

**USING STRUCTURATION THEORY
TO EXPLAIN INFORMATION SYSTEMS DEVELOPMENT
AND USE IN A PUBLIC HEALTH ORGANIZATION**

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ABSTRACT

This paper highlights the use of structuration theory in explaining information systems development and use in a UK public National Health Service (NHS) organization. Our aim is to apply structuration theory to understand the social aspects of such a process. In the research presented below, we describe: (1) the 'hidden' aims of an information systems project, (2) the importance for a successful project of maintaining legitimation and domination structures which reflect a close and synergistic relationship between top and project management, (3) how consequences of information systems use, both intended and unintended, act to shape attitudes and structures, which will, in turn, shape behaviour in different ways.

Keywords. *Information systems, interaction, requirements, structuration theory*

1. INTRODUCTION

The context of an information systems (IS) project is important. Such a context is made up of elements such as stakeholder attitudes, organisational politics, standards and resources. Context shapes the process, which is made up of procedures, logic, and methods for developing and using the IS (Walsham 1993). However, the shaping process is not one-way, as the experience of carrying out a process, for example, using the IS, is likely to affect contextual elements, such as politics or attitudes. Interaction between context and process is the reality in IS projects, and frameworks such as structuration theory (ST) (Giddens 1984), the circuits model of Scarbrough and Corbett (1992), both of which are essentially interactionist, and relevant research (Orlikowski and Robey 1991; Robey and Boudreau 1999; Curtis, Krasner and Iscoe 1988; Coombs, Knights and Willmott 1992; Ring and Van de Ven 1989; Ciborra and Lanzara 1994; Korpela 1994; Kling 1991) can help us explain the complex organizational processes involved in IS development and use. The motivation

for seeking this type of understanding is the key role played by human and organizational factors in the achievement of a successful IS (Clegg et al 1996).

We discuss a research project below where our objectives were: (1) to validate the applicability of ST as an interactionist framework in the IS context, focusing particularly on the production of structure by behaviour, (2) to apply ST to understand the elements that shape the processes and outcomes involved in the development and use of an information system, with an emphasis on human and organizational factors, and to indicate the implications of these findings for IS research and practice. The contents of this paper are: research context and situation, research methodology, structuration theory, presentation of case study findings, discussion and conclusions.

2. RESEARCH CONTEXT AND SITUATION

2.1 Context

The NHS is very large and complex organization that has evolved over the past few decades. It has continually developed guidelines, policies and procedures to achieve common modes of operation. It has changed in accordance with needs and reforms from many stakeholders such as government, unions, medical/nursing staff, public (patients) and local authorities. Recent reforms have resulted in publications of performance tables that show departmental efficiency across the organization. Most of the changes have been politically motivated and have happened due to organizational drives to achieve greater efficiency. At present the demands for better health service and quality have exhausted the health service and it seeks ways of yielding greater efficiency.

However, it is becoming difficult for NHS organizations to improve, due to limited funding, insensitivity of hierarchically organized management and the top-down flow of commands. A possible solution to the problems of the organization we studied is IS, which may help to resolve continuing difficulties and shrinking resources. IS is often perceived as a vehicle for major improvements by most middle management and the younger generation of workers.

Our research situation was located in an NHS Community Healthcare organization in a city in the North of the UK that provided services from 99 locations and employed over 3,500 workers. It provided its services independently and in co-ordination with acute hospitals, doctors, voluntary organizations, other health and social care organizations and some outreach services. The Annual Report for 1997/8 stated that the priority of the organization was to continue improving the provision of current healthcare services to bring them in line with today's health requirements. The budget for the year 1997/8 was £76.2 million, which was another continuous increase from the previous year and total management costs amounted to between 5.2% and 5.7% of the total staff budget. The organization aimed to provide an efficient healthcare service to all its patients. In order to achieve this target it had established a clinical effectiveness directorate a year before the commencement of the research, laying foundations for implementing new NHS policies and clinical governance.

