CONSTRUCTING AND USING A COMPANY INTRANET:

'IT'S A VERY CULTURAL THING'

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ABSTRACT

Organizational intranets are one form of a 'new wave' of information and communication technologies. They provide a 'testing ground' for where certain theories of technology and organizations meet with emerging 'innovative' practice. The paper is offered as a contribution to this debate. It develops a theoretical framework, which is used to analyse data drawn from a case study of the adoption, introduction and use of a company intranet. The analysis and discussion focus on the competing representations of the intranet presented by the staff involved.

INTRODUCTION

Both academics and practitioners have been interested for some time in the nature, contribution and implications of technology and technological change for organizational functioning and behaviour. Recently much has changed in terms of the forms of technology which have become available to and been developed by organizations, and in the resulting ways in which organizations are configured and oriented (see Laurila and Preece, 2003 for a recent theoretical overview). Much of the recent discussion and theorizing of emerging organizational forms is a response to the variety of ways in which ICTs have been deployed within and across organizations (see, for example, Castells, 2000; Barnatt, 1995; Fulk and DeSanctis, 1995).

A recent development at the level of technological and organizational practice has been the adoption and introduction of intranets, with information dissemination and intra-organizational communication being two of the most commonly espoused purposes for which they are deployed. However, on the basis of data emerging from case studies being undertaken into intranet utilization (including our own), it is clear that there is much more to the matter than this. In our own studies reported here, interviewees offered a variety of interpretations of what the company intranet actually was, let alone whether it could be said to be facilitating certain activities or outcomes for the organization. The more people we interviewed, the more elusive this technological/organizational configuration became, and the more indeterminate the organizational 'implications' and 'consequences'. A significant reason for this was the near collapse of the technology into the organization, and vice-versa, in a complex set of interactions and iterations. What we have here is simultaneous and interactive technological and organizational change, raising a number of issues about the changing nature and experience of work and organizations.

The paper is a contribution to the ideas developed above about the conceptualization of technology in its social and organizational setting, both by the actors themselves, and by organization studies analysts. Initially, it briefly outlines and explores those perspectives that were found to be the most helpful in analysing our primary data with respect to the adoption and implementation of this technology. Drawing upon some of these perspectives and our interview and other data, we then develop a theoretical framework which attempts to capture the key elements of this technological-organizational configuration. Following a methodological note, we present and analyse our case study findings. The final section is an overall discussion of our argument.

CONSTRUCTING AND USING INTRANETS

An Intranet is essentially an intra-organizational IT network, akin to the world-wide-web. It is a form of architectural technology, in that of itself it does not imply any specific uses. The latter are created and located within the enabling structure of the intranet. Thus a wide variety of applications are possible through an intranet platform (Newell et al, 2000; Newell et al, 2001). A common claim is that an intranet can be configured to act as a conduit of within-organization communication, enhancing collaboration and productivity (Wachter and Gupta, 1997). It does this by acting as a publication medium, which can be readily accessed and searched. It can also act as a medium for transactions across the organization via the page structure, providing enhanced access and ease of use, and can act as a medium of discussion and record.

So intranet technology has both wide integrative and distributive potential, and lends itself to extensive creative and interpretive flexibility as to its applications, uses, role, and thus to its organizational impact. An intranet configuration is, as a result, specific to the particular organization within which it is created, developed and used, and within a given organization intranets are designed with quite different characteristics (Newell et al, 2000). An intranet is frequently configured in such a way as to be shielded from the 'outside world'. Thus, particular organization intranet configurations will be influenced by both the relevant social, economic and political contexts and by the actions, orientations and concerns of the actors most directly and locally involved (Damsgaard and Scheepers, 1999 and 2000). It follows that the nature of the emergent configuration is likely to be open to contestation and interpretation, and may have many unexpected and unintended consequences (Newell et al, 2000).

