

Qualitative Research

<http://qrj.sagepub.com/>

Development gain? Participant observation in interpretive management information systems research

Joe Nandhakumar and Matthew Jones

Qualitative Research 2002 2: 323

DOI: 10.1177/146879410200200303

The online version of this article can be found at:

<http://qrj.sagepub.com/content/2/3/323>

Published by:



<http://www.sagepublications.com>

Additional services and information for *Qualitative Research* can be found at:

Email Alerts: <http://qrj.sagepub.com/cgi/alerts>

Subscriptions: <http://qrj.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>

Citations: <http://qrj.sagepub.com/content/2/3/323.refs.html>

Development gain? Participant observation in interpretive management information systems research

R

Qualitative Research
Copyright © 2002
SAGE Publications
(London,
Thousand Oaks, CA
and New Delhi)
vol. 2(3): 323-341.
[1468-7941
(200212) 2:3;
323-341; 028900]

JOE NANDHAKUMAR
University of Bath
MATTHEW JONES
University of Cambridge

ABSTRACT This article provides a critical assessment of the potential of participant observation as an interpretive data-gathering method for management information systems (MIS) research by drawing on a participant observation study of Executive Information Systems development. It identifies a range of issues with respect to participant observation in MIS research that may also be an integral part of reflective research practice for any field researcher.

KEYWORDS: *data-gathering methods, interpretive research, MIS research approach, participant observation, studying IT in organizations*

Introduction

In recent years there has been an expansion of different types of management information systems (MIS) that adopt emerging information technologies to support work practices in organizations. While such systems are seen as important in contemporary organizations, relatively little attention has been paid to how organizations actually go about developing MIS in practice. In the MIS literature, systems development is traditionally presented as following a 'waterfall model' or 'lifecycle' comprised of a number of independent 'stages' (e.g. Downs et al., 1988). While some iteration between stages is recognized, the process is seen as broadly linear and unidirectional with clearly specified 'deliverables' from each stage comprising the necessary inputs for the following one, until a fully functioning MIS is complete. Although alternative development approaches, such as prototyping in which a mock-up of the system is quickly produced and modified in response to testing by potential users, are also recognized, the greater control offered by the linear 'waterfall' model means that it is generally favoured for the development of complex, large-scale systems.

Despite a number of widely-publicized MIS failures, such as the London Ambulance Service Dispatch System or the Stock Exchange Taurus System, the causes of which have been attributed, in part, to deficiencies in the development process (Flowers, 1996), much of the research on MIS phenomena conceives the MIS development process as a largely unproblematic, technical process in which the tight control of the creation of precisely-defined deliverables will ensure success. Research attention is therefore focused on improving the lifecycle process through the introduction of a range of methodologies, techniques and tools and on surveying their use across many organizations. Such research, however, neglects the social and historical context and the complexity of organizational work processes of MIS development.

This neglect of context and process may partly be explained by the predominantly functionalist, quantitative and positivist orientation of most MIS research (Nandhakumar and Jones, 1997a; Orlikowski and Baroudi, 1991) typified by the search for 'critical success factors' (Barrow, 1990; Burkan, 1991; Cottrell and Rapley, 1991) and measurement of 'impacts' (DeLong and Rockart, 1986; Fitzgerald, 1992). While there has recently been increasing interest in interpretive MIS research (e.g. Jones, 1994; Orlikowski, 1992, 1993; Prasad, 1993; Walsham, 1993, 1995a; Walsham and Sahay, 1999; Walsham and Waema, 1994) the primary data-gathering method in nearly 50 percent of such studies was interviews (Nandhakumar and Jones, 1997a), the suitability of which for the study of context and process may be questioned. Data-gathering methods, such as participant and passive (non-participant) observation and action research, involving extended direct engagement with a research site that might enable the researcher to gain personal experience of the research context, to go 'backstage' (Goffman, 1990), and to observe processes continuously over time, in contrast, have been relatively little used. While the boundaries between these methods are not always clear, participant observation, classically defined by Kluckhohn (1940) as the 'conscious and systematic sharing, insofar as circumstances permit, in the life-activities and, on occasion, in the interests and affects of a group of persons', may be distinguished from action research, in which the researcher intervenes deliberately in the research context in order to try to achieve particular (improved) outcomes, and from passive (non-participant) observation in which the researcher is present at the research site for some period of time during which data of various sorts are recorded, without any overt intervention on the part of the researcher.

Nandhakumar and Jones (1997a), for example, found that only 5 percent of 197 empirical studies reported in the leading MIS journals between 1993 and 1996 employed passive observation (mainly laboratory studies of student use of IS, for example for decision-making e.g. Leidner and Jarvenpaa, 1993), 1 percent employed participant observation and 1 percent employed action research (mainly studies of the use of methodologies, techniques and tools developed by the authors e.g. Checkland, 1981; Mumford, 1981).

The aim of the article is to illustrate what such engaged data-gathering methods, particularly participant observation, can contribute to a better understanding of the MIS development process in ways that would not have been possible using other, more detached data-gathering methods such as interviews. This will be illustrated using an example of a participant observation study of MIS development. In the process, this article also illustrates some generic issues of qualitative organizational research that may contribute to reflexive practice for almost any researcher carrying out in-depth field research.