A major investment in the past had been in redeveloping and improving its specialities. A large proportion of staff consisted of nursing (57.1%), carrying out a variety of services including elderly care, rehabilitation, midwifery, mental health, school nursing and chiropody, in a variety of locations including patients homes, psychiatric units and homes for the elderly. The next largest proportion was administration staff (14.9%); medical and dental staff (providing services for the young, elderly and mental health) only made up a small proportion (4.4%). The organization was complex in terms of diversity, functional set-up and variety of occupational disciplines involved. It was also very complex in terms of social and political dimensions. Furthermore, due to new government ventures and drive towards the adoption of technology the stakeholders were highly cautious and aware of political implications of their behaviour.

2.2 Intranet Project

The project we studied concerned the development and use of an organization-wide Intranet. The Intranet was intended to play a number of roles, including increasing stakeholder awareness in technology, improving on-line training, increasing both horizontal and vertical communication in the organization and as a result inviting greater enthusiasm in IT. The project was amongst the first of a series of different IS solutions planned for the organization from within the Information Services Department by the IT Manager. The project was mainly a result of the views gathered from an Information Needs Survey conducted two years prior to the implementation of the project and by direct interviews with potential users. The requirements for the Intranet and its support tools came mainly from the IT Manager, who collated them from the Information Needs Survey and by interviewing potential users. He envisaged this change strategically and sent a tender document to a number of Intranet service providers, one of whom was chosen to deliver a working Intranet system.

The needs emerging from the Survey were to: (1) increase in worker awareness of IT, (2) increase vertical and horizontal communication, (3) provide workers and line management easier access to organizational codes of conduct, rules and regulations, and, (4) make shared use of organizational computer applications. Its role was planned to evolve as its use increased and as users realised the benefits. Initially, it was to be used as a means for different departments to (internally) advertise their presence; as time passed it would be used for data capture or information requests. In its maturity it would be used by workers to work from remote sites and compile appropriate patient forms and records and update a secure database as they worked.

The Intranet was believed to resolve some of the problems highlighted by the Information Needs Survey. The purpose, objectives and components were planned by the IT Manager, who initially did not gain much support from strategic or middle management. This was due to their unfamiliarity with the technology and their scepticism about its benefits. To gain their agreement he first purchased an e-mail option and introduced it to strategic and middle management. On using the e-mail, strategic management gave positive feedback, and thereby middle management reacted favourably. The IT Manager then generated a business plan for an Intranet system with a comprehensive set of support tools. The strategic management who were exposed to the e-mail medium reacted favourably to the business plan and funding was approved for a wider and more expensive (costing around £97,000) Intranet project, which involved implementation at all sites.

The Intranet would be implemented across the organization and would involve a change, or complete elimination, of some departmental policies and procedures. The main stakeholders involved at the initial stages were chiefly associated with the Information Services department and were: the IT Manager, the IM&T Manager, the Contracts Director and the Information Services Director (Communications Director). These will be referred to as core stakeholders. They sought top-down agreement on the introduction of technologies (from the Trust Board - the organization executive body) and attempted to gain initial support from management before implementing Intranet facilities. As implementation commenced, most of the line managers (chiefly senior nurses) responsible for implementing IT in the departments also became stakeholders, although a majority of them were still new to it. However, the core stakeholders remained the main driving force in implementing the new technology. They perceived their main hindrance to be line management, who were both IT illiterate as well as being traditional NHS managers, jealous of their professional specialisms and the authority they possessed, based on many years of NHS experience. There was more support from lower level stakeholders.

3. RESEARCH METHODOLOGY

3.1 Research Strategy

We perceived our position as researchers in these projects as non-participatory and non-neutral. The researcher who carried out the fieldwork (ZH) attended meetings but did not take an active part in the development process. According to the research philosophy categories of Orlikowski and Baroudi (1991),

we adopted a stance that was neither positivist nor critical, but interpretivist, characterised by attempting to “get inside” the research situation with an emphasis on the importance of the subjective meaning of individual actors. According to the categories of Bryant (2001), we adopted a qualitative research strategy, characterised by: (1) a constructionist ontology, (2) an interpretivist epistemology, and (3) an inductive orientation to the role of theory in relation to research. With regard to this last point, a reason for choosing ST as our investigatory framework was that it may be regarded as a ‘grand theory’ (Bryant 2001), with the potential for allowing ‘middle range’ theories to be generated from its use in a particular research situation. However, as we had a research objective to establish the validity of ST as a theoretical framework in our research situation, we also had a deductive orientation.