Intranet technology can be seen as a form of 'groupware', along with similar ICTs such as Lotus Notes. As Ciborra (1996; 2000) has pointed out, the term groupware implies the distinct, but linked, attributes of group as a social entity, and ware as the material artefact. Technology, it is argued, has both a material form and is also a social construct, whereby its design, development, creation and use is the outcome of human agency. This position has much in common with Orlikowski's (1992, 1996), who draws upon structuration theory to address the complex relationship between technology as an artefact, human agents (in, for example, their designer and user roles) and the institutional contexts in which they are co-located and enacted. Correspondingly, and in reflecting upon intranets specifically, Newell et al. (2000) have recently developed a model which incorporates three linked layers of functionality and practice: (i) the 'infrastructure', that is the hardware and software; (ii) the 'infostructure', that is the formal rules governing exchanges between and sense- making by network actors; and (iii) the 'infoculture', or beliefs, values, etc., which are often taken for granted.

In order to facilitate the understanding of intranet implementation we utilise the concept of a socio-technical ensemble, 'whose component parts and their composition are shot through with and held together by social relations among people, as much as by more physical ties such as screws, bolts or electrons' (McLaughlin et al, 1999:6). This position, of course, accepts the materiality of technology, but also looks to its social design, construction, deployment and interpretation, often exhibited by the 'texts' attached to the technology. We use the ensemble concept to explore intranets and their application, and the range of texts and meanings that came to be attached to them, which can change over time in relation to the same people and vary across and within different organizations (Hayes and Walsham, 2000a).

The main theoretical perspectives informing the conceptualization of the socio-technical ensemble are social construction of technology (SCOT) and social shaping of technology (SST). (For overviews see Preece et al, 2000; McLoughlin, 1999; and for an extended case study application see McLaughlin (1999)). These approaches view technology as both artefact and social construction (see, for example, Bijker, 1995; Bijker et al, 1987; MacKenzie and Wajcman, 1999).

For those writers who take a more extreme relativist 'technology as text and metaphor' position, such as Grint and Woolgar (1997), the technological/social configuration is never stabilized and is always open to different and new interpretations or texts.

Drawing upon the above perspectives, we developed an 'intranet socio-technical ensemble' framework, which attempts to capture why, how and with what people and organizational implications, this technology was introduced and implemented into our case study organization (see Figure 1). Through the framework, we focus upon the forms into which the emerging socio-technical configuration was shaped by organizational actors (and on what bases); the emerging contests, uncertainties and ambiguities of utilization and deployment; and the texts and discourse which were employed to represent the intranet, to explain, persuade and make sense of what was happening.

[INSERT FIGURE 1 HERE]

The framework draws upon a number of strands in the literature and identifies some key linkages between the various elements of the ensemble, ie: (i) configuration malleability; (ii) shapers and makers; (iii) initial acceptability and usability; (iv) envisaging form and function; and (v) boundaries. The 'outcome' is some sedimentation of the intranet into the organization and its everyday work. 'The intranet at this stage corresponds to Heidegger's term "ready-at-hand", in which the technology disappears and becomes a natural "extension" of the users…' (Damsgaard and Scheepers 2000: 142). The elements of our framework are:

Configuration malleability

Much of the SST literature utilises and builds on the notion of 'interpretive flexibility' (Pinch and Bijker, 1987). Intranets, as argued earlier, are inherently flexible with respect to what they consist of, how they might be used, etc, yet can be seen as constrained with regard to the possibilities for their subsequent interpretation. These constraints may include perceptions of the hardware, whilst others may be conveyed by the early texts which are attached to the technology at its introductory phase. So our concern here is with how much opportunity there was, or was perceived to be, for shaping and reshaping the configuration, and what were the main dimensions and constraints to that process.

Shapers and makers

The process of IT innovation is typically untidy, ambivalent, unpredictable and contested (McLoughlin et al, 2000). Thus, the form(s) and exercise of power and control are central to the evolving configuration of intranet implementation (Bansler et al, 2000; Hayes and Walsham, 2000b). What is more, as Thomas has observed 'the choice of technology represents an opportunity to affect not only the performance of work but also the status, influence, and self-concept of those promoting change. That is, new technology may be far less attractive for what it does than for what it says symbolically about its creators and proponents…' (1994: 6). So the intranet socio-technical ensemble is socially created and shaped by the ideas, interests and objectives of, and interactions between designers, technologists, engineers, managers, users and others actors. This social shaping takes place both as the technology generically develops in inter-organizational contexts, and as it is specifically configured within particular organizational contexts. This configuring process continues as the technology is introduced, implemented and put into everyday use (McLaughlin et al, 1999; Fleck, 1994). What is more, certain actors and groups may have more opportunities than others to shape the technology-organization configuration during implementation and deployment

