Exploring the duality of Information Technology in community health trusts

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Publisher: © Loughborough University

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Exploring the Duality of Information Technology in Community Health Trusts

by Neil Doherty, Crispin Coombs and John Loan-Clarke

Business School

Research Series
Paper 2004: 4
ISBN 1 85901 191 8
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Abstract
There are two important areas of inquiry, within the information systems domain, that are often framed as dualities. The first relates to the nature of the relationship between technological artefacts and human practices: does technology shape human practice or is technology shaped by human agency? The second concerns the impact of information technologies: does IT empower the user or is the user controlled by IT? The aim of this study is to provide new insights into the nature of these dualities by exploring the development, implementation and use of a standard software application, within a homogenous organisational sector, namely NHS Community Trusts. A multiple case-study design incorporating five Community Healthcare Trusts was utilised. The study found that whilst the information system was perceived as facilitating empowerment in two Trusts, it was felt to be reinforcing management control in another Trust; there was no significant change to the distribution of power in the other two Trusts. Moreover, the differences in outcome could be explained by the degree of ‘interpretive flexibility’ associated with each of the information systems projects: the empowerment of users was found in Trusts where the users were actively engaged in the system’s social and physical constitution.

Key Words: Empowerment; Control; Duality; Systems development; NHS; Community Trusts; United Kingdom

Introduction
The modern organisation is one arena in which the dictum ‘there is nothing constant but change’ is particularly pertinent. A key driver of this unrelenting change is the application of information technologies and systems. Information technology [IT] is now a ubiquitous and increasingly critical part of the fabric of the modern organisation, supporting its day-to-day operations and all aspects of the decision-making process, as well as its strategic positioning. It is therefore perhaps not surprising that information technologies and systems have already had a marked impact on the ways in which work is organised, allocated and ultimately accomplished. As a consequence, such technologies are also having a marked influence on the behaviour and motivation of individual members of staff. As Zuboff [1988; p.

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1 Attributed to the 6th Century, Greek philosopher Heraclitus
notes:

‘Computer-based technologies are not neutral; they embody essential characteristics that are bound to alter the nature of work within factories and offices, and among workers, managers and professionals’.

For example, the introduction of new IT applications is often associated with changes to: organisational structure [Raymond et al, 1995]; organisational culture [Doherty & Perry, 2001]; the distribution of power [Poulmenakou and Holmes, 1996]; and user motivation / working styles [Clegg et al, 1996; 1997].

Whilst there is almost universal agreement, within the literature, that the introduction of IT is associated with significant organisational change, there are differing accounts concerning the nature of the relationship. Orlikowski [1992] suggests that there are two well established, yet competing views. Many researchers have considered IT to be an ‘objective force’: a system’s functionality will have significant and largely predictable effects on the design of the organisation and the behaviour of its employees. The alternative view is that IT is a ‘socially constructed product’: IT does not determine behaviour, rather, IT is created through human agency and then it is further shaped and adapted as people interact with the technology. As Bloomfield [1995:490] puts it, the accounts in the literature differ primarily with regard to ‘the direction of causality’: does IT shape the organisation, or does the organisation shape its IT?

Orlikowski [1992] argues that these competing views of IT present a false dichotomy and that IT should be conceived as a fundamental ‘duality’: IT is both shaped through the actions of human agents and the technology will also influence the actions and behaviour of users. However, she also recognises that the balance between ‘objective force’ and ‘social construction’ can vary greatly, from project to project, depending upon the nature of the technology, the user characteristics and the organisational context. Orlikowski [1992] uses the term ‘interpretive flexibility’ to describe ‘the degree to which users of a technology are engaged in its constitution (physically and / or socially) during its development or use’. A more recent contribution to the debate concerning the relationship between organisations and technology has been provided by Hutchby [2001]. Like Orlikowski [1992] he argues that

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Whilst Orlikowski’s [1992] analysis has been reported here, because it frames her ‘duality of technology’ model, it should be noted a similar deconstruction of the literature has been undertaken by many other academics. For example, an earlier analysis by Markus & Robey [1988] distinguished between the ‘technical imperative’, whereby technology strongly shapes the behaviour of individuals, and the ‘organisational imperative’, which assumes that human agents have almost unlimited power to shape technology. In a similar vein, DeSanctis & Poole [1994: 123] suggest that the literature can be classified as coming from either the ‘Decision-making School’, where IT is viewed as the ‘causal agent of change’ or the ‘Institutional School’, in which IT is considered to be ‘an opportunity for change’. 

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technologies are ‘both shaped by, and shaping of, the practices humans use’. Hutchby [2001; p 447] argues that that the degree to which technologies can be interpreted through human agency is dependent upon the ‘affordances’, associated with a specific technological artefact. As he [2001; p 447] notes:

‘The affordances of aeroplane and bridge render available different [though sometimes overlapping] ranges of uses, and subject those possible uses to different ranges of effects and constraints’.

In this context, any specific information technology can be viewed as having a range of ‘affordances’, associated with its core functionality, which will limit the range of ways in which it can ultimately be interpreted or used.

Whilst Orlikowski [1992] has focused upon how the fundamental interaction between technology and the organisation can be conceived as a duality, other researchers have explored how the primary use of IT can be characterised as a duality. For example, Zuboff [1988] uses the term ‘duality’ to describe how on the one hand, IT can be applied to ‘automate’ the workplace ‘according to logic that hardly differs from that of the nineteenth century machine system’; in so doing it will ‘enhance certainty and control’. On the other, she suggests that technology can be used to ‘informate’ the organisation and in so doing ‘fashion innovative methods of information sharing and social exchange’. In a similar vein, Walton [1989] also recognises the 'dual potentialities' of IT. The ability of information systems to monitor and record employee behaviour make them an ideal tool to ‘reinforce a control / compliance orientation’. Alternatively, technology can be used as a tool to promote information access and devolved decision-making, and in so doing it can facilitate a move towards a more empowered, ‘commitment-oriented’ organisation.

