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The potential contribution of Ethnographic methods to Information Systems research

abstract
For IS researchers, understanding the impact of technology on organisations is a long time research challenge that continues to ramify and gain complexity as IT proliferates systems and permeates all aspects of organisational life. Organisational culture plays a significant part in whether these systems are implemented successfully. This paper makes the case for the potential value of ethnographic research methods for organisational change projects and in particular for understanding the influence of ICT investment. These research methods can yield extra-ordinarily insightful results into organisational behaviour but has not been a feature of published IS research.

Keywords
Ethnographic research methods, Information Systems research, Culture and power, Information and communications technology(ICT)

1 Introduction
For IS researchers, understanding the impact of technology on organisations is a research challenge has been a feature of the discipline since the early 1990s. The idea that IT could act as a change agent, driving change in particular in job design, employee pay and rewards and organisational structure, all aspects of organisational culture, is not new. But recent experience has some firms embracing the idea of change programs in which ICT is a key resource and plays an important part in the project.

Culture is blamed when catastrophes occur to organisations, but also often claimed as the basis of organisational success. There are many definitions of which the shortest is probably that by Deal and Kennedy (1982) as ‘the way things get done around here’. It exerts a powerful influence on people within organisations. It becomes most visible during major change programs due to its stability and resistance to change. Hence culture plays an important role in the success of ICT implementation and hence IS research.

This paper makes the case for the potential value of ethnographic research methods for organisational change projects and in particular the understanding of the influence of organisational culture. ICT is frequently part of these projects and this points to the potential value of these research methods in IS research. The paper assesses the reasons for the current comparatively low level of use.

The next section outlines the potential of ICT to support and enable organisational change. Section 3 discusses the profound impact of culture and power on organisations’ when they attempt change programs. Section 4 outlines the potential value and characteristics of ethnographic research methods in these situations. Section 5 outlines the application of these research methods in IS research.

2 ICT and organisational change
In the early pre Personal computer days of Information Technology the impact of the specialist applications such as payroll automation was limited to the departments involved. As computing became ubiquitous, throughout the organisation, it became one of the major forces driving or supporting organisational change. Succeeding waves of innovation in technology and software and more recently electronic communications have intensified this development. All current forecasts expect this trend to continue into the foreseeable future.

The role of information systems in organisational change has been of major interest to information systems researchers for many years. (Markus, 1983; Davenport, 1998). This was initially driven by the perception that investment in ICT had been failing to yield the value that had been promised (Brynjolfsson, 1993; McKinsey Global Institute (MGI) report, 2002) and the publicity given to high profile ICT projects failures (Collins, 1998; Keil et al, 2000). One stream of research took the view that the root problem was firm's inability to make the organizational changes required. This approach focused on the organisational impact of new ICT investment and tended to use case based research methods. It led a group of researchers to the conclusion that a considerable amount of organizational restructuring was going to be necessary to gain the full potential business value (Markus and Robey, 1988; Zuboff, 1988; Venkatramen, 1991, 1994; Ciborra, 1994). The cases investigated were predominantly those where a company had invested in an IS, based on the estimated business benefits of productivity and quality gains, but in which little thought had been given to the potential (or need) for organisational restructuring. This is still the situation for many companies today. Moreover as Leidner and Kayworth (2006) note it has been shown that an ICT application can produce widely different results when implemented in different organisations, indicating the profound effect that organisational culture can have.

For some organisations, a more pro-active view has emerged, in which ICT is simply one of the organisational resources, being developed as part of an integrated plan. Without doubt, substantial amounts of ICT investment tends to have a minor impact on the way a firm works and has little impact on the firm's culture. Examples include automating manual operations and replacing labour (Remenyi et al, 1995; Weill and Ross, 2009), information generation, storage and retrieval (Remenyi et al, 1994; Laudon and Laudon, 2009), communications – dissemination of information between individuals, groups and organisations (Sproull and Kiesler, 1991) and co-ordination. These activities enhance service and increase productivity but can be implemented without changing the fundamental organisational structure.

