post-modernist writing had introduced doubt as to whether attempting this research was even worthwhile. I had become a methodological agnostic and lacked the experience required to firmly declare a position on these philosophical and methodological issues.

Happily, I encountered a stream of literature suggesting that it might be possible to straddle the philosophical fence. A number of researchers have suggested that it is not only possible but beneficial to integrate positivist and non-positivist perspectives (Kaplan & Duchon, 1988; Lee, 1991; Orlikowski & Robey, 1991; Orlikowski, 1992; DeSanctis & Poole, 1994). For example, several of these researchers have referenced Gidden's theory of structuration which finds untenable the premise that subjectivism and objectivism are mutually exclusive (Orlikowski & Robey, 1991; Giddens, 1984). Structuration provides a sound basis for employing a multi-paradigmatic research approach by suggesting that objective (or institutional) properties of social systems are created by past human action and that those properties, in turn, influence further human action.

By adopting a multi-paradigmatic approach it might be possible to design a study that could capitalize on the advantages and minimize the disadvantages of positivist and non-positivist research paradigms. Fortunately, the research environment in my doctoral program was more supportive than that described by Applegate and King in their vignette concerning Professor Marilyn Moore's research experiences (Applegate & King, 1999).[4]

Despite the difficulties associated with the approach (Creswell, 1994), I decided that my topic warranted pursuing a multi-paradigmatic research design. Such an approach promised to provide a richer understanding of what constitutes IS management practice given the relative lack of theory relevant to the subject. Beyond my substantive research agenda the selection of a multi-paradigmatic research design afforded me the opportunity to personally evaluate the strengths and weaknesses of positivist and non-positivist approaches as well as my own ontological and epistemological beliefs.

Consequently, I adopted a multi-paradigmatic research framework proposed by Lee. In his framework, Lee identifies three levels of understanding (Lee, 1991, p. 351):[5]

[4]The case concerns a practitioner-turned-researcher who was dissuaded from pursuing her true interests and encouraged to conduct more traditional research, and then found it difficult to get that traditional research published anyway, because of problems with her study sample and the topic's no longer being considered "hot."

[5]Lee identifies this framework as being an elaboration on first- and second-level constructs proposed by Schutz (1973).

- **Understanding at the first level** (subjective understanding) belongs to the observed human subjects. This understanding consists of the everyday sense and everyday meanings with which the human subjects see themselves, and which give rise to the behavior that they manifest in socially constructed settings.

- **Understanding at the second level** (interpretive understanding) belongs to the observing, organizational researcher. This understanding is the researcher's reading or interpretation of the first-level, common-sense understanding.

- **Understanding at the third level** (positivist understanding) also belongs to the organizational researcher. This understanding is the one the researcher creates and tests in order to explain the empirical reality that he or she is investigating.

Lee suggests that methodologies (phenomenological sociology, hermeneutics, ethnography, etc.) associated with interpretive research could be used to develop the researcher's second level of understanding. The second level, interpretive understanding, can then inform the development of testable propositions addressing institutional/structural aspects of the social phenomenon being studied. These patterns or themes, as represented by testable propositions, constitute a third level of understanding that can then be subjected to more conventional methods of scientific testing.

Having already confessed a degree of paradigmatic agnosticism, I must also admit that the adoption of a multi-paradigmatic research design hedged my paradigmatic or methodological bet. While it is not necessitated by Lee's multi-paradigmatic approach, I included structured surveys in the data collection effort. Realizing in advance that I intended to conduct subsequent phases of research using positivistic-oriented research methods, I wanted to evaluate data-quality issues associated with surveying key informants in large, complex organizations. I could cite the objective of achieving data triangulation, but in reality I was worried about my ability to conduct rigorous interpretivist-oriented research. In all honesty, I wanted to ensure that I would have data to analyze should my efforts at conducting unstructured interviews and analyzing the resulting data prove less than satisfactory.

Revelations

My research site was a federal agency. My data-collection methods were multiple: I reviewed hundreds of documents, conducted three formal surveys (of IS managers, non-IS managers and general agency staff), held 19 unstructured interviews with IS and non-IS managers, conducted several focus groups with IS managers, and had numerous short conversations and email exchanges with agency staff. The surveys ensured that participants had an opportunity to provide their perceptions on a number of constructs identified in my literature review. As noted above, the structured collection of data in the surveys gave me the confidence to conduct face-to-face interviews in an unstructured, conversational style.