Barley [1986] has noted that the application of identical technologies, in similar organisational contexts can result in different organisational impacts. The broad aim of this research is to further investigate this finding, by exploring the extent to which the impacts of the implementation of very similar information systems³ within a sample of community health

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³ The term ‘similar’ is deliberately used, rather than ‘identical’, because whilst the systems had a high degree of core commonality, and shared a common core of standard functions and features, there was some flexibility to make subtle changes, particularly with regard to the data captured and the design of reports. These issues are more fully addressed in the fifth section.
Trusts\textsuperscript{4}, might reflect Zuboff [1988] and Walton’s [1989] duality, with some Trusts experiencing a more control-oriented working environment, whilst others might adopt more empowered ways of working. The ‘duality of IT’ as conceived by Orlikowski [1992], and in particular the concept of ‘interpretive flexibility’ will then be used as a lens through which to examine why similar information systems, introduced into a common organisational context might occasion different outcomes. To further explore the issues highlighted above, the remainder of the paper has been organised into five sections. Section two reviews some of the basic ideas with regard to IT-induced empowerment and control, before establishing the specific focus of this study. Next, we provide an overview of the research context: the introduction of information systems within the NHS’s Community Trusts. Section four describes and justifies the research methods used. The fifth, and most substantive, section reports on the introduction of information systems at five Community Care Trusts. In the final section, we interpret the implications of our findings in the context of the literature.

**The Role of IT in Empowerment and Control**

Do workers always need bureaucratic control systems to make them comply, or can they, under the right conditions, become personally committed to organisational goals and empowered to make a more proactive contribution to the organisation? Is the exercise of power primarily a prerogative of the ‘institution’, or does it reside with the collection of ‘individuals’ who make-up the workforce [Munro, 1999: 430]? This fundamental debate about the very nature of the manager-employee relationship was brought to prominence by McGregor’s [1960] ‘Theory X – Theory Y’, and has been a recurring theme in the organisational behaviour and human resource management literatures for many years [Legge, 1995: 174-176]. The contributors to this debate have often split along ideological and philosophical lines: the managerialists extol the virtues of empowerment, whilst labour process theorists contend that, under the capitalist paradigm, management must emphasise a control orientation [Storey, 1995]. As noted in the introduction, this debate has now spilled over into the information systems literature and the aim of this section is to present a discussion concerning the potential of information technologies to reinforce a control

\textsuperscript{4} Following a reorganisation of UK’s National Health Service that began in April 1999 many of the responsibilities held by Community Care Trusts (such as, developing primary and community health services and commissioning hospital care for their local populations) passed to new Primary Care Trusts (PCT). The new PCTs are run by family Doctors and Nurses and are directly funded by the Department of Health. Consequently, many Community Trusts have either ceased to exist or their roles have been greatly reduced with many staff that previously worked for the Care Trusts now being employed by the new PCTs (D of H Press release 2002/0167). A review of the NHS’s latest IT strategy [D of H, 2002] suggests that the issues discussed in this paper with regard to Community Trusts are likely to be just as relevant for the recently created Primary Care Trusts.
orientation or to facilitate a more empowered working environment. The section concludes with a critique of this literature and a discussion of the positioning of this study.

**IT and Control**

Monitoring and controlling the complex mix of resources that make up an organization has long been recognised as one of the critical responsibilities of management [Fayol, 1949]. Moreover, since the early contributions of researchers such as Herbert Simon [1957] and Stafford Beer [1966], a rich stream of literature has evolved that promotes the role of information, systems and information systems as a means of promoting management awareness and facilitating management control. Modern information systems are viewed as an ideal tool for the application of management control as they can accurately and efficiently monitor the performance of employees and processes, in real time, and ultimately help to regulate their application [Torkzadeh & Doll, 1999]. Indeed, the general view now sees modern technology as typically associated ‘with the desire to realize and maintain control’ [Bloomfield & McLean [1993: 55]. It can be argued that managers have been particularly keen to embrace the use of IT in support of control as it allows them to automate their work processes, and in so doing, extend control over the workforce, at arms length. As [Zuboff, 1988] notes:

> ‘Information systems can alter many of the classic contingencies of the superior-subordinate relationship, providing certain information about subordinates’ behaviour while eliminating the necessity for face-to-face engagement. They can transmit the presence of an omnipresent observer and so induce compliance without the messy conflict-prone exertions of reciprocal relations’.

Many respected commentators have argued that technology is by its very nature an instrument of domination [e.g. Latour, 1992:130]. As Bloomfield [1995: 493] puts it:

> ‘Whatever the purpose or higher ideal a computer is engaged to serve, its very deployment reproduces notions of utility, use, control, predictability and instrumentality: we cannot wish to wish these aspects away’

However, there is a growing literature that suggests that information technologies enable more autonomous ways of working [e.g. Orlikowski, 1996], which presents an important counterpoint to the discourse of domination and control.

**IT and Empowerment**
It has long been argued that the attainment of competitive advantage is dependent upon the effective use of organisational resources and competencies [Barney, 1991; Hamel and Prahalad, 1994]. Moreover, it is recognised that if the knowledge and competencies of human resources are to be fully exploited, then employees must be empowered. The growing interest in empowerment was well summarised by Bloomfield & McLean [1995: 371], who noted:

‘empowerment has become a popular and alluring concept associated with ideas of emancipation, participation and the delegation of decision making’.

But what exactly do we mean by the term empowerment? There has been a multitude of descriptions and definitions of empowerment, which often emphasise different elements, but little by way of unanimity within the field [Robbins et al, 2002: 420]. However, Robbins et al [2002: 420] go on to argue that there are two ‘critical steps in the empowerment process’, namely physical changes to job structure that allow employees more autonomy and the motivation of employees to engage in such empowered behaviours. Employees will only exercise their increased authority if they feel confident and competent to do so.

If employees are to be given more autonomy to make their own decisions, within a specific sphere of activity, then they must be provided with appropriate information to support their decision-making processes [Spreitzer, 1996]. Consequently, the implementation of new information systems might act as a catalyst for the introduction of more empowered ways of working [Psoinos et al, 2000]. However, whilst the implementation of appropriate information systems might be a necessary condition for the empowerment of employees, it cannot be viewed as a sufficient condition, as the deployment of new technology will not automatically motivate employees to engage in empowered behaviours.