However ICT has the potential to be a significant component of programmes of major organisational change in three main ways – enabling integration, transformation and/or innovation.

The potential of IT- enabled integration has been identified by many writers (Venkatramen, 1991, Brown and Spanos, 1995; Bannister, 2001; Wastall, 2002; Bannister and Walsh, 2002). Integration comes from the ability to combine data sets from different sources and unify processes, dissolving boundaries and departmental silos, supporting collaboration across far flung units and hence driving the restructuring of the organisation as a whole. Examples of applications with this potential include ERP and KM systems. A CAD package provided the impetus for integration at an architectural practice (Yetton et al (1994). The partners learn to use the package and then preside over the rollout of the application to all their staff of architects. The job roles of both partner and architect begin to change. Staff were required to 'put down their pencils' (Yetton et al, 1994) and use the package as a personal tool. Each architect became the manager of all parts of a job, cutting out the need for support staff. The partners embarked on path of continuous learning as CAD technology went through a steep development curve. Their role came to include that of sponsors of the new technology and 'drivers of learning' (Zuboff, 1988) of their staff.

IT-enabled transformation is the ability of ICT to introduce major change to business, production and sales processes, which leads to organisational restructuring into new forms such as flattening of hierarchies, decentralising managerial authority and creation of network organisations (Zuboff, 1988; Venkatramen, 1991; Hammer and Champy, 1993 ; Remenyi et al, 1995). There have been many examples of successful transformation with the restructuring of whole industries as for example the insurance industry dramatic reduction in

time to complete over the last twenty years, manufacturing embracing lean methods and just-in- time (JIT) (Womack et al, 1990) and traditional retailing incorporating ecommerce.

Innovation includes for example the development of completely new businesses, creation of new products and services, exploitation of new delivery and marketing channels. The explosive growth of new businesses created by the world wide web would fall into this category.

ICT can be used in ways to create great benefits but often at the cost of major organisational change.

3 Organizational Culture and Change

Culture has so far proved an elusive concept but is of fundamental importance for understanding the way social groups and hence individual organizations work. It forms an important theme of research in social science and IS research. A firm's culture has a profound effect on 'the way things get done around here' (Deal and Kennedy, 1982). There is little doubt among experts that there is a link between organizational culture and organizational performance. Nonetheless this is based in general on case examples of individual organisations (Peters and Waterman,1982; Schein, 1992,2010). It is when organisations try to implement projects which demand culture change that the role that culture plays becomes most visible (Williams et al, 1989; Flyvbjerg, 2001; Leidner and Kayworth, 2006). An important objective of IS research is developing methods for understanding the potential effects of new types of information and communications technology on company's operations and whether and in what way it could support transformation initiatives.

Definitions of organizational culture abound (Schein, 2010, Deal and Kennedy, 1982; Williams et al, 1989; Leidner and Kayworth, 2006). These focus on how the culture affects the behaviour of employees in carrying out work tasks within their organization. Culture is the creation of 'shared basic assumptions learned by a group as it solves problems' (Schein,2010). This guides the way individuals interpret organizational problems and approach taking appropriate action. It includes the organization values, visions, norms, working language, systems, symbols, beliefs, habits and make decisions. A crucial aspect is that this is taught to each new recruit on arrival. New members of the group (organisation) learn to see the world from this unique viewpoint accepting this way of perceiving, and even thinking and feeling about organizational events. This creates cultures that are self sustaining, stable and resistant to change.

Schein's (2010) model of culture demonstrates clearly why it has such a profound effect on an organization and why it is so difficult to change. According to Schein (2010), culture can be analyzed at three separate levels – level 1 of Artifacts, level 2 of Espoused Beliefs and Values and level 3 of Basic Underlying Assumptions. The levels 1-3 represent the decreasing degree to which the cultural phenomenon is visible to the observer. Levels 1 and 2 are relatively easy to ascertain, but level 3 is far harder to establish. Level 1 the artifacts includes all observed structures and behaviour including for example awards, dress code, mission statements, reporting lines, language, myths and stories about the organization, organization charts and decision processes. This level is easy to observe but may be difficult to interpret as it represents actions taken based on the deeply held organizational assumptions (level 3). Level 2, espoused beliefs and values, are those ideas on for example organizational and individual goals and values that can be stated and shared by the group. Often organizations develop ideologies and philosophies based on such ideas. This level is easy to establish as it will be published aggressively all over the organization. However these espoused beliefs can be at variance to the actual behaviour of the organization's members. They maybe what the organization aspires to but does not actually do. Level 3, basic underlying assumptions, includes the unconscious taken-for-granted beliefs and