(Blosch and Preece, 2000). Thus it is important to know who/whom has this opportunity, what their aims are, what sources of influence they have, and what means they can and do deploy to shape the configuration. So, who are the key 'shapers and makers' here, and what, if any, is the degree of concordance of perspectives within and across the organization?

Initial acceptability and usability

In parallel with the issue of configuration malleability is the early stage of entry of an embryonic configuration into the organization. This includes the process(es) of introduction, the actors involved, and their objectives and concerns. We were particularly interested in the extent of the initial acceptability of the configuration, along with the factors which influenced this, and were alert to the discourse and texts by which this process was shaped and influenced.

A long- recognised factor in the success of technology implementation is the extent and nature of the involvement of the user. Horton et al (2001) deploy a 'Technology Acceptance Model' (based on the work of Davis, 1989) in analysing intranet implementation and usage. They argue that perceived usefulness and perceived ease of use act as predictors of intranet take up, but that the interrelationships are complex and the possibilities contingent. Thus their work reinforces the need to contextualise intranet usage within particular organizations, and emphasises the requirement to pay attention to the nature of that usage.

For us, usability involves more than simply ease of use. It also includes the level of basic literacy possessed by users, how that is developed, and how confident people are in applying that literacy to employing the technology. So key questions are how literate and confident were people in the use of the technology, and how can variations in the levels of confidence and literacy be accounted for?

Envisaging form and function

The configuration of the ensemble is influenced by the value (McLaughlin et al, 1999) that the various organizational actors, both users and non-users, expect to gain from the technology, in that they attempt to construct a configuration which will provide value to them and possibly others. A key question here is 'How is the utility of the configuration influenced and developed by practitioners, that is both the direct designers and users, and the organization at large?' What form does the configuration take, and what utility does it offer the organization and the people who have access to it?

Boundaries

Damsgaard and Scheepers (2000), in developing a multi-stage model of intranet implementation, argue that the initial introduction is a 'championing' process, but that later diffusion is dependent upon subsequently-emerging 'sponsors' (often acting as agents of other organizational interests) 'grabbing' the intranet technology from the 'champions' to shape usage and diffusion. Without this, a critical mass of usage is unlikely to emerge which is sufficient to sustain the intranet, thus it 'withers on the vine'. Futhermore, Scheepers (2003) and Damsgaard and Scheepers (2000) argue that the intranet needs to be prevented from consisting of a 'gigantic mess of information'- thus its development must be controlled. This control takes the form of the imposition of an increasing degree of standardisation and formality by management. Such a view sees management's role as significant and legitimate in setting the boundaries within which the configuration can and should develop. Some practitioners and other analysts, though, may see such an exercise of power as going against the arguments for encouraging creativity, flexibility and local shaping. So are the ensemble boundaries perceived as being open and transparent or subject to forms of control and restricted

access? Thus, for example, is the intranet seen as a means of surveillance and control, and if so, what is the response? We will return to these matters in the concluding discussion.

THE CASE STUDY

Introduction

The company is a medium-sized 'high-tech' organization-here called 'Grangers'- located on the south coast of England, which designs, develops and manufactures specialist products and sells consultancy and other services throughout the world. Grangers was born out of a management buyout of the organization, which had been one of the previous (US) owner's UK manufacturing plants, and was continuing to manufacture the same kind of product line at the times of our interviews. It was also in the process of establishing sales and other operations outside the UK. We are unable to provide more detail because of assurances we gave on anonymity and confidentiality.