A participant observation study of MIS development

This study examined the process of MIS development in a large manufacturing company over a period of 6 months. The aim of the study was to understand how MIS development was carried out in practice and to identify implications for the management of MIS development work. The particular type of MIS studied was an *Executive Information System* (EIS): a computer-based management information system that provides online access to various reports and key performance indicators for the company's top executives, such as the President and Divisional Vice Presidents (VPs).

The company setting

The research site was the European headquarters of a Large Manufacturing Company (LMC – a pseudonym) with more than 400,000 employees worldwide and over 3000 at the site in question. LMC had a clear management hierarchy of several layers of senior executives and a divisional structure. The main operational functions were coordinated by the President and by the Vice Presidents of the support functions such as Finance and Manufacturing. The European headquarters of LMC formally coordinated the strategic planning and provided advisory specialist support services, including computing (MIS), for its national companies.

The project team under study was specifically devoted to developing an EIS for the company's European Division. The EIS used proprietary software running on company-standard personal computers (PCs) with a touch-screen, graphical interface and provided online access to a variety of 'reports' based on internal and external data sources. A mainframe-based system managed the distribution of reports to the PCs.

The EIS project

The EIS project had been initiated in response to concerns raised by the VP for Manufacturing about the timeliness and accuracy of key daily performance reports for the company's different plants. At that time these were manually

TABLE 1. *EIS Team members and their status in the company*

<i>Name</i>	<i>William</i>	<i>Mark</i>	<i>Luke</i>	<i>David</i>	<i>Joe</i>	<i>Phil</i>	<i>Ben</i>
<i>Status</i>	Systems manager, Executive systems project team leader	Senior analyst (original member of project team)	Senior analyst (joined from Finance Division)	Senior analyst (joined from Systems Division)	Researcher/analyst	Trainee	Systems manager (responsible for EIS in another site overseas)

compiled using information sent from sites in five European countries and were hand-delivered to executives. While the Systems Division began investigating this request, the VP asked for them to be made available using an 'easy-to-use', touch-sensitive screen computer system, after he had seen one in use in a finance company. Subsequently an 'EIS team' was formed to introduce EIS for top executives. The EIS team was responsible for developing new reports (referred to as 'projects') to be included in the EIS and for maintenance, software and hardware support, documentation and security.

At the time of the study the EIS team comprised a leader, William (the EIS Manager), three analysts (Mark, Luke and David) and a trainee (Phil). The researcher (Joe) joined the team as an additional member. Ben, an analyst from a foreign branch was also associated with the team because of his responsibilities for coordinating the team's activities in his branch. Table 1 presents the main actors involved during the period of research at LMC. The EIS team was located in a large 'open-plan' office along with other finance and systems groups, in the HQ building of LMC Europe. The EIS manager's office was also in the same area as the team members' workspace, but partitioned off from it. The executives' offices were located in the same building, but in a 'penthouse suite' with private access from the car park.

Carrying out participant observation at LMC

Participant observation involved the researcher working full-time for six months as a salaried member of the EIS team based in the HQ of LMC Europe. Initial access to the research site was facilitated by the fact that the researcher had previously worked for the team, and that he would be an additional resource for the team leader whose three systems analysts and trainee were facing high workloads as EIS use spread rapidly among LMC Europe's senior executives. The researcher's role was thus that of an overt (his position was disclosed) participant. LMC's dominant engineering culture was reflected in the MIS department. Most of the organizational members were male and the dress code was 'business like' and was followed throughout the headquarters. The researcher found it easy to fit comfortably in the work role for the duration of the study, because he had previously worked for the team.

However, because of sensitivity about publicity relating to this strategic MIS, it was necessary for the researcher to sign a confidentiality agreement specifying that the company should not be identified and that all reports should be cleared by the team leader. It was also agreed that the researcher would not make any attempts to talk to executives because normally the EIS team had no direct contact with executives.

During the participant observation period the researcher was fully involved in the EIS team's activities, being given charge of development and maintenance of a number of EIS projects. He was also given the same facilities as the other team members including access to all documents and support staff involved in data provision, technical support and systems security. He was invited to attend weekly team meetings where tasks were allocated among the team members and project progress was reviewed.

As part of development work the researcher shared many of the practices of the EIS team, which were concealed from others outside the department. These provided insights into the way team members worked around systems security requirements, company policies and hierarchical norms. This insider status meant that the researcher gained access to information that would not otherwise have been divulged.

Through working as a regular team member the researcher was able, over time, to develop a personal relationship with the other team members who provided insights into their motivation and perspectives. The researcher also experienced the work atmosphere at first hand and, by being physically located among the team members, had opportunities to hold conversations with team members on their views on personal and organizational matters.

The researcher also participated in informal social activities with the team members, took coffee breaks with them, went along to lunch in the staff restaurant in the HQ building and went for social drinks in the local bar often visited by LMC staff. He was also invited to attend social events such as leaving parties in the HQ. Such social occasions away from the workplace provided opportunities to get to know the team members personally and to obtain insights into their views on people working in the LMC.

Although the researcher worked full-time at LMC, he was allowed a few days a month to write up the research and meet with his academic supervisor to discuss his progress. As a stranger to the research context, however, the researcher was also able to notice and question aspects of the social routine of which the participants were hardly aware unless interruptions occurred.