values that dominate all organizational thinking, shared by all members, but are hidden from all but an insider. Organizational members rely on these assumptions about the world, to direct their actions and when interacting with other members of the organization, but are seldom aware of them at a conscious level. It is only when we understand this level can we make sense of much of the behaviour at level 1. These are the elements of culture which are so ingrained that they are often taboo to discuss inside the organization. It is this that makes culture such a powerful and mysterious force in organizations - when formal rules and regulations (levels 1 and 2) clash with unwritten rules of behaviour (level 3) people will follow the little understood level 3 assumptions. Like an iceberg, the visible 10% of levels 1 and 2 is dominated by the invisible 90% of level 3.

This demonstrates why Schein (2010) claimed that an organization's culture was so difficult to change. If 'basic assumptions tend to be non-confrontable and non debatable' (p28, Schein, 2010) then level 3 is beyond discussion, key ideas on managing the company cannot be analysed or re-examined with a view to change. People get comfortable with one mind-set and are loathe to move outside their comfort zone by revising these ideas.

The case described by Kohli and Kettinger (2004) supports Schein's view. This case describes the attempts of the hospital management to introduce an information system aimed at improving the decision making of the physicians employed by the hospital. The hospital management was under pressure to reduce clinical costs, while continuing to improve the quality of patient care. It was accepted that the physicians controlled the clinical process that in turn determined the costs and quality achieved. The route to better practice was through 'informating' (Zuboff, 1988) this group. The management had a clear business aim and their definition and measure of business value was relatively precise. This was to reduce costs per case and improve quality care. The improvement in care was interpreted as reduced variance in clinical activities, because this was thought to signal the adoption of best practice. A clinical DSS was developed 'to collect and process physician benchmarking information' (Kohli and Kettinger p370, 2004). The information system was designed to track individual physician's activities through his or her patient data on costs and quality measures like length of stay (LOS). The system produced reports that could be used by the various clinical specialities (departments) to monitor performance and hopefully improve the decision making of each physician. The clinical DSS was managed by the central IT department who produced the reports initially for the central management team. Although the information system was agreed to be a success in that the physicians acknowledged that it accurately represented clinical practice, the early results were disappointing in terms of adoption by physicians. By classic measures, that of user response, the system was a failure, as most physicians and clinical specialities made little use of the information provided by it. The case description explains how the norms (culture) by which the physicians operated worked to reduce their willingness to use this information system. At this stage, two initiatives were started by the management and design team. The information system was redesigned to one in which the information could be delivered straight to each physician through his or her PC, instead of through paper reports from management. It was renamed a physicians profiling system (PPS) and came under their own personal control to interrogate and use as they saw fit. In addition the management sought to work with existing group cultural norms of peer pressure and assessment to create the conditions within which physicians would view the system as a valuable tool to improve their own and their group's performance. The outcome of this second initiative was successful in terms of the management aims. For the first year following implementation both cost and quality indicators improved significantly. But it was the IS that had to conform to the organisational culture.

Much research into culture has been focused on Schein's level 2 concept of values. Researchers have sought to create general models of the firm that capturethe key characteristics of culture (Handy, 1976; Deal and Kennedy, 1982; Hofstede, 1980). But it

could be argued that each organization has a unique culture (Schein, 2010), resulting from a combination of many factors including for example: the philosophy of the founders, the history of the organization, the macro context (of the state) and industry characteristics etc. It is in change initiatives that another factor is likely to surface – the exercise of power, which will affect all 3 levels of culture. Organisational restructuring or transformation projects are very likely to change the way power is exercised (Flyvbjerg, 2001; Gordon, 2005).