Senior managers, and in particular the Business Services Director, saw a company intranet as serving a number of purposes for the recently de-merged organization:

1 It would serve to emphasize and continually remind people (employees and other stakeholders) that this was a new organization, quite separate in structural and cultural terms from the company who had previously owned it. For example, whenever the initial computer screen came up after switching the monitor on each morning, the new company's logo, with different colours, etc, would come up, rather than the one of the previous owner. With regard to employees, this was, inter alia, intended to signal to them that they were now working for an independent company, competing in the market place with other such companies, and without the support of the infrastructure and resources provided by the previous owner.

2 It would facilitate improved communication within the company and, in time (subject to later enhancements) between the company and external stakeholders.

3 It would enable employees to obtain a better appreciation and understanding of what was going on elsewhere in the organization, i.e. outside their immediate section/department, and thus facilitate collaborative working/projects.

4 In part based upon 2 and 3 above, it would encourage reflection upon current working practices and job/organization structure, which might lead to more effective and appropriate working practices.

5 Certain data could be held on the intranet which would act as the 'definitive' record (with only specified people being able to amend/alter this data), and this would now be available for all to see and draw upon as required.

The IS & Quality Manager, along with his staff, were given the responsibility by the Board of designing the shell of the intranet, along with the initial screen and other features of the original configuration; generating/obtaining and providing this infrastructure across the organization; rolling out the implementation (including not just 'hardware' aspects, but also social ones such as communication about the intranet, training in its use, generating user interest and activity); acting as a source of expertise and advise; and maintaining and developing the hardware and technical infrastructure over time. During late 1997 the organization was restructured into a number of

business units and the great majority of IS staff were allocated to the units, retaining just a small central function of a handful of people.

Methodology

The primary data was gathered via interviews, documentary analysis and participant observation. In analysing the interviews through the application of our framework we focussed upon the narratives, discourse and texts which were used, and, in particular, those which were attached to the technology. The TTM perspective offers a route into this. Since the technology cannot speak for itself, one is compelled to explore what the people say who speak for and against it, who these people are, what their background is, etc. Amongst other things, this aids the understanding of how certain actors, not least managers and IT specialists, attempt to legitimise technologically- induced organizational change, and how other actors contest such change. Our guiding concern throughout has been to attempt to provide an overview of the interconnected and overlapping comments and observations made by interviewees through a framework which draws out the key organizational and technological dimensions.

Two series of interviews were conducted, the first when the intranet first went live throughout the organization between February and early July, 1997 and the second set around six months later (in a number of instances we interviewed the same person on both occasions, thus allowing us to refer back to the views and perceptions offered during the first interview). The forty interviewees were taken from horizontal and vertical slices of the organization, and were seen individually for between 30 minutes and two and a half hours, with the majority of interviews lasting around an hour. The interviews were semi-structured, guided by a limited number of 'areas for exploration' (which were covered with all interviewees), with the interviewer always being willing to let the discussion develop along lines chosen by the interviewee. Usually just one of the authors conducted the interview, but on four occasions both authors were present. The great majority of the interviews were, with the permission of the interviewee, tape-recorded, and subsequently transcribed verbatim. The interview transcriptions were read, coded, discussed between the authors, but also with one of the IS specialists in the company, re-read and re-coded by the authors a number of times. We also had access to some company documentation relating to the intranet, and undertook a limited amount of participant observation, that is observing and talking to staff whilst they were using the intranet.

In the interview extracts below, following each quotation (or series of quotations from the same interviewee) the interviewee's role is indicated, along with either a '1' or '2'. '1' indicates that the interview was conducted during the first round, and '2' indicates a second round interview between January and March, 1998. Thus, it can be seen whether the intranet was in the process of adoption or had just been introduced at the time of the interview (1), or whether it had been in existence for a minimum of six months at the time of the interview (2). July 1st, 1997 was 'Independence Day', when the switchover was made from the previous ICT platform, called the 'VM' or 'PROFS' system. 'M' = Manager, 'D' =Director, 'IS'=Information Systems department.