During the study at LMC a log was maintained by the researcher to record activities of EIS team members, events, meetings, discussions, and other observations as shown in Table 2. Initially an attempt was made to record activities and events on an hourly basis, but this proved impractical due to time constraints and it was decided to switch to a daily summary, usually prepared after work. Occasionally discussions were specifically arranged to

TABLE 2. *An extract of the log for two days*

<i>Week 6: 15 October</i>	All PCs were started up early and team members were busy checking mail and daily EIS reports. William had a meeting with Mark to discuss various projects and future strategies. William then talked with Joe to find out how far he had progressed with the new screen design for a prototype system concerned with product development. Joe spent all morning testing this prototype for a planned presentation. While installing the prototype on the demonstration computer, however, Joe encountered several technical problems, which delayed his planned work. In the afternoon Mark, who had been sorting out a problem on William's computer, helped Joe to sort them out. David spent most of the day quietly studying the reports he had received from the data providers for a project relating to personnel. Phil, who had been assisting other team members on various projects, was asked to prepare a document on the current status of computer installation for executive users. William wanted this document, which would show EIS uptake at LMC and his group's progress against plans, for a meeting with Systems Executives, to try to persuade them to provide more resources for the team. Because of the company convention that development staff should not work on an executive's computer while they were in their office, Luke had to wait until one of the executives was away to upgrade his PC with the latest version of the EIS software. He therefore spent his time on other activities, such as reading a professional manual.
<i>Week 6: 16 October</i>	In the morning various data provider managers dropped by and team members' work was often interrupted. William was also away at a meeting. He later met with Peter, a Financial Analyst from the Production Finance Division, whom he had made several previous unsuccessful attempts to meet. They discussed a possible screen layout for a new report on inventory levels (a previous EIS project relating to inventory performance had been suspended for over six months) and Joe, who had earlier been improving layout and presentation of various executive reports with some help from Phil, was asked to take on development of this new project. Joe spent the rest of the day in discussions with Peter and studying the inventory reports. Mark continued implementing the new and more secure logon procedure for communication between computers and also spent time catching up with administrative work. During a short discussion over coffee, Luke enthusiastically talked about the improved features of the new EIS software, which he had read about in the manual. Mark commented on the possibility of using such features to monitor executive usage. Ben from the overseas site, who was responsible for upgrading and maintenance of the EIS in his branch, had encountered several problems, which he could not clarify with Luke over the phone. He therefore came to the HQ to learn more about the new release of the EIS software. Luke spent the whole day advising Ben. David continued working on the project relating to personnel and Phil on the installation document.

enable the researcher to obtain other participants' accounts of their actions. Data were also sought from other key players such as support staff. In addition, data on the historical context were gathered from the staff at LMC and from company documents.

The study resulted in hundreds of pages of log containing a large amount of data, which was then written up in the form of a case description soon after the field study was completed. This described the development process in the order that events happened, and recorded many aspects of the real-life context, which was then analyzed and interpreted. A copy of the case description was sent to the EIS team leader and comments invited on any omissions or errors of interpretation.

New insights from participant observation

UN-DISCLOSED ORGANIZATIONAL PRACTICES

As Mitchell (1991) notes, organizational practices may be confidential and not readily disclosed to outsiders. For example, the EIS team did not talk about systems security to anyone outside the department because tight security was essential to safeguard the confidential reports and win the support of data providers. In practice, however, security was compromised by many issues such as the inability of the software to provide the necessary password security and the reluctance of executive users to use many levels of passwords. Team members therefore covered this issue up to project an image of a secure EIS. For example, they followed an elaborate password allocation procedure to satisfy other interested parties such as data providers and users that the EIS complied with company practices. Similarly, elaborate company procedures were followed to allocate the EIS manager a group budget for the EIS team. Within the team, however, there was little direct use of any formal control procedures but the detailed organization of work activities was generally left to the individual analysts, which involved negotiating with colleagues for use of their specific skills, or with other company members, such as data providers, whose collaboration was required for a particular activity. The team however sought to present an image of formal control and effective management of budget. The EIS team therefore usually gave a well-rehearsed version of the 'EIS story' to outsiders. These informal practices were however not concealed from the participant observation researcher, but rather they involved him in them. The researcher was therefore able to develop an understanding of the informal practices that were found to be one of the main characteristics of the development process, despite externally-maintained appearances of control to the contrary.

LOCAL MEANINGS AND THEIR EFFECTS

The analysts used a range of acronyms and expressions to describe the situations in the LMC context. As Taylor and Bogdan (1984) note, many of these

terms could have been misinterpreted as they were commonly used in everyday life, but held different meanings in the LMC context. For example, the term 'travelling-man' was used by team members to describe the new Divisional Vice President who took over responsibility for the EIS. This was explained as meaning that he was rarely in his office and was therefore thought unlikely to make as much use of the EIS as his predecessor. As a result, team members became concerned about a possible loss of senior executive support for the EIS and several meetings were held to discuss how they should respond to this development. The term 'closed-door-meetings' was used in conversations to describe urgent meetings in LMC, but this also had a wider meaning that you should 'keep your distance' from the manager because something was wrong – such as someone was being made redundant or adverse data on departmental performance was being published. Actual door slamming was used by managers to convey this message to their staff. For example, during a period when problems arose with one project, the EIS manager held a number of meetings with his office door closed, which alerted other members to the situation. By observing these rituals over time as a participant observer, the researcher could develop an understanding of their meanings and their effects on the development process.