My interviews and focus groups with study participants were unstructured. While I did provide the general topic of IS management challenges as a starting point, I encouraged the participants to take the conversation in whatever direction they thought appropriate. My initial fears concerning data and analysis issues resulting from this unstructured approach proved groundless. The narrative data resulting from these naturalistic interviews or conversations provided the primary basis for my constructing an understanding of IS management within the studied agency or, more accurately, my second-level interpretation of participant understandings. The analysis of these data, primarily taped transcripts and electronic mail, conformed to the canons of rigorous research as recommended by qualitative researchers (Silverman, 1993; Miles & Huberman, 1994).

Researchers espousing positivistic assumptions would likely be uncomfortable with such a naturalistic interviewing technique. Given the extent to which I had studied positivist-oriented research methods, how could I claim to control for personal biases and my influence on study participants? After all, I was entering the study with preconceived notions. I had approximately 15 years of federal IT management experience. I had spent almost five years immersed in analyzing federal IT management policies and had read widely in the academic and practitioner literature concerning management and IT management. I had an emotional commitment to understanding the research question.

Consistent with a non-positivist approach to research, I recognized but did not seek to overtly control for researcher bias. Strauss (1987) warns against squashing experiential data in an attempt to minimize bias. "Mine your experience," he admonishes researchers, "there is potential gold there!" (1987, p. 11). This idea is central to understanding non-positivist paradigms. I was not attempting to capture an unsullied representation of some external social reality. Rather I was constructing an understanding with the study participants.

The employment of multiple data collection and analysis methods provided the anticipated benefits of triangulation in the positivist sense of capturing "a more complete, *holistic*, and contextual portrayal of the unit(s) under study" (emphasis original)

(Jick, 1979, p. 603).[6] However, that benefit was minor in comparison to the benefits derived from not imposing my pre-determined constructs on the participants. Similar to the results reported by Trauth and Jessup (2000), adopting a non-positivist research approach and methods allowed me to perceive phenomena and relationships that I had not been seeking: in this case, the pivotal role that organizational culture played in determining the extent and quality of agency policy-compliance actions.

I had not insisted that study participants respond to theoretically imposed and sterilely operationalized constructs. Due to the non-positivist approach, the participants were able to identify their concerns in their vocabulary. Because the findings were grounded in participant experience, the research product was relevant to the study participants[7] and much more likely to be relevant to practitioners who have had similar experiences. This was not simply the application of qualitative techniques applied within a positivist framework. The research process involved the study participants and researcher in a mutual creation of meaning that was quite different from uncovering a set of lawful relationships implied by exploratory research conducted under a positivistic paradigm.

One could declare success with an application of non-positivist-oriented research as just described. Yet, I am not prepared to disavow research methods associated with positivist epistemology and ontology. I believe non-positivists err to the extent that they adopt a radically constructivist stance, discounting completely the notion of objectivity and value neutrality, and holding all knowledge to be paradigm-dependent. Human experience suggests the accuracy of the statement, "There is a world of empirical reality out there. The way we perceive and understand that world is largely up to us, but the world does not tolerate all understandings of it equally" (Kirk & Miller, 1986, p. 11). That is, there are real consequences to actions taken on the basis of our human understandings and misunderstandings of our social environment.

The advantage of Lee's (1991) multi-paradigm framework is that it recognized that understandings gained through interpretivist analysis might provide a basis for developing testable propositions. Such propositions do not necessitate a belief in universal laws of social behavior. However, to the extent that evidence can be found supporting the validity of such propositions in other organizations, researchers may be able to provide insights or suggest changes in behavior beneficial to an organization and its stakeholders. The methods associated with positivism lend credibility to any assertion that insights obtained in one context might be usefully generalized or transferred, thus increasing the relevancy of those research findings to the practitioner community. Furthermore, one can reject a correspondence theory of reality while accepting that individual and organizational behaviors often have predictable consequences. Ignoring for a moment the legitimate question of whose values are being served, positivist research techniques force researchers to consider sources of error that inevitably creep into human understanding: error that might well be defined in reference to instances where the consequences of one's behavior are inconsistent with one's intent or interests. Considerable behavioral research has demonstrated a human predilection for certain types of judgmental errors (e.g., selective perception, illusion of control, prior hypothesis bias, adjustment and anchoring) that can lead to behavior in conflict with an individual's own goals or intentions, be that individual a practitioner or a researcher (Hogarth, 1981; Kleinmuntz, 1990; Wright, 1980; Tversky & Kahneman, 1974).