3.2 Data Gathering

The most suitable research design for applying a social behaviour framework such as ST was the interpretive case study (Walsham 1993). This helped us to focus on the process of Intranet development and use over time. A number of different research methods were used within the case study approach, for example, structured and unstructured interviews, non/participant observations, seminars, discussions and secondary literature research. We feel that a researcher has to be open minded about selecting from possible types of methods, bearing in mind the required insight into the project context, process and its likely content. We made very regular visits to the organization over a two year period (September 1997 - 1999) to gather data. Another feature of ST that suited the longitudinal nature of our research project was its underlying duality of structure principle (discussed below), allowing us to observe the continuous cyclical process whereby structure influences action which re/produces structure, which influences action.

ST was applied through observation during meetings, interviews, seminars, discussions and minutes of (past) meetings. In particular, actions of the core stakeholders involved in the project were tracked, since it appeared that these individuals were most influential in the decision making and final rules of operation. ST was also applied using a semi-structured questionnaire. The major reasons for using both methods were: (1) to cross-reference the subjects’ response with the researcher’s observations and perceptions, and (2) to gain a better understanding of the situation.

3.3 Analysis of Data

A problem shared by all qualitative research methods is that of the amount of data generated, and the concomitant problem of deciding on what is important. ST shares this problem, and, to help us manage and organise the data collected we use the concept of *episode* as a grouping or category mechanism. We think of an episode as a (abstract) unified set of events and actions that we believe encapsulate an important set of interactions within the organization and that enable us to make sense of these interactions. A similar concept of episode is also discussed in Newman and Robey (1992). One criterion we had for grouping and selecting such episodes was that there should be a narrative - a story - to the unfolding events and behaviour; another was that the narrative should illustrate an important interactionist aspect of IS development or use.

We have used the concept very much as a post-hoc method for organising the data gathered, rather than going into the research situation looking for episodes, although we don’t discount this for future research. Another problem with this type of research is that very often the evidence for the researchers’ interpretations of the research situation is lacking, as researcher views are too often inextricably intertwined with stakeholder accounts. We wanted to disentangle our views from those of the stakeholders, where possible, and to provide evidence for our assertions. Table 1 shows summaries of three episodes, with various characteristics such as the source of information for the episode. The source is important as this relates to individual notes of interviews or observations, so that we may provide relevant evidence if we are to make any assertions. A fuller text of an episode is used as a basis for an ST analysis, such as that presented in the findings section below, and we show the exploration of episode 1 in table 2.

We subdivided the project into three phases: (1) planning (2) requirements, and (3) use. It thus covers one ‘interaction cycle’ of context shaping process which in turn shapes context. We selected these phases from our observation of the project.

4. STRUCTURATION THEORY

Structuration Theory (ST) provides a framework for understanding social situations in terms of social structure and human interaction. ST is concerned with (a) the influence on human interaction of institutional (structural) aspects of social life such as rules, procedures and power structures; (b) the production and reproduction of these structural aspects through human interaction. It is thus wide-ranging in that it incorporates both the structure (macro) and agency (micro) perspectives through its concept of duality of structure, whereby structure influences action which re/produces structure. This is thus a relevant, if high-level, model of the interaction between context and process in IS development and use. We believe that ST is a useful tool for analysing our research situation, particularly as it draws attention to social factors such as the exercise of power and sanction. A well-known representation of ST, based on Giddens (1984), is shown in figure 1.

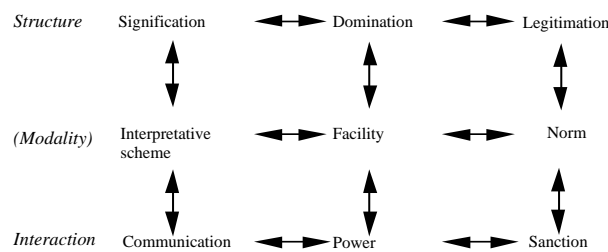


Figure 1: Dimensions of the relationship between action and structure in ST

Figure 1 shows social structure and human interaction subdivided into three dimensions and linked by three modalities. Structure is a problematic concept and its meaning within ST is contentious. It consists of a continuous sequence of actions, is continuously re/produced by the actors involved and is based on their beliefs and actions. Structure changes as actors’ beliefs or values change and only exists ontologically as memory traces unassociated with any type of physical existence. Modality is a bridge between action and structure, and actors draw on modalities, such as stocks of knowledge and skills to allocate resources, using these together with appropriate actions to produce and reproduce structure. Modality is more tangible than structure and helps to give meaning to the actions of individuals.