Constructing, using and contesting the Granger's intranet

Configuration malleability

Not surprisingly, given their brief, it was the IS function which took the lead during the adoption stage and early introduction period in designing the architecture and configuring the intranet. This architecture acted as a constraint on what could be made of the intranet; however, if a member of staff wanted to use it for a particular application which was not currently possible within the given

architecture, IS had to be consulted, and may or may not agree to the change. As the IS & Quality manager somewhat graphically put it:

> the building fabric is provided by IS, and what you do inside the house is pretty much up to you- you can put your own carpets and curtains, but you are bounded by where the walls are. If you want to knock down a wall you have to go outside and get permission, to make sure you are not going to damage the walls so badly that your building crashes and brings down the floor above or the floor below. (IS and Quality M. 2)

There was general acceptance that this 'maintenance' function carried out by IS was necessary and helpful, and the great majority of interviewees felt that there was some flexibility for users to decide, within any given configuration, how they would use the intranet, as illustrated in the following comment of the Business Planning manager: 'I think in terms of the way people use them, they will tend to evolve cultures of use in different areas'. The intranet was seen as less constraining than the old technology, providing more room for localized shaping. The following comment is indicative (it also illustrates an awareness of the greater 'public visibility' associated with the intranet):

> I don't find it as a constraint…in the past the system was very structured-'take it or leave it'- and you just worked with that. There was very little room for flexibility, and now there is a lot of room for flexibility, and you have to think very carefully about what you are going to do. (Finance M. 2).

The redistribution of most IS staff out to the newly-created business divisions (which took place during the fourth quarter of 1997) was, according to the IS specialists, something which would have been much more difficult to achieve with the previous IT platform and its associated expertise and working practices:

> One of the areas that got decentralized into the divisions was IS …you probably wouldn't have done this last year with the systems we were on, as we had an army of VM [previous platform] people whose strength was in the collective. They all knew the one system, so to try and fragment them up would have been impossible. With the new technology we have been able to take the desk top and give it to each of the divisions with an IS person, and we have said 'That individual there is to all intents and purposes your IS man.'(IS and Quality M. 2)

So, the intranet ensemble was 'malleable within constraints', and constraints might be removed. Local shaping of the configuration was possible, and indeed was encouraged by senior management and IS specialists. The redistribution of IS staff out to the new business units, whilst unconnected with the intranet introduction and roll-out, acted in a serendipitous way to provide IS expertise locally to users vis-à-vis the continuing shaping of the intranet ensemble. But how was the intranet rolled out across the organization and what sort of related practices emerged?

Shapers and makers

As was noted above, one of the key senior management intranet objectives was for it to have a demonstration effect for all the company's stakeholders: the company was now 'on its own', and quite separate from its previous owner. To the extent that there had been a 'dependency culture' in the organization, this would have to go, to be replaced by a spirit of entrepreneurialism and focus upon winning new business. The IS & Quality manager was fully aware that:

The person who wants to distinguish this, to create a new identity away from [the previous owner]...is the Chief Executive of the company, and if he's the only one that says it looks and feels different, that's good enough for me (IS & Quality M. 1).

The Board made the IS Director responsible for rolling the intranet out across the company. Whilst the timescale set for full implementation (ie 'switchover date of July 1st, 1997) was tight, most of the people we interviewed thought this was necessary and justified:

I think the Director of IS and his group ...drove that very vigorously, with very tight timetables to make it work, and bluntly didn't take any excuses along the way. It was going to go in, you were going to be off the system by this date...And I think that was extremely important because I think it could have been just... 'Oh well, you can stay on it' (Finance and Contracts M. 2).

The IS and Quality Manager and his team acted subtly and strategically in working to get some early successes, which they knew would be spread through the organization's grapevine, and could be used as illustrations of the benefits of the intranet:

I wanted some people onside, some small wins very quickly, and picked one or two. To be honest, I have got this family [cousins] in this company- I said 'Your organization are going first, I want to be in this with you...' So we slowly got two or three of them on our side, and we educated the secretaries to try and use it (IS & Quality M. 1).