There is a pressing need for further work in this domain, because as Psoinos et al [2000] note, there has been ‘relatively little literature which explicitly links empowerment and information systems’. However, any researcher taking up this challenge must proceed with caution, as in practice, there is often a significant gap between the rhetoric and the actuality of empowerment [Howcroft & Wilson, 2003], and consequently demonstrating that a workforce has become empowered may be difficult. Indeed, the rhetoric of empowerment is often employed to disguise the fact that the true motivation for IT deployments is typically economic rather than emancipatory [O-Conner, 1995].

Research Focus

Whilst there is undoubtedly a rich literature in the area of IT and empowerment and control, it
can be argued that the literature tends to split into two distinct branches [Bloomfield, 1995: 419]. It can either emphasise ‘notions of control and domination’ or it can promote images of ‘progress and empowerment’. As a consequence there have been relatively few empirical contributions that build directly upon the work of Zuboff [1988] and Walton [1989] by directly addressing both IT’s potential to empower and control. One notable recent piece of research that has addressed both sides of the coin was the study by Hayes and Walsham [2000] that explored the ‘competing discourses of empowerment and control’ that arose during the implementation of Lotus Notes at a single pharmaceutical company. We also wanted to study the empowering and controlling potentialities of technology, but in contrast to a single organisation case study, we wanted to focus upon the impacts of a specific type of information system, across a range of broadly similar organisational contexts. Consequently, we needed to gain in-depth knowledge, based upon the views of the stakeholders, of whether these applications, once implemented, have the capacity to facilitate empowering or control-oriented ways of working. Moreover, our intention was to investigate the perceptions of the key stakeholders about the effectiveness of their systems, once operational. Finally, we needed to investigate the approaches used to acquire, shape and implement the systems, to determine whether the outcomes of projects, in terms of empowerment and control, were associated with different modes of interaction between the host organisation and its technology.

It was envisaged that this research would make a significant contribution by providing important new insights into the relationship between information technologies and their host organisations, as well as highlighting the role and effectiveness of information systems within the UK’s National Health Service.

**The Research Context**

The UK’s National Health Service (NHS) provides an ideal context in which to study the relationship between technology and the organisation, because the NHS is an enthusiastic investor in IT and NHS staff are generally willing to participate in research projects [Doherty et al, 2000]. The organisational context for this study was a number of Community Health Trusts, each of which had recently implemented a relatively standard information systems application. Community Trusts, at that time, were primarily concerned with ‘meeting the healthcare needs of people who live at home’ [Audit Commission, 1997: 4] who did not

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5 It has been argued that the NHS is responsible for the ‘world’s largest single IT project, with a proposed budget of £12 million over the next five years’ [Economist, 2002]
require the services provided by Acute Trusts. As such, Community Trusts provided a wide range of services, including: community nursing, health visiting, school nurses, occupational therapy, speech and language therapy and physiotherapy, to a multitude of individual patients, each with very different needs.

The specific aim of this paper is to review the development, implementation, use and impact of information systems within Community Trusts. The Community Information Systems Project (CISP) was launched in 1992, with the aim of encouraging Community Trusts to adopt information systems that could both support the information needs of clinicians, whilst at the same time acting as resource management and performance monitoring systems [IMG, 1992]. Five years later, a report by the Audit Commission [1997: 4] concluded that: ‘most Community Trusts are desperately short of data’, and this ‘undermines their ability to manage the complex range of services they deliver’. As a consequence, in the late 1990s there was a significant drive within Community Trusts to improve information management, by either upgrading existing community information systems (CIS), if these existed, or more commonly by acquiring and implementing completely new information systems.

Community Information Systems were being implemented or upgraded against the backdrop of the Government’s White Paper for health: ‘The New NHS’ [HMSO, 1997]. In a way this strategy document sent out mixed messages. On the one hand, it emphasised the need for efficiency and performance monitoring, by highlighting the need for: ‘systems to monitor, assure and improve clinical quality’ and the ‘promotion of efficiency in all areas of NHS activity’. By contrast, the White Paper also used the rhetoric of empowerment, with phrases such as ‘local doctors and nurses will be in the driving seat in shaping services’ and ‘by empowering local doctors, nurses and Health Authorities to plan services we will ensure that the local NHS is built around the needs of patients’. It was recognised that against this strategic backdrop, Community Trusts would have a high degree of discretion to design systems that either facilitated empowerment, particularly in support of clinical decision-making, or reinforced control, by emphasising performance measurement and resource management activities.

The temporal and spatial dimensions of managing Community Trusts provided a further critical catalyst for systems to ultimately reflect either an empowering or controlling emphasis. Foucault [1979] suggests that organisational power and control is often exercised

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6 It should be noted that in this context the term ‘information system’ is being used as short-hand for computer-based information system.
through the management and regimentation of time and space. The way in which Community Trusts operated made it hard for their managers to control time and space. There is the potential for Trust employees to be working anywhere within the community, at any time, as the location and timing of visits is significantly influenced by the unpredictable needs of patients, rather than the preferences of managers. The introduction of information systems was, therefore, seen as an ideal opportunity to help Trusts manage their operations across space and time. As Bloomfield & McLean [2003: 55] note in such situations the role of information systems is to help monitor and co-ordinate activities, and ‘as it were, hold everything together’. Consequently, for some Trusts the obvious solution might be to use CIS to more effectively monitor and control their highly dispersed workforce. The alternative strategy might be to provide employees with the information and authority they need to make more of their own decisions when they are working out in the community.

The Research Approach

In terms of our philosophical perspective, this empirical study can be broadly categorised as 'interpretive' as our aim was to gain 'knowledge of reality' through the study of social constructions, in particular, language and documents [Klein & Myers, 1999]. As Walsham [1993: 4-5] notes interpretive approaches are particularly helpful in 'producing an understanding of the context of the information system, and the process whereby the information system influences and is influenced by the context'. Consequently, it was envisaged that the research would generate 'relevant theoretical insights that might be useful in understanding similar and related organisational situations' [Prasad, 1993; 1405], rather than providing 'universalistic predictions and explanations about organisations'. The aim of the remainder of this section is to review the overall research design, describe the targeting, execution and analysis of the case studies.