MULTIPLE NARRATIVES AND INSIGHTS INTO THE REASONS FOR THEM

When approached, each analyst provided a different account of the situation they encountered. This is not to say, as Becker and Geer (1957) note, that there is a single 'true' view of what should happen in a situation or of what actually happens, but that actors may interpret their own behaviour differently. For example, when the team leader asked one of the analysts to find out executives' needs from their secretaries, he complained that they would not talk to the EIS team members and treated them like maintenance workers. One of the other analysts, however, did not share this view. The Participant Observation researcher was able to compare this with his own experience of interacting with executive secretaries, and to relate the responses to the personal history of the analysts in question. Thus the first analyst had made his way up from the shop floor while the other was a graduate who had been recruited from the Finance Division. By getting to know the personal history of analysts and the constant opportunity for reflecting on alternative narratives also helped to gain insights into the reasons why individuals interpreted situations in a particular way and to develop an understanding of how personal history influenced individuals' development efforts.

BACK REGION PRACTICES

As Van Maanen (1979) argues, social actors may deliberately mislead inquirers or avoid discussing sensitive topics. For example, the EIS team sought to spread a story that the suspension of one of the EIS reports by the data

providers' division was to hide the adverse stock performance figures resulting from a major strike. It subsequently transpired, however, that the suspension was largely due to the inability of the EIS to support the changing needs of the data providers' division. The EIS team had seen this as bad for their image of technical excellence in the company and had therefore encouraged an alternative story, which cast the blame for the suspension elsewhere. It was not possible, however, to sustain the deception with a team member for any length of time. Thus the participant observation researcher's close and prolonged engagement with the research site enabled access to the 'back region' (Goffman, 1990) of social settings in which disclosure constraints are relaxed, providing insight on the team members' impression management practices.

ROUTINES AND UNSTATED CULTURAL NORMS

Social actors may be unable to give an account of their actions because, as Giddens (1984) argues, they form part of social routines and cultural norms of which they may be hardly aware unless interruptions occur. Being an observer as well as a participant at LMC, however, the researcher was able to notice and question aspects of such social routines. For example, expectations of timing and location of many activities such as report updates and team meetings were largely taken for granted by other team members. By noticing these activities and inquiring about their origins, the researcher was able to gain insights on how they contributed to the organization of the team. Further the researcher was able to observe the influence of unstated cultural norms on EIS development through the sustained involvement offered by participant observation. For example, the researcher was very aware of the strong organizational hierarchy of LMC which required that EIS team members should never speak to the executives who used their system, or even be seen in their office if working on one of the terminals. Thus, when one of the EIS team members was seen in a Vice President's office, the Systems Executive demanded an explanation from the EIS area managers. The lack of contact between developers and executives meant that team members had to rely on their own judgement of executives' requirements during the design of EIS applications, and to devise indirect ways of assessing executives' opinions about the applications' usefulness. By observing these routines and unstated cultural norms over time as a participant observer, the researcher was able to develop an understanding of their effects on the development process and the team members' group identity.

DIRECT PERSONAL EXPERIENCE OF THE PRACTICES

The type of work practices at EIS team was complex and characterized by various routines, time pressures, interruptions, personal preference and mutual negotiation and improvisation. The participant observation researcher was also able to appreciate for himself, as Goffman (1989) describes, the subjective

experience of work, such as motivation and time pressure in EIS development and to understand the ways that team members responded to them. For example, when restrictions were imposed on the LMC employees' overseas travel in response to the outbreak of the Persian Gulf War in 1991, this contributed to a loss of motivation among the team members. They therefore fulfilled only the minimum requirements and spent most of the time reading trade magazines and software manuals.

CHANGES IN PROCESSES OVER TIME

LMC's EIS context was highly volatile, and processes and analysts' interpretations changed over time. The participative observation researcher's extended experience in the LMC context enabled him to get insights on how processes were changing and also how they were sustained. For example, the way in which design standards used for EIS interfaces and working practices and ongoing routines were enforced could be observed, as well as the way in which they evolved. The six-month research period also allowed the complete development process for an EIS project to be studied from the initial concept through to its implementation as a working component of the EIS. As the timing of work on this project changed frequently in response to other events and pressures on team members' time, continuous participation was necessary to be able to ensure that critical events were not missed and to appreciate the evolving interpretations of events and activities.

Participation in the context also enabled insights into the way in which changes in the broader context of LMC affected the EIS developer's work. For example, the way favourable and unfavourable market conditions during the various stages of the EIS development led to a feeling of a secure and insecure future respectively among the EIS team members could be observed, as well as their attitude towards EIS development.

Challenges of carrying out participant observation MIS research

While providing useful insights into the MIS development process, participant observation also poses many challenges for the researcher. This section explores the problems and challenges of using participant observation as illustrated by the LMC study and discusses the measures adopted to try and overcome these problems.