IS also used people they had identified as likely enthusiasts and disciples for the new technology ('representatives', as they called them) from the various business units to carry the message deeper into the organization, and to act as sources of local expertise and two-way communication between the users and themselves. The 'user representatives' interpreted their role in a variety of ways, and local (unit/departmental) contingencies meant that there was always the likelihood of different intranet configurations emerging:

Some of them are obviously better than others and are selling it. I mean, there are a couple of areas which I think in a year's time, if it goes the way that these business unit reps want it to go, will knock our socks off. And there's a couple of areas where we are going to have to go in and kick people, and they will do the basic minimum as grudgingly as possible. But that's life. (Quality Management System (QMS) M. 1).

Where the business unit or departmental web pages were considered to be underdeveloped (both absolutely and in relation to other web pages in the organization), this was made known to them by the central IS department. A rather more subtle form of control (cultural) was also expected to come into play:

There are a couple of areas who are not doing enough. When all the other areas have got their's in, it's going to be blatantly obvious to anybody on the site who goes into it and finds a blank page...that someone has failed (QMS M. 1).

IS had intended to take a lower profile following the implementation of the intranet and its roll- out, and this did indeed happen as pockets of expertise built up around the organization, aided by the user reps. Now the business units became the main shapers of the intranet, and practice across the company came to vary even more markedly. This was welcomed by IS and senior management, as they wanted and encouraged local initiatives and configuration. It was facilitated by, and in part a

result of the organizational restructuring. The general view was that, in relation to the intranet ensemble, 'IS has become less and less strategic in its own right and more of a commodity', [As] 'You can generate complex networks almost on a commodity basis, the real driving seat now will be because of the business units in taking the technology to where its' customers demand'.(Test Systems M. 2).

Whilst local configuration, and hence diversity and variety in terms of what was put up on the intranet, was welcomed by senior management and the majority of staff we interviewed, some staff were concerned about the loss of standardization, observing that it would be more difficult to maintain consistent and predictable practices across the organization and to take a cross-company view:

> There is the danger that they are going to go off on their own, do what's best for them, which is obviously important, but maybe be less concerned about what is good for the company as a whole, and I think perhaps the IS strategy, when it was all together in one central organization, one of the merits was that it would look across the whole company (Network Systems M. 2).

The 'pull and push' between flexibility/creativity on the one hand and standardization/predictability on the other, was a theme which recurred throughout both rounds of interviews.

Initial acceptability and usability

The initial acceptability of the intranet to employees appeared to be related to (i) whether it was seen as a radical or incremental change, and (ii) its 'usability' rating.

Some people saw and/or represented the intranet as a form of radical organizational change:

> A little while back, when I presented what we are trying to do with the intranet, in the auditorium, to the employees, I said it would be a cultural shock-wave that would go through the company, and people looked at me a little surprised, [but] I think they are beginning to realize now what was meant at the time. (Business Services D. 1)

…But other people saw it as a form of incremental change:

> It's more evolution than revolution because we were already using something like that. For a company who havn't had anything and then installed this, then I think you would find the revolution-but not within this organization...with the intranet we can go about it a little bit better perhaps...but it's a tool at the end of the day, that's all it is. (Procurement M. 2)

It clearly was seen by the people we interviewed as a socio-technical phenomenon, with the emphasis being placed upon the socio. This is captured in the following extract, which also (somewhat paradoxically perhaps) illustrates why staff rarely objected to the non-consultative mode of introduction):

> The management team in IS did a very good job in communicating the dates, the mechanisms, what it entailed, and it was of a prescriptive nature- you know, 'If you have got problems with it, shut up', like it or lump it, which I think was the right attitude because it is a very cultural thing, and if it had been deep consultation it wouldn't have worked. (Storage Systems M. 2)

The IS & Quality Manager argued that, to the extent that staff had changed their working practices, this was because they had seen the possibilities offered by the ensemble, and had then chosen to use them:

> I can choose to work completely differently, and use this as a tool, but if I do work completely differently, it won't come from the fact the tool exists, it will be somebody coming and knocking on my door and saying 'For God's sake, don't you realize you could be driving to France?' I'm a great believer in catastrophe theory type of models, and I think suddenly somebody will do something a bit different, [then] everybody else will think 'Oh, that's good', and suddenly it will take off. (IS and Quality M. 2)

Employees' views about the usability of the intranet depended in part upon their previous experience of computer technology, whether gained inside or outside this or other organizations. And what was the nature and 'sophistication' of the IT with which they were familiar? Did they have previous experience of using computer technology in the home, such as for word processing, computer games, internet access? In some cases this had come about through parents benefiting from their children's more computer literate education and deeper familiarization with the technology:

> I have started to teach myself, and my two daughters have used them [the home pc] for preparing documents, reports and so forth, and they needed to learn some of the new packages, so I bought myself some of the idiots' guides, and I got the laptop and took it home, and I would spend some time at the weekend and gradually start to teach myself.(Network Services M. 1).