Research Design

To gain the necessary in-depth interpretations surrounding the implementation of information systems in Community Trusts, a multiple case study approach was adopted. This has been defined as 'an empirical enquiry that investigates a contemporary phenomenon within its real life context', which 'relies on multiple sources of evidence' [Yin, 1994: 13]. Walsham [1995: 78] suggests that in the context of interpretive studies, interviews are arguably the primary data source, as they provide the:

‘best interpretations that participants have regarding the actions and events that have, or are taking place'
Consequently, the interviewing of a variety of key stakeholders was chosen as our primary data collection method. However, as Darke et al [1998] suggest that data should be collected in a variety of ways, a review of documentary evidence provided by the Trusts was also used to help contextualise and verify the interview responses. Such sources included: published articles, policy documents, internal reports and newsletters. Moreover, a review of national policy documents and interviews with two members of the NHS’s IM&T Executive provided important, additional insights into the research context.

The main focus of the interviews was an exploration of how the introduction of CIS had affected Trust employees' working lives, particularly in terms of perceived changes to the levels of worker empowerment or managerial control. In this context, empowerment was defined in terms of the degree to which the system’s implementation had been associated with increased participation in the decision-making processes and the design of working practices. A control orientation was conceived as the degree to which the system’s adoption was associated with the centralisation of decision-making, in the hands of a small number of senior managers. The interviews also explored the approaches that had been adopted to support the acquisition, modification and implementation of each Trust’s CIS. A semi-structured interview was adopted, rather than a standardised interview, because of the exploratory nature of the research and the fact that it would not have been possible to create a fully structured guide from current knowledge [Diamantopoulos and Souchon, 1996].

Poole & DeSanctis (1990) coined the term ‘spirit’ to describe the organisational values and goals that triggered a given set of structural features, within specific information technologies. The aim of our inquiry was to make interpretations about the ‘spirit’ of community information systems and whether these could be categorised in terms of empowerment or control. Our research design was judged to be appropriate for this task, as DeSanctis & Poole [1994] have noted that the person best placed to make any judgements with respect to the spirit of a system is the independent researcher, through a process of qualitative inquiry.

Research Targeting and Execution

To effectively apply a multiple case study approach, a ‘replication’ logic is required, rather than a random sampling logic. [Yin, 1994:49]. Consequently, when deciding upon which specific Trusts to target, it made sense to focus upon a group of Trusts using a common type of CIS software, to further reduce the potential for variation, and in so doing make the results of the study easier to interpret. In this respect, the results of an exploratory quantitative survey were very helpful [Coombs et al, 1999] as they indicated that one particular
proprietary software application, CISYS\textsuperscript{7}, should be targeted, as it was the most common type of community information system, among the sample of respondents.

The IM&T managers of a number of Community Trusts, using CISYS, were contacted to explore their willingness to participate in the research, and positive responses were received from these managers at five Trusts. An initial interview was conducted with each of these IM&T managers, at the end of which he / she was asked to provide supporting documentary evidence. It is important, when conducting interpretive research, to seek ‘multiple perspectives’ [Klein & Myers, 1999:77] to test for ‘conflicting interpretations’, in our case, on the use and impact of information systems at each Trust. To this end, the IM&T manager was also asked to nominate additional members of the Trust to be interviewed. Ideally, we wanted to encourage the participation of a senior manager, a clinical manager and a clinical user, in addition to the IM&T manager. As can be seen, from the breakdown of interviewees presented in Table I, it was not always possible, for practical reasons, to achieve the desired mix of informants, but in all cases, the sample reflected a range of views.

Take in Table I here

Prior to the interview, each participant was sent a letter outlining the aims of the research project and indicating the specific areas that would be explored through the interviews. Each interview was then conducted, in-situ, at the Trust and lasted approximately an hour. To enhance the validity of the interview process, the informants were asked to supply specific evidence and examples to support their assertions. In the vast majority of cases, each face-to-face interview was complemented by a follow-up phone call that was used to clarify issues and obtain supplementary information. Both the initial interviews and the follow-up phone calls were tape recorded and later transcribed verbatim. Klein & Myers [1999] argue that it is important when conducting interpretive research to set the subject matter in its social and historical context. To this end profiles of each of the five case study organisations have been presented in Table II.

Take in Table II here

The analysis strategy was based upon the three concurrent activities identified by Miles and Huberman, [1994, p10] of data reduction, data display and conclusion drawing/verification.

\textsuperscript{7} The name CISYS has been used to keep the identity of the actual system, and the UK-based organisation that developed and supported it, anonymous.
Data reduction was conducted on each interview transcript using mainly ‘in-vivo’ codes, that is codes derived from phrases used repeatedly by informants [Strauss and Corbin, 1990]. In addition, marginal remarks were used during the coding period to add clarity and meaning to the transcripts as well as having the ability to help revise and improve the coding structure. From the codes it was possible to develop a series of within case matrix displays for each Trust. The within case analysis was primarily conducted using time ordered displays, conceptually ordered displays and effects matrices [Miles and Huberman, 1994]. Following the within case analysis the displays were synthesised into a series of cross-case displays, most notably a composite thematic conceptual matrix and causal networks [Miles and Huberman, 1994].

The Duality of Information Technology

The research findings are reported in this section by presenting evidence in the form of specific examples and comments gathered through the interview process and the document reviews. The section firstly explores the extent to which the impact of the use of CIS can be characterised as a duality [Walton, 1989; Zuboff, 1988] before reviewing whether the Trust’s interactions with their systems can be explained using the ‘duality of technology’ model [Orlikowski, 1992].

Community Information Systems: Delivering empowerment or imposing control?

The evidence presented in this section suggests that in two Trusts [A and C] there was a general perception that the implementation of information systems had facilitated higher levels of user empowerment. By contrast, in Trust B the system was perceived as being an explicit instrument of increased management control. For Trusts D and E there was no compelling evidence to suggest that the introduction of information systems had either facilitated empowerment or reinforced management control.