The selection of non-positivist approaches to research can improve relevancy by helping to focus the researcher's attention on problems and issues foremost in the minds of study participants as reflected by their speech and behavior. Researchers are not constrained to look only at what they think they are able to quantify and measure. While accepting that research necessitates subjective interpretation, the evolving standards for evaluating non-positivist research promise methodological rigor (Kirk & Miller, 1986; Miles & Huberman, 1994; Klein & Myers, 1999; Schultze, 2000), allowing the consumers of such research a means for evaluating the quality and relevance of those subjective interpretations to their own purposes.

Should the understandings gained from non-positivist research lend themselves to formulation as testable propositions, then let us test them. Researchers should not reject methods associated with positivism solely on the basis of epistemological or ontological disagreement. Those methods simply represent another source of data that require rigorous interpretation. Evidence gained through positivist-oriented methods may prove crucial for those researchers wishing to argue for the transferability of their research findings, thus increasing relevancy of the research to the practitioner community.

Multi-paradigmatic research is neither quick nor easy. While I do not regret the effort, high quality multi-paradigmatic research likely requires a team effort, where the team is comprised of members knowledgeable of and committed to faithful execution of methods associated with the research paradigms employed. As an independent researcher, I found multi-paradigmatic research

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[6]The validity of triangulation is highly contested. See Coffey and Atkinson (1996), Silverman (1993) and Falconer and Mackay (2000).

[7]Key participants completed a short survey concerning the study findings generated from the structured surveys and qualitative data analysis. Using a seven-point scale in which a "one" indicated strong disagreement and a "seven" indicated strong agreement, the participants indicated strong agreement (6.8) with the statement that the qualitative findings reported "represent issues significant enough to merit further consideration within the bureau" (Beachboard, 1999, p. 184).

to be a mind-expanding (perhaps even mind-bending) experience. At times, it felt as if my intellectual energy were spread too thin, inevitably limiting the depth of analysis accomplished. Yet, as a personal meta-research experiment, the effort was a success.

Conclusions and Implications

Falconer and Mackay (2000) have labeled multi-paradigmatic research as a cross-paradigm accommodation and found it to be problematic. They contend that papers which have been cited as exemplars of multi-paradigmatic research "did not address adequately ontological issues and they [the authors of these papers] subordinated non-positivist methods" (Falconer & Mackay, 2000, p. 1470). It is difficult to discount their fundamental argument. The espoused ontological positions underlying positivist and non-positivist philosophies are irreconcilable. However, Falconer and Mackay leave the door open to multi-method or multi-paradigm research by agreeing with Mingers (1997) that "the results of investigation of different phenomena by different methods may accumulate to provide rich understandings of complex real-world situations (2000, p. 1471). Mingers (2001), crediting Habermas, suggests the existence of a multi-dimensional world: material, social and personal, each with distinct epistemological possibilities. To the extent that these dimensions impinge upon one another, then multiple methods, informed by differing ontological and epistemological perspectives, are not simply desirable but necessary for achieving research rigor and relevance within the IS community.

The IS community should assist in de-politicizing the paradigm debate. It is a fair criticism that much positivist-oriented, instrumentalist research is managerialist in orientation. It is a mistake, however, to conflate particular research paradigms with particular sets of political values. For example, if one wishes to pursue a critical research agenda, the identification of causal or structural relationships that could be manipulated consistent with one's emancipatory objectives would seem desirable. Conversely, my use of an interpretivist perspective served instrumental, even managerialist, objectives. Multi-paradigmatic research requires inevitable compromises to purist forms of positivist and non-positivist research traditions. De-politicizing the debate allows the IS research community to focus its energies on the substantive costs and benefits of these compromises rather than on competing political values where reaching agreement is unlikely.

Finally, I am not suggesting that all researchers must seek practical relevance in their research agendas nor adopt multi-paradigmatic research designs. The IS community would do well to heed Hammersley's (1995) caution that social science researchers must be modest in their expectations regarding the development of instrumental knowledge. Research is rarely able to cover all considerations relevant to social phenomena. Yet, while IS researchers will continue to value knowledge for knowledge's sake and seek to expand disciplinary knowledge, I believe most would still subscribe to this sentiment expressed by British economist Pigou, which calls for increasing research relevance:

> When a man sets out upon any course of inquiry, the object of this search may be either light or fruit – either knowledge for its own sake or knowledge for the sake of the good things to which it leads.... there will, I think, be general agreement that in sciences of human society, be their appeal as bearers of light ever so high, it is the promise of fruit and not light that chiefly merits our regard (Pigou, 1920, p. 34).

My journey suggests that multi-paradigmatic research may improve our chances of producing both fruit and light.

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