In analysing power in organisations, social scientists have offered a valuable view on Schein's basic assumptions. According to Flyvbjerg (2001) main stream management theories about power deal with the issues such as identification of the formal decision makers and their authority to control resources and the power to exclude decisions from the agenda. These are visible and are clearly part of the level 1 and 2 descriptions of culture. Lukes (1974, cited in Gordon, 2005) has added another dimension that of the power to manage meaning. Gordon, (2006) quotes 'that power can be used to shape people's "perception, cognitions and preferences in such a way that they accept their role in the existing order of things, either because they can see or imagine no alternative to it, or because they see it as natural and unchangeable". This fits very closely the definition of level 3 proposed by Schein. Foucault (cited in Flyvbjerg, 2001) adds a further more complex concept about the organisations and social groups to which we belong, that we all carry around with us – that of relations of power. He conceives people as embedded in a network of individuals and groups with varying ideas about what constitutes knowledge. At any point in time there will be a core set that have primacy within each organisation, often derived from historical events within the company. In his view our attitudes and value are to a certain extent controlled by these ideas. Clashes of culture may be clashes between one set of ideas (values, models, assumptions) and another neither of which is 'right' just the current dominant view.

For Flyvbjerg (2001) the key to understanding and researching a social event is in the details of the problem and the context within which it falls. Each situation is dependent on the specific time and place within which it occurs. Social science research models produce important insights but cannot give a good picture of the whole situation. The case described by Gordon (2005) analysing the results of a reform program to change the culture of one police force, addresses the question – Have the basic assumptions of all members of the force been changed by this program? The methodology used was ethnography because 'it involves the use of methods, instruments and protocols that facilitate the detailed recording of what happens in a localized social system' (Gordon, 2005, p149).

4 Research methods for organisational change

Researching organisational change calls for a focus on contextual detail that is not possible within traditional positivist quantitative methods. Even interpretivist qualitative methods such as case methods as they are normally applied will be inappropriate. Case research is limited by the way data is collected. In essence the researcher uses published sources and then relies on interviews with appropriate subjects. The picture created by these methods is based on a view from outside the community. The researcher needs to go deeper into the specific details of the organisational situation. Ethnographic methods allow the possibility of the researcher reaching a more profound understanding of the basic assumptions that drive organisational members as well as the specific details surrounding the event under investigation.

The ethnographer lives and works with the group of people of interest in order to be able to tell their story in their terms (Sanday, 1979; Fetterman, 2010). The research focus is that of understanding and explaining the behaviour of this social group, which to outsiders may look not only unfamiliar but in many cases irrational and counter-productive. The fundamental assumption of the ethnographer is that for members of the social group the behaviour of the group and it's individual members is normal, correct and appropriate for the situation that the

group has to deal with. To analysts, industry experts, customers, collaborators and other stakeholders of all types, the behaviour of organizations and their employees can look just as baffling as the behaviour of the people investigated by anthropologists. When behaviour fails to match expectations, this research method enables the ethnographer to critically assess the taken for granted assumptions on which such expectations are based and perhaps to create a better understanding of the drivers for individual and organisational behaviour (Myers, 1999). Ethnographic research produces a picture from the inside.

This method makes high demands on the ethnographer, in terms of both the range of skills required, the need for individual design of information processing and analysis methods and the enormous personal investment in time and effort needed. Moreover there are practical problems including access to the case site(s) and ethical issues (Myers, 1999; Schultze, 2000; Fetterman, 2010). This is costly method in terms of researcher time and complex in application.

The ethnographer must be able to handle the potentially ambiguous role and/or isolation of the participant observer and to write about the group's actions in terms that they understand but also in terms that an outsider can also understand. To be able to do this he or she must immerse themselves in the society. Hence the methodology is based on extensive empirical research. 'Fieldwork is the heart of the ethnographic research design' (Fetterman, 2010). The ethnographer can expect to spend considerable amounts of time in the field, typically between 6 months to a year (Sanday, 1979; Van Maanen, 1988; Yin, 1994; Klein and Myers, 1999). Throughout this period the ethnographer will be collecting information, perceptions and hard data from all available sources but uniquely through participant observation or long term close observation of members of the social group in their daily activities. Data collection, analysis, interpretation and reporting are carried out in parallel.