When humans interact for communication purposes they draw on interpretative schemes such as stocks of knowledge to make sense of their own and others’ actions; in so doing they produce and reproduce structures of signification. Human agents utilise power in interaction and draw upon facilities, such as their ability to allocate resources, to re/produce structures of domination such as management hierarchies and procedures for mobilising resources. Domination is a capability that creates command over material factors. Humans also sanction (that is, justify) their behaviour by drawing upon norms such as standards of personal morality to re/produce legitimation structures that, for example guide organization procedures. Finally, ST believes that actions often have unintended consequences.

5. PRESENTATION OF CASE STUDY FINDINGS

5.1 Overview

The organization that we studied was involved in a process of change, where humans interacted to produce new structures, which had intended and unintended shaping effects on interaction. ST allowed us to show this interesting cyclic process, which we present below in two ways. Firstly, we identify elements of the research situation which are examples of the three ST dimensions shown in figure 1. This is a mostly static, analytical perspective which is intended to show clearly how we made links between the ST elements and the case study findings. Secondly, we provide a more dynamic perspective of a significant aspect of the project which relates all the project phases.

5.2 Linking ST Elements and the Case Study Findings

5.2.1 Overview

To provide a context for our selection of case study findings viewed from the perspective of the three ST dimensions we discuss three examples, two drawn from the Requirements phase and one from the Use phase of the project.

5.2.2 Requirements I - Illustration of Communication Dimension

This example illustrates the principle of duality of structure, outlining a cyclic procedure whereby signification structures shape the communicative processes which use individuals' knowledge to produce the eventual requirements specification.

Communication - the *communication* dimension of interaction involved generating ideas for the requirements for the Intranet system and the associated change process in the organization. Requirements mostly originated from an earlier Information Needs Survey and were also brainstormed in teams made up of potential Intranet users, led by an IT Department representative.

Signification - a number of *signification structures*, for example standard codes and procedures were defined, such as document codes for the creation of new integrated documents for all specialities and fixed protocols for common procedures. Some codes were based on NHS guidelines; for example, administrative codes defining quality levels for individual tasks and IT codes, based on the NHS Information Management and Technology strategy (IM+T), which set quality standards for the Intranet and for its hardware and software components.

Interpretative scheme - various types of knowledge from *interpretative schemes* were used to assist in communication. Individuals' experience of the NHS, organizational procedures and systems development was important, and team members were often selected on the basis that they possessed relevant knowledge. Those individuals who often had their ideas accepted during the requirements phase were those with good knowledge and experience of signification structures relevant to organizational procedures. In addition, motivation skills helped others to achieve a particular goal and negotiation skills helped to reconcile differences towards a particular target.

5.2.3 Requirements II - Illustration of Sanction Dimension

This example illustrates how a senior Human Resources manager, with a reputation for introducing learning programmes within the organization, was given the task of convening and managing the teams for constructing requirements. In ST terms, a legitimation structure, in the form of the reputation of this

manager, was used to sanction (that is, justify) the process and outcome of requirements construction, and thereby to encourage sceptical individuals to take part in an exercise from which they gained to benefit.

Legitimation - The IT Manager and the IM&T Manager sought the help of the HR Director to convince workers to take part in eliciting requirements for the Intranet project. They sought his help, as he had previously been involved in setting up discussion groups on various initiatives that he referred to as 'double-loop learning circles'. He held a lot of credibility both in the organization as an 'organizational developer'. Requirements elicitation was presented as involving organizational learning, which cleverly coincided with workers' norms (see below) which valued learning in its own right. The beliefs and respect of organizational workers thus constituted a *legitimation structure* that was brought into play for the Requirements process.