There was no evidence from either Trust A or C that the empowerment of staff had been a significant or explicit objective of the CIS implementation, at the project’s outset. However, the potential of the information systems to empower users had been recognised from an early point in both projects. As the IM&T manager [A] noted that:

‘Changing the Trust’s culture was explicit from the time of doing the first year’s pilot and realising that we needed to radically change the way people used information and thought about information’.

In a similar vein, a senior clinical manager at Trust C noted that the information system’s
potential to facilitate empowerment had been recognised:

‘I think that halfway through the implementation, perhaps even following the pilot study, we were very aware that we didn’t want to just see it as a management tool’.

Whilst in both these Trusts [A & C] the shift to more empowered ways of working had been evolutionary, rather than explicitly planned, there was substantive evidence that users perceived that they had more discretion with respect to the management of their workloads. For example, at Trust A, a clinical user described how clinical staff had used information from the CIS to decide how they spent their time, with the result that time spent with patients had improved from 33%, prior to implementation, to 50%, once the CIS was operational. Empowerment was being manifested in a similar way at Trust C, where clinical staff were demanding specific reports to look at managing their workloads more effectively. For example, a clinical manager [C] stated,

‘The team leaders particularly, I think have felt empowered to actually say “I want a report on ‘x’”. They actually want to look at caseload management and different issues. I think a lot more people are becoming aware of how powerful information can be, comparing caseloads and things’.

There was also a strong perception at Trust A that the CIS was allowing clinical users to make pro-active changes in their clinical working practices and use their own clinical judgement in response to changing patient needs. As a progress report noted ‘reports are only useful if they force clinicians to question traditional ways of working, support team-work and enable them to justify the care they want to provide’. This perspective was supported by the following comments from informants:

‘Having greater empowerment has impacted on our clinical working practices, people are sort of, more hands on in changing or refining their working practices and that improves the delivery of patient care’ (clinical user, A);

‘Achieving user empowerment has demonstrated the value of giving clinicians access to information and by having direct access they can influence patient care better.’ (IM&T manager, A);

Whilst the outlook for greater clinical empowerment, within Trust A, was perceived to be positive, it was recognised by a clinical user that it might take time to achieve consistently across the Trust as: ‘it’s very hard to change old habits and old attitudes’. However, she was optimistic that: ‘there is now a culture of active reflection on clinical practice that makes all
clinicians more responsive to change’.

At Trust C, there was also a belief that the implementation of CIS would ultimately allow clinical staff more discretion with respect to clinical decisions as they now had ‘immediate access to patient based information’ (IM&T manager, C). However, it was recognised that they were only just embarking on what might be a long journey:

‘I think the next step is that they [clinicians] will look at what they do and I think we have started this with the reporting process. I think they will say, look, we’ve got all this information, we’ve got all this data about the way we work, we can now start to analyse it to see if there is a more effective way of working’ (IM&T manager, C).

Indeed, there were doubts raised as to how quickly more empowered ways of clinical working might be achieved. As a clinical manager [C] noted many staff would feel safer clinging to their traditional working practices:

‘Will they [clinicians] be questioning their practices, or will they just carry on doing things in the way they have for the past twenty years?’

In stark contrast to the discourse of empowerment that was evident in Trusts A and C, it was suggested that whilst the CIS at Trust B had made a significant organisational impact, it was of a very different nature. A clinical manager [B] thought that the introduction of the CIS had facilitated the development of a ‘blame’ culture at the Trust, with the staff fearing that the system would highlight any mistakes that they made, leading to reprimands or even disciplinary action. Moreover, both managers and clinicians perceived that the system was being used to control employee behaviour. A manager [B] stated that, ‘the staff do feel that the system does control them and that’s what they don’t like’ and a clinical manager [B] added that, ‘I think they [clinicians] regard it [the system] as “Big Brother” and as a policing tool’. A clinical user [B] stated:

‘when the system came in everybody felt “Big Brother” was watching you and we had to account for every minute of our time. We had jokes about having to code going to the loo and going for lunch because we had to account for every minute of every day.’

Even the more positive comments, made by the IM&T manager [B], suggested that the system’s introduction had reinforced a control orientation. She stated,

‘I think it has made them more aware that they really have to pack into a day as much as possible. I think it has made them aware of what they are doing when
they are not actually seeing a patient and that now this time is recorded that they are accountable to their manager.’

It is perhaps not surprising, that the overall reaction to the Community Information System was less positive at Trust B, than it had been at A and C. More specifically, at Trust B the system was viewed simply as a means of capturing data to provide management with a source of control information. As one manager [B] noted:

‘the staff are not driven by the need to record statistics. Their reason for being here is to treat patients and recording information is just something they do as a by-product. Having the system has made very little difference to them in terms of empowerment or anything else’.

In trust E there was no compelling evidence to suggest the system’s introduction had either facilitated empowerment, or reinforced control. However, reaction to the system had not been favourable. Indeed, it was the system’s failure to deliver more empowered ways of working that had caused disappointment and frustration with the system. As a clinical manager [E] noted ‘It’s always been feeding the beast and that has been a real frustration. Basically the clinicians feel, well, what is the point of having the system if we can’t get anything back?’ The IM&T manager [E] indicated that the clinician’s lack of interest in the system stemmed from senior management’s failure to proactively promote a culture of using information. This in turn was perceived as having a negative impact on users’ motivation and interest in using the system. The IM&T manager [E] commented, ‘if senior management aren’t interested in the information, why should the staff be?’

Similar observations were reported at Trust [D] where informants indicated that senior managers had appeared to lose interest in the system and were not willing to provide sufficient levels of financial support to make the system more useful for decision making by clinicians. The IM&T manager [D] stated:

‘The user group is frustrated by the lack of money being put into the system to run it properly and to get the data out. They would like to take it further but there is no commitment from the financial side which is a result of a lack of senior management interest.’