Ethnographers deal with social systems that contain as many realities as there are members and moreover evolve over time. The credibility and rigor of such work can be contentious. There is a less clear cut pathway for the steps of the research process, than there is for more traditional methods. Researcher objectivity is inappropriate - indeed it is in the ethnographer's personal vision and individual perceptions that the strength of the work is likely to lie. Nonetheless the ethnographer must be able to control for personal bias and convince an audience that the final report captures to a large extent what actually happened.

5 Application of Ethnographic methods in IS research

Case examples of ethnographic research methods used in Information Systems research are still few (Mingers, 2003; Leidner and Kayworth, 2006). Mingers (2003) analysed the publications of six of the major IS journals over the period 1993-2000. Empirical papers as a proportion of the whole started at a low base of 48% in 1993 and rose to approximately 66% by 2000. The empirical papers were classified by research method into three groups:

1. those typifying positivist research (passive observation, measurement and statistical analysis, survey, questionnaire, instrument experiments, case study and simulation)
2. those typifying interpretivist research also referred to as non-traditional research methods (interviews, qualitative content analysis, ethnography, hermeneutics, grounded theory and participant observation)
3. those involving intervention (Action research, Critical theory and consultancy)

Two of the six journals (ISR and EJIS) published no papers using ethnography. Of the remaining journals Mingers (2003) found that 3% of all empirical papers used ethnographic methods. The survey by Leidner and Kayworth (2006) provides an interesting set of results. The authors took the position that culture is important to the study of IS. In their view culture exerts a major influence on successful implementation and use of IT. The paper surveyed a wide range of journals for empirical articles that dealt with both IT and culture. Eighty two articles were found in 38 journals for the period early 1990s to 2004. These were split into two groups - those focusing on culture at a national level (51) and those at an organisational

level (31). Of the 82 articles only 2 used ethnography and this was in the group on organisational culture. ie 2.5 % of all papers or 6.5% of the organisationally focused papers. This is a curious finding, as this review was about articles specifically focused on culture and IT, for which ethnography seems peculiarly well suited. Moreover the authors draw on the papers to develop a culture clash model which suggests that ICT adds an additional level of complexity to organisational change studies.

It seems clear that the difficulty of establishing the basic assumptions (Schein's level 3) on which an organisation operates has led many researchers to focus on level 2 that of the visible espoused values (Leidner and Kayworth, 2006; Schein, 2010). The traditional approach has been through attempts to categorise culture types and develop measures for them along a small number of value dimensions (Handy, 1976; Deal and Kennedy, 1982; Hofstede, 1980). Hofstede's taxonomy is perhaps the best known and most applied. This measures nation's culture in terms of the four dimensions – power distance, uncertainty avoidance, individualism vs collectivism and masculinity vs femininity. It is possible to create a model of a company's culture based on these dimensions, which can be used to explain or predict it's response to events. This approach aims to create standard models of culture for an organisation. Models are powerful tools for situations in which they are a reasonably accurate representation of the underlying reality, but can be misleading when critical aspects lie outside the model boundaries. An implicit assumption of these models is that the culture of most organisations can be adequately described through their espoused values. In situations of change this is unlikely to be the case. However the alternative assumption, that change programs involves factors specific to each situation, would lead researchers into much greater cost, time and complexity.

6 Conclusions

The implementation of new ICT in organisations is likely to be part of a change program that is in turn likely to involve organisational culture change. Culture change presents major barriers, not the least if which, is the lack of understanding of many organisations as to what the fundamentals of their culture is. When organisations seek to change their culture, they need to know and understand the basic assumptions or the relations of power of their staff, in all sectors of the organisation and then identify the changes they wish to achieve in them. Ethnographic methods are the most appropriate research methodology for change programs, but are costly, time consuming and complex to apply.

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