PROBLEMS OF ACCESS

While access to an organization of interest is a perennial difficulty in many forms of research, the extended, intensive interaction can make the access requirements for participant observation particularly demanding. At LMC the researcher was able to trade on his prior experience with the EIS team to persuade the team leader to act as a gatekeeper, and to offer his skills as an

additional resource at a time when the demands on the team were rapidly growing. With his MIS development skills and the company background, the researcher was able to fit comfortably in the work role in the MIS Department.

PROBLEMS OF RECORD KEEPING

Once having gained access to an organization of interest, another problem facing the participant observer is to create a record of their research since such data are often derived from sensory experience and informal conversation. The data generated by participant observation are also often ephemeral and internal to the researcher and it may not be possible to produce a transcript of a recorded conversation. As Schwartz and Schwartz (1955) argue, even if observations can be recorded as they happen, there is an inevitable process of interpretation between registering and recording an event. Recording data is thus a process of retrospective sense-making which may be more or less attenuated by the practical contingencies of the time lapse between the occurrence of an event and its recording. The daily writing up of field notes at LMC was an attempt to establish a full and systematic record of events.

PROBLEMS OF ENDING OBSERVATION

For researchers to decide when to end a participant observation study may also be difficult. In the absence of any guidelines for an optimal period of observation, the duration of the period of study may be determined by a combination of the time available to the researcher to complete the particular study and the organization's willingness to tolerate the disruption it causes. At LMC, for example, participant observation was based largely on the expected duration of staff shortages in the EIS team. The six months for which the researcher worked at LMC, however, conveniently allowed at least one EIS project to be followed from initiation to implementation. Some phenomena of interest, though, are likely to develop over timescales that exceed the period of observation and plans will need to be made for how these are to be studied. For example the researcher arranged follow-up visits to LMC after the study was completed to see how various activities had developed.

PROBLEMS OF DATA REPORTING

Reporting participant observation research may be seen as a difficult process. The researcher will have to translate the immense detail about the research phenomena to which participant observation gives access into a form that can reasonably be presented in academic articles or even books. Goffman (1989), for example, suggests that a year of participant observation is likely to yield between 500 and 1000 pages of single-spaced typed notes, while the LMC log comprised over 250 pages of heavily abbreviated single-spaced typed notes. This case description was sent to the EIS manager for comments and permission to discuss it in academic articles.

PROBLEMS OF STANDARDIZATION

Participant observation may be seen as a non-standardized method for finding and collecting data in a particular site. The close engagement in a particular research context means that their inquiry is likely to be guided by the practical contingencies of the activities in which they are engaged over a period of time. For example, at LMC various unforeseen events such as organizational restructuring, departures of key actors and budget cuts disrupted data gathering. What started as a study of process therefore became one of change. Further, in the absence of any a priori criteria for deciding what constitutes data, there may also be problems in selecting what to record, given the richness of potential phenomena made available through participant observation. Walsham (1995b) therefore warns that researchers adopting participant observation may get so wrapped up in the detail of particular sites that they become unable to step back and critically reflect upon actors' interpretations – failing to 'see the wood for the trees'. In the LMC study, the researcher's occasional withdrawal from the research site and discussions with the academic supervisor attempted to provide some critical distance on the phenomena.

PROBLEMS OF RESEARCHER INTERVENTION

The direct involvement of the researcher in the research context during participant observation may affect the phenomena he or she is studying. For example, at LMC the presence of the researcher encouraged EIS team members to reflect on their actions more consciously. The researcher was also expected to play a full part in the team's activities otherwise he would not have been seen as a 'normal' member. He therefore had an unavoidable influence on aspects of the phenomena he was seeking to observe, not least through his contribution to the team's productivity. The researcher's particular contribution was also inevitably atypical in that it reflected his particular skills and experience so another researcher in the same context might have had a different effect.

The researcher however may seek to reduce the implications of this problem by trying to behave just like any ordinary member of the research context. In the LMC study this meant that the researcher matched his work style to those of his colleagues and did not deliberately seek a particular role, but allowed the EIS manager to assign activities according to the manager's judgement of the researcher's abilities and the needs of the team. Moreover, although some conversations were deliberately set up to discuss particular events or perceptions, in general, the researcher did not draw attention to his additional role. Thus, even if colleagues could not escape the fact that they knew why the researcher had joined the team, this rarely intruded in any overt manner on their interactions. The researcher's access to 'back region' (Goffman, 1990) activities, such as the approach to security, may be seen as evidence of his acceptance as a 'normal' member of the team.

PROBLEMS OF RESEARCHER COMMITMENT

The researcher's close, personal engagement with the research phenomena may give rise to bias in participant observation research. The data may thus tell us more about the researcher's interests and preconceptions than about the situation they are studying. The researcher may also be easily guided by a 'wrong' impression, perhaps obtained from an initial informant contact, and be blinded by this view throughout the research. The lack of distance also means that the researcher's views may reflect those of particular individuals with whom they find it easier to relate rather than reflecting the full spectrum of perspectives. Participant observation researchers can, however, take steps to address this issue, if not to escape it. In the LMC study, for example, specific mechanisms were set up to encourage a critical reflection on the research process, including regular discussions of the findings with a non-participant. Even if temporal or spatial constraints make such arrangements difficult, the writing up of a log and the subsequent drafting of the case study description provide opportunities for 'stepping back' from the data and deliberate reflection on underlying assumptions.