Informant comments in Trust [D] suggested that the CIS had simply been used to automate existing paper based data collection practices with little effort made to either empower users or give managers greater levels of control. There was a low level of interest in the system
from both users and managers and while it continued to function adequately at a technical level there were few complaints. However, a comment from a follow up phone call with the IM&T Manager was particularly telling with regard to the overall success of the CIS as he indicated that the apathy towards the CIS had become so severe that the option of dispensing with the system and returning to manual paper based data collection was being seriously considered.

Community Information Systems: Objective force or social construction?

Irrespective of the ultimate impact of a CIS implementation, in terms of the degree to which users were perceived to be either empowered or controlled, there was broad agreement amongst all the participating Trusts that they had had to work within the fairly rigid constraints imposed by the system’s functionality. As the following quotes makes clear, the CISYS system was built around the national strategy, but not all Trusts were able to work within these constraints:

‘A lot of the problems with the system were the fact that the system works using care objectives and that is not the way our community staff work. Now you might say that the system was dictating the way that nurses work but the system only reflected what the NHS was suggesting how our nurses should work so the system reflected emerging normal practice’. [IM&T Manager, Trust C]

‘The system itself is like an off the shelf system really it’s not really designed for us, and it is designed to satisfy national requirements so really you get the system, you implement it and there are not many decisions you can make on the road really. You can set up your codes and everything but the way it is set up, it is defined nationally’ [IM&T Manager, Trust D]

‘The system is certainly built on the assumption that you get a referral, you start treatments, you give some treatment and then you stop treatment. Not everybody works on this basis and if they don’t it tends to screw up the way data is recorded’. [IM&T Manager, Trust E]

Moreover, if changes to the system’s functionality were requested by a majority of Trusts, then these would often become a mandatory feature of a new software release, and would ultimately affect all Trusts using the system. As an IM&T Manager [B] noted: ‘the software company have made changes to the system and, at times, our working practices have suddenly taken a bend’.
Given this important evidence that the software was widely perceived to be an ‘objective force’, with which the organisations had to conform, it is perhaps surprising that such a variety of organisational impacts had been witnessed across the participating organisations. It is, therefore, important to explore the system’s ‘social construction’, through the acquisition and implementation process, to determine whether the detected differences in outcome can be accounted for here. The obvious difference in the approaches adopted by the two ‘more empowered’ Trusts [A & C], and the other three, was in the level of active user engagement\(^8\) witnessed; in Orlikowski’s [1992] terms, there was a far higher degree of ‘interpretive flexibility’.

Whilst informants in Trusts A and C recognised that their systems acted, at least in part, as an ‘objective force’, they also perceived that there was scope to tailor the system, particularly in the areas of data capture and information presentation. Moreover, both Trusts had explicitly used this flexibility to modify their system’s functionality, in support of their empowerment strategies. As exemplified by the following quotes, users were able to directly influence: systems’ priorities, the composition of their data sets and to ensure that reports were tailored to their needs, through an active process of user involvement:

‘I think user involvement has been important in empowering the users. I think the involvement has driven every development with the system. We have decided what is a priority in terms of what data we want on our palmtops and that sort of thing. That shows that the Head of Information and her department are listening to what the clinicians have said.’ (clinical user, A);

‘We have involved clinical staff to develop routine reports and these reports can be sent out on request.’ (IM&T manager, A),

I think we have shown a commitment to empowering users because of the way in which we have involved them in decisions about how the system is developed. We want the staff to inform the process, generate ideas and determine what information the CIS collects for their benefit as well as ours. I think that is helping

\(^8\) It should be noted that whilst user involvement was identified as being the primary catalyst for the facilitation of empowerment, at trusts A and C, it was not seen as being the only trigger. For example, in Trust C, the appointment of a ‘clinical development adviser’ was considered a key element of managing changes in clinical working practices. The clinical development adviser’s role was to ‘look at clinical issues and encourage the users to develop and improve their clinical practices’ (Senior clinical manager, C). At trust A, the critical role of training and education was also emphasised. As the IM&T manager [A] stated, ‘I’m not training them about which keys to press, I could get a technician to do that, it’s a dialogue about how they are going to be using information in the future and why they are collecting it in this way.’
encourage user empowerment. (senior clinical manager, C)

‘The pro-active, meaningful involvement of users has been a key element in developing our Trust’s information culture. We have emphasised that managers are listening to clinicians’ needs and that staff are able to influence change’. (clinical manager, C)

The general attitude at Trusts A and C was to work with the users to determine their requirements, and then to explore how these could best be accommodated. However, as the Information Manager [A] noted, even though the system had some flexibility, such requests didn’t always fall within its scope, and this ‘means that we have to do some sort of fudge’. She went on to give an example of how five data fields that were designed to keep a record of the patient’s treatment had, at the request of the user, been used for a completely different purpose, namely to store ‘the five different Enderby\(^9\) measures of outcome’.

At Trust B, the scope to modify the system’s functionality was also recognised, but it was not used to the same extent, or for the same purpose. The Information Manager [B] noted that: ‘we actually have the facility to write menus’, and went on to describe how this facility was primarily used to control access to the system:

‘We have people who just want to look, so they have a menu whereby they can’t do anything but look. We can also do that by professional group, by restricting them to a password. We can make it so that what they are looking at is purely what they’re using, and they don’t get to see all the gubbins’.

Moreover, the system’s inability to record clinically-relevant data and to produce clinically useful reports, was attributed to the inadequate levels of active user involvement. As a clinical user [B] noted the system was ‘generally viewed as not providing any information for front line clinicians’, and when asked to explain this, she noted:

‘well inevitably if somebody is setting something up for you, and you’re not involved then they might not have an understanding of how your services work, and its difficult for somebody to set the thing up if they don’t really know the sorts of things that you do’

\(^9\) Pam Enderby used the WHO’s International Classification of Impairments, Disabilities and Handicap to develop a set of outcome measures designed for specific communication disordered populations.
At Trusts D and E, in contrast to the other three, there was a view, albeit for different reasons, that, in practice, their systems couldn’t be easily modified. For example, the IM&T manager [D] simply perceived the system to be inflexible: ‘you haven’t really got the facility to tailor the system’. By contrast, the IM&T manager [E] perceived the system to be ‘infinitely configurable’, but he felt there were very strong constraints that inhibited him from exploring any of this flexibility. As he noted:

‘You have to change to fit with the system, as you don’t have the resources to change the system and can’t afford to get another one so have to do the best with what you’ve got’.