Sanction - The HR Director helped the IT Department to set up discussion groups around the organization where these groups, that were made up of ordinary workers, were made aware of the benefits of the Intranet. They were told that it would help to achieve new organizational norms of enhancing communication and making shared use of technological resources. As a result of involving these workers in such discussion groups and the proactive involvement from the HR Director most workers *sanctioned* (justified) their participation to express their needs for the Intranet. After following a carefully pre-planned agenda by the HR and the IT Departments, over several discussions, most workers approved the need for the Intranet and also carried a positive message to other workers. This made the IT Department task of *sanctioning* the benefits of the Intranet to a wider set of workers much easier.

Norm - individuals, in general, were keen to improve their communication skills in an organizational context and thus drew on this *norm* to motivate and sanction their participation in the requirements exercise.

5.2.4 Use - Illustration of Power Dimension

Towards the end of implementing the Intranet the IT Department realised a need to appoint an individual in each department to: (1) help other users to use the Intranet, (2) maintain a departmental homepage and (3) to act as an agent to the IT Department and report any Intranet related errors. This example illustrates an unintended consequence of the use of the Intranet, as these individuals, termed Intranet Representatives, exercised power by their knowledge and skills in using resources.

Facility - These individuals were chosen voluntarily by each department and were then given the necessary training to enhance their skills in Intranet use and homepage creation. They were given the necessary resources and time to do this. They were also granted access to necessary workers, including professionals such as doctors, to elicit the necessary information to enable them to create and update the homepages. In this manner, they gained the ability to draw upon *facilities* such as their new knowledge and skills, as well as being able to allocate the resources of the Intranet itself.

Domination - as a result of this role, most Intranet Representatives built a reputation amongst the departmental workers as the local technical gurus who were their first point of reference on the Intranet related matters. This gave them an unintended and informal power base and position in a *domination structure*.

Power - on one of the visits by the researcher (ZH), a worker told the researcher that she was told not to use the Intranet at certain times and not to access certain sites by the Intranet Representative. So she did not. Also workers, especially those at lower-level, were careful about not being caught by the Intranet Representative for using the Intranet when they should have been working on other tasks. Although most of the Intranet Representatives themselves were lower-level workers who were usually young and were less hesitant in using computers. Finally some lower-level workers saw the Intranet Representatives being closely associated with IT Department that was viewed as a 'strategic' (that is, powerful) department; hence they did not want to be seen as an obstacle. Likewise the Intranet Representatives continued to enjoy such use of their power.

5.3 ST Explanation of the Continuity between Project Phases

This section shows how legitimation and domination structures were created in the Planning phase of the Intranet project and reproduced throughout the Requirements and Use phases.

5.3.1 Phase 1 – Planning

In the planning stages of the project, legitimation structures were created which were made up of justifications or reasons for acquiring the Intranet. At the initial stages of the project the legitimation structures were mainly created by the actions of the IT management, as they initially attempted to persuade strategic management and then line management and workers to approve the need for the Intranet. The major reasons highlighted for acquiring the Intranet were linked to an Information Needs Survey (conducted two years earlier). External drivers were also present, and a major one was the perception of strategic management, the NHS and the Government that IT was crucial in obtaining efficiency and effectiveness improvements. A hierarchy of legitimation structures thus existed. There were also ‘hidden’ reasons which we shall discuss below.

In Phase 1, certain domination structures were created. The appointment, by strategic management, of an IT Manager with commercial experience, with authority to introduce commercial efficiency practices to bring about IT-related change in the organization, constitutes the most influential domination structure, as the manager and his department had control over IT resources and the active support of strategic management.

5.3.2 Phase 2 – Requirements

The legitimation and domination structures created in Phase 1 were reproduced continually in a number of ways by repetitive activities throughout Phase 2. For example, legitimation structures were reproduced by periodic strategic management bulletins reinforcing the importance of Intranet and the IT department, and by the IT manager’s deputy spending much time talking to stakeholders convincing them of Intranet benefits. Domination structures were reproduced by public appearances of strategic and IT management obviously ‘in partnership’ as well as by the management bulletins. Fear was another way in which domination structures were reinforced, as there was a belief that a disagreement with strategic management could result in employment being terminated. These structures thus shaped the requirements process as it proceeded, helping to achieve compliance with the aims of the main drivers, the IT department.