ETHICAL CONCERNS

The participant observer's dual role as researcher and participant may give rise to a number of potential ethical dilemmas. While participant observation at LMC was overt, however, this might also be seen to involve direct surveillance of others, typically with the expectation of making public reports of their behaviour. In situations of conflict between those authorizing access to the research site and those being observed, the researcher's presence may therefore be felt to be oppressive. Alternatively, familiarity with the researcher may lead subjects to behave in ways that they would not wish to be reported.

There may also be other ethical concerns relating to the researcher's own participation in unofficial activities, such as sustaining the illusion of EIS security at LMC, but also to the disclosure of information gained through the research process that may not be immediately evident to other actors (this is not to argue that other actors may not be capable of making similar findings, but rather that, in the absence of their research interest, the researcher might not identify these either). The researcher might, for example, in the course of reflection on their data, identify fraud or a potential problem. To draw their colleagues' attention to it would be to intervene abnormally in the research setting and might risk expulsion, but to withhold this information because of its research origins might have significant negative consequences. There is thus a fundamental dilemma in participant observation, as Punch (1986) discusses, between the ethical duties of the researcher to disclose their sources of data (and also any constraints on their reporting) and their duties to protect their subjects' confidences (which may be further complicated by tacit or formal commitments to non-disclosure). The first of these may be powerfully reinforced by the affective pressures developed through close interaction with

the actors. For example, should a researcher report behaviour that may reflect badly on their erstwhile colleagues? How do they report important phenomena that might compromise confidentiality agreements? In the LMC study the sharing of the case description with the EIS team leader and the use of pseudonyms to disguise individual and company identity sought to address such concerns.

Discussion

The above analysis indicates that, though not without its limitations, the continuous and engaged experience of the participant observer at LMC enabled distinctive insights on the practice of EIS development at LMC. The contribution of these insights to the understanding of significant aspects of the EIS development process may be illustrated by considering two examples: the temporal organization of work activities, and the constraints operating on developers' work. These are discussed in more detail in Nandhakumar and Jones (1997b, 2001).

Through participating in the EIS team, the researcher was formally inducted in a number of formal routines (such as security procedures and documentation), but also experienced the relatively repetitive nature of daily work practices. These reutilised social practices were seen to organize time and space into a number of 'locales', such as the EIS office, the foyer and the restaurant each with their distinctive forms of activity. The researcher also observed that repetition and regularity did not necessarily preclude exceptions, interruption or variety. These routines were not automated responses giving rise to a single pattern, but a repertoire of possible patterns from which team members enacted particular performances. The researcher's experience indicated that such routines significantly influenced the organization of work practices and also constituted an important element of group identity for the team members.

The researcher was also able to draw on his personal experience to appreciate how, despite the relatively low levels of control over his and other team members' time management, and the improvisatory character of their work practices, their activities were subject to various forms of social control – for example, norms promoting collaboration with colleagues, professional design standards and established routines such as routine team meetings and shared lunches. While the day-to-day work practices were seen to contribute to the reproduction of formal organizational norms, observation also enabled the researcher to see how these norms were relaxed in the absence of the EIS manager from the office and to understand how team members sought to evade control and direct surveillance by organizing their own work space and practices. It also became evident that the team members were protective of their professional autonomy and aware of the conditions of their surveillance. While the EIS software tools might extend surveillance to individual

work practices, it was evident that the team members possessed the technical skills to reduce the effectiveness of such surveillance had this been introduced.

Despite the consistent advice of the MIS literature regarding the desirability of user involvement in the MIS development process, it was readily apparent that the LMC's strong hierarchy placed significant constraints on the relationship between the EIS team and the senior executives who were the system's users. The design of an EIS might however be expected to be highly customized to the requirements of its important and influential users. Through participant observation the researcher was able to draw on his personal experience of the constraints, for example of executives failing to attend demonstrations of new projects or of the consequences of one of the EIS team being seen in an executive's office when he unexpectedly returned from a meeting. He was also able to observe his colleagues' solutions to these constraints, for example using a chance encounter with an executive in the company car park to elicit feedback, and to discuss these informally with them. Where observation appeared to be particularly helpful was in understanding how these constraints could also be an enablement, for example in using the EIS team's relationship with executives to obtain the cooperation of staff who were more senior in the LMC hierarchy, and in understanding how the EIS team's own actions contributed to the reproduction of these constraints, for example by scheduling their work to meet the executives' requirements and avoiding contact with them. By adopting these hierarchical norms the team members also helped to reproduce these constraints. Many of these practices were so much part of the regular routine of team members that they would probably not have been remarked upon or been evident to an outside researcher who would not have shared the personal experience.

The above examples have sought to illustrate how participant observation may provide new insights on MIS development by enabling close engagement and direct experience of the research context, in a way that would not have been possible from other data-gathering methods. In organizational research participant observation may also offer more direct benefits, for example in terms of additional personnel resources, such as researcher's MIS development skills at LMC.

For Becker and Geer (1957: 28) participant observation therefore 'can provide us with a yardstick against which to measure the completeness of data gathered in other ways'. Even if, as critics of Becker and Geer (1957) such as Trow (1957) have argued, we may question this claim of primacy for participant observation as a data-gathering method, it would nevertheless seem somewhat surprising that there are relatively few reports of the use of such a potentially valuable method in MIS research.