As a result of their system’s perceived inflexibility, little effort was made at Trusts D and E to engage the users in any dialogue, with regard to the system’s functionality. A clinical user [D] indicated that there had been little user involvement at their Trust stating, ‘the only involvement has been in the actual operation of the system’. A clinical manager [E] observed that:

‘Apart from the early days when the professional Heads of Services were involved, when the “Shall we do this? Shall we do that?” sort of questions were asked, its been very much, “This is what we are going to do”, rather than, “Well, what do you think?”’.

This last comment was particularly interesting, as a strategy document [E] had stated: ‘it is important that stakeholders feel that they have a part to play in information system developments, and can see the benefits from their participation’.

In both these Trusts [D & E] the lack of user involvement was considered to be having a negative impact on the system’s overall effectiveness. The IT Support manager in Trust D indicated that a lack of ongoing consultation had resulted in users feeling that the information provided by the CIS was not directly relevant to them and therefore reduced the level of interest in the system and the information it could provide. In Trust E, not involving the users was thought to be directly impacting on the effectiveness of the system through poor data quality. It was suggested by the clinical manager [E] that:

‘as the clinicians were not involved and do not feel that the data they are entering has any value or relevance to them, then they were unlikely to put great effort into ensuring the data was accurate’.
Theories that have a ‘logic of opposition’ [Robey & Boudreau 1999: 81] and that embrace ‘paradox, contradiction and duality’ [Schultze & Orlikowski, 2001: 67] can often provide novel and insightful ways of exploring and making sense of organisational phenomena. The aim of this section is to explore the extent to which theories of duality relating to the ways in which IT is used [Zuboff, 1988; Walton, 1989] and developed [Orlikowski, 1992] can provide insights into the nature of the complex relationship between technology and the organisation, in the context of Community Trusts. Community Trusts provide an ideal context for this study, because all the Trusts were broadly similar in terms of mission, structure and function, and they were all tasked with implementing a reasonably homogenous information system application. However, each Trust has some autonomy, and the strategic, spatial and temporal context in which the systems were being applied allowed for a high degree of variation in terms of the development approach and role of the resultant system.

The study has provided fresh evidence to support Barley’s [1986] finding that identical applications, implemented in very similar organisational contexts, can result in very different organisational impacts. Moreover, on the face of it, the study provides support for the assertion that information systems can be used to either facilitate empowerment or reinforce a control orientation. However, given the potential difficulties of defining, let alone measuring, empowerment [Robbins et al, 2002], it is important to subject this finding to further critical scrutiny.

There can be little doubt that the term empowerment was a prominent constituent of the organisational vocabulary at Trusts A and C, but as Asaro [2000] notes the ‘rhetoric of empowerment’ is often used to disguise the fact that the underlying motivation for introducing systems is the desire to increase managerial control. However, the evidence from the study would suggest that the concept of empowerment went beyond mere talk. At Trusts A & C there was compelling evidence that nurses and therapists were provided with more information, than the other three Trusts, relating to their patients, and given more autonomy with respect to their treatment. However, as Godfrey et al [1997] suggest the term empowerment is often too strong for what, in practice, is merely an increase in ‘employee discretion’. In the cases of Trusts A & C, there was certainly a great deal of talk of empowerment, and almost certainly an increase in employee discretion, but there must be real doubt as to whether there was a meaningful devolvement of power. Moreover, it is very difficult to judge whether the provision of more information accompanied by the authority to use it had been accompanied by a widespread willingness among the workforce to engage in
more empowered behaviours.

It is also interesting to note that even at Trusts A and C where attitudes to the newly implemented information systems were generally positive, and the frontline workers were given more discretion, they still remained under the ‘panoptic gaze’ [Foucault, 1979: 195] afforded by the new technology: the same information systems that provided nurses and therapists with very specific information provided managers with broader information that allowed them to compare and contrast the performance of their staff and where necessary take steps to regulate this. For example, as an internal report at Trust C indicated that the information system had been specifically designed to ‘monitor the achievement of the quality and waiting time identified in the Patients’ Charter’ [Document: Business Case]. Consequently, as the clinical user [C] noted, whilst attitudes to the system were generally positive, there was still the underlying feeling that ‘big brother is watching’. In the case of Trust A, control was exercised by using the information system to prescribe certain courses of action. As the IM&T Manager [A] noted, in the context of treatment regimes for leg ulcers:

‘If we are going to compare your episodes with someone else’s episodes we need to make sure you are carrying out the same treatment protocol, because otherwise there’s no valid comparison’.

At Trust B attitudes to the system were generally negative and there was a strong belief that the CIS was primarily an instrument of managerial control. However, there was some evidence that the information system’s potential to facilitate greater employee discretion was at least beginning to be explored. As the IM&T manager [B] noted:

‘I think the managers are using it less as a policing device now. Whereas before I think they thought that big brother was watching them now they can see it’s actually being used for clinical work’.

Moreover, a clinical manager [B] recognised that clinical staff would ultimately need to have more discretion, in terms of managing their workloads, to ‘ensure that their efforts are concentrated on those patients with the greatest clinical problems’.

In the literature, the potential of IT to modify the decision-making process has tended to be presented as a simple dichotomy: IT as either a facilitator of empowerment, or an instrument of control. As Bloomfield & McLean note [1995:371] there are now a familiar set of questions about the impact of IT: ‘does IT deskill or enskill, enslave or empower, is it an instrument of managerial control or does it represent the potential for worker autonomy’? Even authors
who have explicitly used the term duality in this context, have tended to emphasise the choice between two alternatives: empowerment or control [Walton, 1989] automate or informate [Zuboff, 1988]. The evidence from this study suggests that although the implementation of technology might tend to either facilitate empowerment or impose control, the impact of information systems should be characterised as a duality, as there is likely to be elements of both empowerment and control. For example, in the cases of Trusts A and C, there was greater employee discretion, but this was regulated through management scrutiny and sanction. By contrast, in Trust B, it was envisaged that once the CIS had become more established, its strong control orientation might be somewhat tempered by greater employee discretion.