Whilst the majority of the staff we interviewed welcomed the intranet, and were prepared to put in time and effort to develop 'skills-in-use', there were some employees who had reservations:

> There has certainly been a lot of friction about it, let's say unhappiness, in my group, which is no secret to [the IS specialists]...they [ie the group] have been more vocal about their concerns about the system, and feel it's being imposed, and will restrict or make difficult their job... it's not going to improve on it...so they can see some attractive aspects of the new system, but have got some underlying concerns. (Network Services M. 1).

In this particular instance, then, the intranet was not seen by the group to be as functional for their type of work as the technology it had replaced, and they attributed this primarily to the fact that they had had no opportunity to (co)shape the emerging intranet socio-technical ensemble.

Envisaging form and function

As was noted earlier, senior managers wanted the intranet to act as a catalyst in encouraging staff to reflect upon their jobs and the organization, triggering a search for new, more effective/efficient ways of working:

> Managers are trying to discover how they can think differently about their organization and the way we do things...encouraging them to show interest in other issues elsewhere in the organization. Yeh, we can encourage it by demonstrating the tools are there, you only have to sort of one click, and you are into a different world of information. I don't think we are going to force people to do that, but we can encourage (Manufacturing D. 1).

How, then, was this socio-technical ensemble going to create value (McLaughlin et al, 1999) for the organization? It was felt that staff would need to be more 'proactive' in actively seeking out the information they wanted, whilst the intranet was expected to improve the effectiveness of the information-retrieval process:

> Switch to the intranet means people will need to request information, right? So we are going to use home pages...if an individual wants to know about something, they are going to have to go out and seek it, it won't be sent to them as it was done before. (Manufacturing D. 1).

The Manufacturing Director was hopeful that this would happen and that the intranet would encourage staff to take a wider, cross-organizational perspective and responsibility:

> If the information is available, my experience is that people will look, people are anxious to learn, the vast majority. To me, that's helpful because all that does is encourage people to think differently, be aware of other parties in the organization, hopefully break down some of the divides of 'Oh well, it's their problem, not mine', a chance to see where people fit into the overall process of the business, right? It can only help in that regard...whatever borders there were or barriers between functions, it will actively break those down even further. (Manufacturing D. 1).

By the time of our second round of interviews, for some people at least, the intranet ensemble had become so immersed into everyday working life that there was a sense in which it was now not just reflecting the organization, but was actually part and parcel of it:

> We can store documents in the format that we write them, it's very accessible, it's much more friendly to use, and it's more interlinked. We've got the whole quality management system in there now, whereas previously it was a quality management system by name only, now we use it for documentation changes, for our organizational structure...it's now a real quality management system (Procurement M. 2.).

> The restructuring is trivial compared to what it would have been like before. You can literally just drag and drop a few things around and you've reflected the new organization. (IS and Quality M. 2).

Whether, and if so, the extent to which, this orderly world of documents, files and electronic linkages corresponded to what was occurring in other spheres of organizational practice, for example manufacturing the product and attending to customers via non-electronic means, is another matter.

The above extracts throw into sharp relief the question of whether, and if so in what way(s), users regarded the intranet as a tool which could be used by people in the organization (for various information capture, storage, dissemination, etc purposes), or as so fully embedded within the organization that it was now in effect impossible to distinguish between it and the organization *per se*.