From our analysis of participant observation, it is also clear that participant observation brings many crucial challenges to the surface and forces researchers to confront them perhaps more directly than with many other

methods. Consideration of such challenges and opportunities may thus encourage the adoption of data-gathering methods on more considered grounds than simply established convention. Thus the difficulties of obtaining and sustaining access, the problems of recording, analyzing and reporting observational data may all act as a deterrent to the adoption of participant observation irrespective of its suitability in other respects. Indeed the limited number of participant observation studies in IS research may be attributable as much, if not more, to these practical considerations than to any failure by MIS researchers to evaluate fairly its merits as a data-gathering method. A more reflective approach to the choice and use of data-gathering methods would therefore seem desirable to ensure that MIS research takes advantage of the full range of opportunities available to it and does not unnecessarily restrict the data sources on which it draws.

Conclusions

In this article we have provided a critical review of the potential of participant observation as an interpretive data-gathering method for MIS research by drawing on a participant observation study of EIS development in an organization. We illustrated that such data contribute to a rich understanding of MIS development process, in particular, by enabling close involvement and direct experience of the research context in all its complexity, in a way that would not have been possible from other data-gathering methods.

However, despite its apparent suitability as an interpretive data-gathering method, participant observation has been largely ignored by interpretive MIS researchers publishing in mainstream MIS journals. We have identified a range of problems of participant observation which might deter the potential researcher, for whom other less time-consuming and better-established methods may be expected to be more attractive. The lack of previous participant observation studies in the MIS literature, however, means that there is little guidance on how to conduct such studies. This may itself act as a disincentive to the adoption of participant observation but, more significantly, may discourage the recognition of its value as a potential MIS research method.

On balance, however, given the potential of participant observation as we have identified it, we believe that the lack of participant observation studies may be unnecessarily restrictive on the MIS discipline, and argue for a wider use of participant observation in interpretive MIS research. We would argue that the distinctive strengths of participant observation make it particularly suitable to address the call of Prasad (1997) for better ethnographic data (Atkinson and Hammersley, 1994) in the MIS discipline. In drawing attention to the problems of participant observation as well as its advantages we have also sought to illustrate a reasoned and reflective approach to the adoption of data-gathering methods of the type that Prasad (1997) has argued is necessary to enhance the credibility of interpretive MIS research.

Since many of the problems identified with participant observation may be argued to be characteristic of all interpretive data-gathering methods, and in many cases of all research, irrespective of its perspective, the arguments presented in this article may be considered to be of much wider relevance. Participant observation, however, perhaps brings many of these crucial issues to the surface and forces us to confront them more directly than with many other methods. Thus consideration of the issues discussed in this article may be argued to be a necessary aspect of reflective research practice for almost any researcher, and the measures and suggestions discussed may be of value to researchers using other data-gathering methods.

Finally, we should make clear that our advocacy of participant observation is not intended to suggest that it is suitable for all kinds of MIS research or to promote it at the expense of other methods. For example, to study large-scale processes over long time periods, such as changes in national industrial structure, participant observation is likely to be inappropriate as a data-gathering method. The choice of method may therefore depend on what sort of phenomena researchers are studying and the research perspective adopted. That being said, however, the particular qualities of participant observation would seem to suggest that it may be most appropriate in the study of MIS phenomena where situated meanings and practices may be of particular significance. Thus, understanding of almost any aspect of MIS design, implementation and use may benefit from the additional insights to which participant observation provides access.

ACKNOWLEDGEMENTS

We wish to thank the staff from the company in which the case studies were based for their participation in this project.

REFERENCES

- Atkinson, P. and Hammersley, M. (1994) 'Ethnography and Participant Observation', pp. 101–18 in N.K. Denzin and Y. S. Lincoln (eds) *Handbook of Qualitative Research*. London: Sage.
- Barrow, C. (1990) 'Implementing an Executive System: Seven Steps for Success', *Journal of Information Systems Management* 7(2): 41–6.
- Becker, H.S. and Geer, B. (1957) 'Participant Observation and Interviewing: A Comparison', *Human Organization* 16(3): 28–32.
- Burkan, W.C. (1991) *Executive Information Systems: From Proposal Through Implementation*. New York: Van Nostrand Reinhold.
- Checkland, P. (1981) *Systems Thinking, Systems Practice*. Chichester: Wiley.
- Cottrell, N. and Rapley, K. (1991) 'Factors Critical to the Success of Executive Information Systems in British Airways', *European Journal of Information Systems* 1(1): 65–71.
- DeLong, D.W. and Rockart, J.F. (1986) 'Identifying the Attributes of Successful Executive Support System Implementation', pp. 190–205 in J.F. Rockart and C.V. Bullen (eds) *The Rise of Managerial Computing*. Homewood, Illinois: Dow Jones-Irwin.