Potential conflict could have come from the two other major stakeholders: workers and their line management. Worker conflict was avoided by excluding them from the requirements process, so that information concerning Intranet, which might have given them cause for concern, was deliberately withheld. Line management conflict was avoided rather neatly by obtaining their assistance in worker exclusion, allowing them to nominate chosen subordinates to be involved in the process. Line management had traditionally blocked many IT ventures in the organization and hindered the IT department’s previous plans.

IT management also participated in an NHS regional IS strategy and applied it to the Intranet project. They took a lead in applying their new strategy to gain recognition in the region amongst the NHS organizations, strengthening their domination structure by acting in accordance with global NHS aims and thus the aims of strategic management.

5.3.3 Phase 3 – Use

The Intranet ‘embodied’ new domination and legitimation structures. In the early stages of Intranet use, most workers had little or no desire to use it as they believed that they lacked technical skills; it was also perceived as a threat to their freedom and as a management tool. But due to its ease of use and unfolding benefits, such as having access to internal and external information and use of e-mail, most workers were impressed and began to use it. Some even started to request the supporting technologies to help them in their

functional work. They saw Intranet as a gateway to obtain up-to-date information and enhance their knowledge. Therefore new beliefs and values were created in their minds. Workers became more reliant on the IT department for IT support, training and requesting system enhancements.

New domination and legitimation structures were thus created when the attitudes of workers changed after using the Intranet. In terms of legitimation, many attitudes to the potential of IT had changed. In terms of domination, the biggest loss was by line management, where their relative power in the domination structure changed as their employees used the Intranet to obtain internal and external functional and specialist information, for example information and research on certain types of clinical treatments. Workers also gained more direct access to strategic issues and information through the Intranet without having to be told by line management. Another change that was going to affect line management was that their subordinates were now going to use new organization-wide work procedures and computer applications rather than the old procedures that each line manager had in place.

Why did not line management see this? Perhaps they did not know the real capability and future development of Intranet and its ability to change the views of workers. Initially it seemed a very friendly technology, even to those who were completely novice. The line management who joined the workers in exploiting the Intranet had a better chance of regaining lost domination over the information than those who were against. This was because the Intranet-enthusiastic workers did not see them as obstructive to their freedom to information.

Unintended consequences of Intranet use were that Intranet representatives were required in each department to create and maintain new departmental homepages. They were trained in homepage creation and as a result gained recognition for being departmental spokespersons, speaking through the creation of homepages. The Intranet representatives were appointed voluntarily, without much focus on the amount of power they might gain. Therefore, new activities led to *unintended changes* in the old structures, which resulted in change to the way people worked after the introduction of the Intranet. The use and demand for the Intranet homepages and a reliance of departments on their technical expertise and control of technical resources also led to an increase in power of the IT department.

6. DISCUSSION

6.1 Hidden Aims

As researchers, we feel that the main aims of the Intranet project from the viewpoint of strategic and IT management, referred to as 'hidden' reasons earlier, were to benefit certain groups of stakeholders. From their viewpoint, the project is, so far, successful. The key beneficiaries of this change were: (1) the IT department and the IT Manager who gained better recognition, and, (2) most lower level organizational workers who gained better access to information. The 'losers' were line management, as the project helped the IT department to reduce line management credibility and at the same time have direct control over the workers and their demands for IT.

6.2 Maintenance of Structures and Conflict Handling

The usefulness of this example to the requirements process is that it shows, firstly, the importance, for a successful project, of setting up and continually maintaining legitimation and domination structures, throughout the project, which reflect a close and synergistic relationship between top and project management. Secondly, it also shows that potential conflict needs to be anticipated and dealt with.

6.3 Implications for Research

6.3.1 Validity of ST

We conclude from the following that ST has demonstrated, in this case study, its validity.

Duality of structure & production of structure - ST allows us to clearly see an outline 'architecture' of this project, within the framework of the duality of structure. There are two main aspects to this architecture: (1) Development phase - to allow successful introduction of the Intranet system, domination and legitimation structures were initially created to shape individual behaviour, and these were reproduced by repetitive activities throughout Development. (2) Use phase - the use of the Intranet system, 'embodying' the above domination and legitimation structures, as well as new communication structures, shaped behaviour by changing worker attitudes, which in turn changed domination (line management) and legitimation structures.