In terms of the interaction between the Community Trusts and their newly acquired information systems, there was evidence to support Orlikowski’s [1992: 403] proposition that the role of technology can best be expressed as a fundamental ‘duality’ - IT is both ‘structural and socially constructed’. From the Trusts’ perspective, all of the reviewed information systems were, at least in part, an ‘objective force’ in that they had been independently developed by a software house and therefore much of their functionality was imposed on the organisation. As a consequence, there is evidence that the CIS’s functionality becomes routinised or institutionalised in organisational processes and employee behaviour. However, the significant differences in the impact of the systems, that was manifested in terms of empowerment versus control, suggested that there was also a high degree of ‘social construction’ exercised, at least in some Trusts.

Orlikowski [1992: 421] notes that where there is a significant temporal and spatial discontinuity between the design of a system and its use – as was the case in our study - the system’s ‘interpretive flexibility’ is likely to be low. However, the results of our study present some interesting new insights into the nature of interpretive flexibility, as this significant discontinuity wasn’t found to have uniformly reduced the level of interpretive flexibility. More specifically, there is evidence that the level of ‘interpretive flexibility’ varied greatly across the case studies, even though they were all designed and developed by an independent software house. It is, therefore, important to explore the possible explanations of this variability. In the cases of Trusts A and C, the degree of ‘interpretive flexibility’ was relatively high. More specifically, the empowerment initiatives in these two Trusts were actively supported through a combination of exploiting the system’s stated flexibility, where possible, or adopting a ‘fudge’, when the system couldn’t easily accommodate the desired outcome. Moreover, in many cases it was not necessary to make changes to the system’s functionality, as empowerment could be achieved through the simple expedient of allowing nurses and
therapists to have direct access to information, and to make clinical judgements and changes to their working practices, based upon this information. The high levels of ‘interpretive flexibility’ witnessed were, therefore primarily a function of these two Trust’s attitudes and objectives: the projects were very inclusive, with a wide variety of managers and users engaged in the systems’ ‘social construction’. By contrast in Trust B, ‘interpretive flexibility’ was exercised by small numbers of senior managers, and focused upon restricting access to information, and using the system as an instrument of management control. In trusts D and E, the attitude to the system was rather more ‘laissez-faire’, with limited engagement in the ‘social construction’ of the system. In summary, the message from our sample is that if an organisation has a very clear idea of what it wants from a system and it is prepared to work hard to achieve it, then flexibility can be found and exploited. By contrast, if an organisation is fairly indifferent to the introduction of a new technology then they are far more likely to perceive it as being inflexible.

In Hutchby’s [2001] terms, the CISYS offers a range of ‘affordances’, in areas such as: managing caseloads, recording patient details / symptoms, prescribing treatment regimes and monitoring resources, that can be interpreted in different ways, such that it can either facilitate empowerment or impose control. However, the flexibility of the system is constrained as it could not be used for: the interpretation of the results of scans or X rays, the scheduling of ambulances or the provision of clinical judgements with respect to treatment regimes, without completely re-conceptualising and rewriting the entire system from scratch.

**Conclusions**

The significance of this exploratory study is that it sheds some important new insights into the nature and significance of the application and impacts of information technology. More specifically, the study confirms that the development, implementation and use of a standard software application, within a homogenous organisational sector, namely NHS Community Trusts can result in a range of very different outcomes, ranging from the facilitation of empowerment through to high levels of managerial control. However, we also caution against viewing the impact of IT as being a simple dichotomy - empowerment or control – as the results of the study suggest that in practice the impact of information systems is a duality synthesising elements of both empowerment and control, even if one of the two may be dominant. Finally, Orlikowski’s [1992] ‘duality of IT’ framework has proved to be a useful lens for exploring Community Information Systems, as there is evidence to suggest that they are both in part objective forces and socially constructed artefacts.
The UK’s NHS is an extraordinarily large and complex organisation, which is still very labour-intensive. It has very strong traditions, cultures and sub-cultures running throughout, and is generally perceived as being slow to change. It is also making a very significant investment in information technology with the expectation that this will not only improve efficiency and resource management, but also inform the clinical decision-making of all health care professionals: ‘*time with patients will be spent more effectively in delivering safe, high quality care based on universally available, secure, accurate, up to date electronic records*’ [D. of H. 2002:2]. Against this backdrop, the results of our research are particularly timely, as they provide new insights into the manifold ways in which information technologies can be interpreted within NHS Trusts, and the wide range of outcomes that might be anticipated.

Research into the role of information systems, within the organisational context, is an ambitious undertaking, and therefore contains a number of inherent limitations. In particular, the adoption of the case study format reduced the number of organisations that could realistically participate and there is also potential bias with respect to the way in which these cases, and the interviewees, were ultimately chosen. Consequently, whilst the study provides many interesting and novel insights, these limitations do highlight the need for follow-up studies to be conducted that adopt different methods, and target different populations and respondents, to investigate the wider currency of the results. Of particular importance, in terms of follow-up research, will be longitudinal studies. As was noted earlier, the balance between empowerment and control is likely to be fluid, changing over the operational life of the system. The same can probably be said of the balance between social construction and objective force: at certain times the system’s use will stabilise and the system may be largely viewed as an objective force, at other times the system will undergo periods of reappraisal and revision, and it will be viewed as a social construction. The dialectic nature of these processes underscores the need for more longitudinal studies to explore how the nature of two dualities reviewed in our study might change over time.

**Acknowledgements**

An earlier, and very much less complete, version of this paper was presented at the 2003 UKAIS Conference. The authors would like to thank the conference participants for their helpful suggestions, as well as colleagues at the Business School, Loughborough University for their comments on early drafts of the paper.
References


Table I: Range of Informants Interviewed at Each Trust

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<th>Trust D</th>
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Table II: Case Study Trust Profiles

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