- Downs, E., Clare, P. and Coe, I. (1988) *Structured Systems Analysis and Design Method: Application and Context*. London: Prentice-Hall.
- Fitzgerald, G. (1992) 'Executive Information Systems and their Development in the UK', *International Information Systems* 1(2): 1–35.
- Flowers, S. (1996) *Software Failure: Management Failure: Amazing Stories and Cautionary Tales*. Chichester: Wiley.
- Giddens, A. (1984) *The Constitution of Society*. Cambridge: Polity Press.
- Goffman, E. (1989) 'On Fieldwork', *Journal of Contemporary Ethnography* 18(2): 123–32.
- Goffman, E. (1990) *The Presentation of Self in Everyday Life*. London: Penguin.
- Jones, M.R. (1994) 'Learning the Language of the Market: Information Systems Strategy Formation in a UK District Health Authority', *Accounting, Management and Information Technologies* 4(3): 119–47.
- Kluckhohn, F. (1940) 'The Participant Observer Technique in Small Communities', *American Journal of Sociology* 46(3): 331–43.
- Leidner, D.E. and Jarvenpaa, S.L. (1993) 'The Information Age Confronts Education: Case Studies on Electronic Classrooms', *Information Systems Research* 4(1): 24–54.
- Mitchell, R.G. (1991) 'Secrecy and Disclosure in Fieldwork', pp. 97–108 in Shaffir, W.B. and Stebbins, R.A. (eds) *Experiencing Fieldwork*. London: Sage.
- Mumford, E. (1981) 'Participative Systems Design: Structure and Method', *Systems, Objectives, Solutions* 1(1): 5–19.
- Nandhakumar, J. and Jones, M. (1997a) 'Too close for comfort? Distance and Engagement in Interpretive Information Systems Research', *Information Systems Journal* 7(2): 109–31.
- Nandhakumar, J. and Jones, M. (1997b) 'Designing in the Dark? User Involvement in Executive Information Systems Development', pp. 75–86 in K. Kumar and J.I. DeGross (eds) *Proceedings of the 18th International Conference on Information Systems*, Atlanta, Georgia, US.
- Nandhakumar, J. and Jones, M. (2001) 'Accounting for Time: Managing Time in Project-Based Teamworking', *Accounting, Organizations and Society* 26(3): 193–214.
- Orlikowski, W.J. (1992) 'The Duality of Technology: Rethinking the Concept of Technology in Organizations', *Organization Science* 3(3): 299–326.
- Orlikowski, W.J. (1993) 'CASE Tools as Organizational Change: Investigating Incremental and Radical Changes in Systems Development', *MIS Quarterly* 17(3): 309–40.
- Orlikowski, W.J. and Baroudi, J.J. (1991) 'Studying Information Technology in Organizations: Research Approaches and Assumptions', *Information Systems Research* 2(1): 1–28.
- Prasad, P. (1993) 'Symbolic Processes in the Implementation of Technological Change: A Symbolic Interactionist Study of Work Computerization', *Academy of Management Journal* 36: 1400–29.
- Prasad, P. (1997) 'Systems of Meaning: Ethnography as a Methodology for the Study of Information Technologies', pp. 101–18 in A.S. Lee, J. Liebenau and J.I. DeGross (eds) *Information Systems and Qualitative Research*. London: Chapman & Hall.
- Schwartz, M.S. and Schwartz, C.G. (1955) 'Problems in Participant Observation', *American Journal of Sociology* 60(4): 343–53.
- Taylor, S.J. and Bogdan, R. (1984) *Introduction to Qualitative Research Methods: The Search for Meanings* (2nd edition). New York: John Wiley.
- Trow, M. (1957) 'Comment on Participant Observation and Interviewing: A Comparison', *Human Organization* 16(3): 33–5.

- Van Maanen, J. (1979) 'The Fact of Fiction in Organizational Ethnography', *Administrative Science Quarterly* 24: 539–50.
- Walsham, G. (1993) *Interpreting Information Systems in Organizations*. Chichester: John Wiley.
- Walsham, G. (1995a) 'The Emergence of Interpretivism in IS Research', *Information Systems Research* 6(4): 376–94.
- Walsham, G. (1995b) 'Interpretive Case Studies in IS Research: Nature and Method', *European Journal of Information Systems* 4(2): 74–81.
- Walsham, G. and Sahay, S. (1999) 'GIS for District-Level Administration in India: Problems and Opportunities', *MIS Quarterly* 23(1): 39–66.
- Walsham, G. and Waema, T., (1994) 'Information Systems Strategy and Implementation: A Case Study of a Building Society', *ACM Transactions* 12(2): 150–73.

JOE NANDHAKUMAR is Senior Lecturer in Information Systems in the School of Management at the University of Bath. Previously he was a Lecturer in Information Systems and Director of the Master's Programme in Information Systems in the Department of Management at the University of Southampton. His current research interests focus on the social and organizational aspects of the development and use of collaborative information technologies in organizations. He has published widely on these issues. Dr Nandhakumar has wide-ranging experience in industry and gained his PhD from the University of Cambridge, Department of Engineering.

Address: School of Management, University of Bath, Bath BA2 7AY, UK. [email: j.nandhakumar@bath.ac.uk]

MATTHEW JONES is a University Lecturer in Information Management in the Judge Institute of Management Studies and Department of Engineering at the University of Cambridge. His research interests are concerned with the relationship between information systems and social and organizational change, and theoretical and methodological issues in information systems research. He has published widely in these areas.

Address: Management Studies Group, Department of Engineering, University of Cambridge, Trumpington Street, Cambridge CB2 1AG, UK. [email: mrj10@cam.ac.uk]