Unintended consequences - the example of the Intranet representatives was given above.

6.3.2 Domination and Legitimation Structures

We have shown that these have played a key role in achieving the outcome desired by the IT Department in the Intranet project. As knowledge concerning legitimation structures is insufficient we suggest that more research is undertaken into (1) the selection of appropriate types of legitimation structures, (2) different types of behaviour which maintain (strengthen/weaken) those structures, (3) their role in achieving desired outcomes, particularly with a view to understanding how they are used for achieving change within a context of sceptical workers. For example, as discussed in this case study, different ways in which legitimation structures may be presented as being coincident with workers' norms. We also suggest that research is undertaken into the maintenance and strengthening of domination structures.

6.3.3 Hidden Aims

Our view is that line management were intended to lose power through the introduction of the Intranet as they were perceived as potentially obstructive to new technology. We suggest that the redistribution of power may be a major motivation in many IT-based changes in organizations, that is, there is often a social as well as a technical aim, and further research may seek to identify this explicitly in IS projects.

6.4 Implications for Practice

We have found that it is important to: (1) set up and maintain legitimation and domination structures which reflect a close and synergistic relationship between top and project management, (2) anticipate and plan to deal with potential conflict or resistance. To achieve this in practice requires awareness of these issues, probably best disseminated in educational programmes.

7. CONCLUSIONS

ST is a powerful framework within which social shaping of behavior may be analysed. We have shown how, firstly, the duality of structure principle of ST may be used to chart the cyclic process whereby IS use shapes attitudes and behaviour, and thence structures, which, in turn, shape behaviour in different ways, giving examples of the reproduction of structure by repetitive behavior. Secondly, we have established the potential importance of selecting appropriate legitimation structures as a device to achieve success of an IS project.

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APPENDIX

Episode	Episode summary	Evidence	Information Source
1.	Personal aim of the IT Manager was to portray a good image and to demonstrate his ability to undertake organization wide change ventures.	IT Manager was recruited from the commercial sector to use business like concepts to increase organizational efficiency and effectiveness.	IT Manager interviewed
2.	Strategic aim was to use Intranet to enhance communication, make a shared use of computer applications, enhance management control and work monitoring.	Most users questioned the purpose of the system and whether it will help them or whether it was a management tool.	Users interviewed
3.	The IT department felt that the introduction of Intranet would help to change the organizational culture, worker values, beliefs and perceptions.	It helped to change some of the ways in which the organizational employees behaved.	Evaluation questions

Table 1: ST episodes and characteristics

<p>Episode 1</p> <p>The IT Manager had been recruited a short period before conducting the Information Needs Survey and his major strength was his commercial experience. It was hoped that he would apply his commercial experience to make cost savings and to achieve efficiency and effective, as well as better quality of service for patients. He was aware of such expectations and knew that his credibility in his department and relationship with strategic management depended on him making IS related changes through out the organization. He jointly conducted an Information Needs Survey (first of its type ever conducted in the organization) and then proposed a few large organization wide systems that were to replace smaller departmental systems situated at various sites that were old and incompatible with one another. Such smaller systems were often disused and expensive to maintain. His newly proposed systems were going to be expensive initially but if successful would assure a better return on investment. One of the first step he took was to implement IT network as an infrastructure on which other systems could run, across all 99 sites. The next step was to propose an organization wide Intranet system to enhance organizational communication and increase worker awareness of IT through using this more friendly technology, on which two functional applications were to be implemented. He was highly respected by his subordinates for his efforts and moving the IT department forward. He possessed charismatic leadership style, good organizational knowledge, professional approach to situations and worked closely with strategic management. The latter had a very strong impact on other departments as in NHS organizations the strategic management has a lot of political influence. A disagreement with Strategic Management could result in employment being terminated, or at least that was the belief. However, the IT Manager took decisions to benefit the organization more than seeking to enhance his personal support, although the personal support for him by the IT workers and Strategic Management increased. The IT department workers were clearly convinced with his ability to initiate and manage projects successfully and having a good influence on this organization, whereas strategic management admired his sense of direction and innovativeness.</p>

Table 2: Episode 1 explored