Boundaries

On a number of occasions during the interviews, especially with the 'intranet enthusiasts', it was difficult to see if, and if so where, people drew a boundary between the organization and this technology; indeed, on occasions they came close to collapsing the one into the other. This is

resonant of a 'virtual organization' (Jackson, 1999; Castells, 2000; Davidow and Malone,1992; Nohria and Eccles,1992; Fulk and DeSanctis,1995. See also Woolgar, 2002). The following extract is illustrative:

> What it will actually do, it's the first time that we will ever have the running of the company so publicly available to the people in the company to understand what's going on, because they will be able to get to it, if they want to get to information, and see what the company is like and what the company does and how it is structured...its actually going to be there for them for the first time ever...I mean, there's obviously going to be some things that they're going to hide, I mean we are not going to have the finance things and the negotiations with companies, that's never going to be up (QMS M. 1).

Notice also here the recognition that certain data and information won't be placed on the intranet by senior management, despite, as we saw earlier, their and IS's encouragement to staff share information across the organization. The Business Services Director was quite candid about the equivocation here: 'You can have open access to information...but if you choose not to put certain information on there, you are not being open' (Business Services D. 2). The senior management view was that whilst staff (including middle and junior management) should be encouraged to experiment and explore, at the same time their intranet use should be monitored and controlled by themselves (i.e. senior management), IS and the business unit reps to see what they were using the intranet for and whether they were using it 'appropriately':

> We consciously decided we were going to allow people to learn, discover, explore in the short term, then rely on management to start pulling in the reins and recognizing where all these areas of potential lie within the system...understanding how to use it...and that's going to take some time. We need to make sure that we nurture these people and we identify them quickly, and that's why we are spending time educating the managers to recognize who the people are who are pushing the boundaries...and those who are not logging on, not even turning on the system and interacting with it...(Manufacturing D. 1).

There are a number of tensions here, not least whether senior management are taking a 'devolution/autonomy' or 'control and surveillance with partial devolvement' route. On the basis of the data we collected, it was the latter. Whilst senior management and IS were talking about and advocating innovative usages of the intranet, they had a view as to what was 'appropriate' and hence what was 'inappropriate' data/information, as indeed did the staff themselves:

> We have continued down a path of relative anarchy in terms of applications that can be used on the systems...I actually think we should have discipline and control over the way in which we communicate...because 'I am a computer literate person, I can create this amazing document with flashing lights and different colours', and they may in fact spend more time than they need to doing it (Test Systems M. 2).

There was some recognition on the behalf of senior management that it was difficult on occasions to make an 'appropriate/inappropriate' distinction. Given, though, that they had taken this route, certain implications for employee perceptions of the intranet, and hence their orientations towards it, followed. This ambivalence over surveillance and control was regarded by some staff as counter productive:

> IS in control of being able to turn off illegitimate use of the system if they wanted to, but I don't think they will. I mean, you defeat the object to some extent...of an open access system,

if you start trying to control it. So, apart from not having anything illegal or immoral or other such literature on it, it becomes a shame if you start limiting people's ability (Business Planning Officer, 1).

Whatever senior managers and IS staff said they were or were not doing with respect to intranet surveillance, and whether or not they actually put any such edit into practice, some staff harboured suspicions that surveillance was occurring, and this acted as a form of 'electronic panopticon' (Sewell and Wilkinson, 1992) control over what they placed on the intranet:

> My director might surf around the structure and ask simple questions, that you think 'Oh God, what's he found, what's he uncovered this time?' He can do that to his heart's content- yeh, he's very good at it, ha ha, unfortunately. (Testers M. 2).

Staff were justified in being suspicious for (as with the old IT technology) IS did have a surveillance capability:

> We had the ability centrally [with the previous IT software] to get past people's passwords and get into their own account, and it wasn't something that was widely discussed or shared...and we have retained that ability. Probably it's a little stronger on the intranet...IS centrally can actually tap into anybody's system, we have got the ability to understand what software they have got loaded onto their PC, what applications they are running, and to actually step into, you know, their environment and take a look round. So, there's a kind of 'Big Brother is watching you' from IS. (Business Services D. 1).

Notwithstanding the above, there is always the space for resistance and organizational misbehaviour (Ackroyd and Thompson, 1999), in this instance if members of staff have the IT expertise (remember that this is a 'high-tech' computer company, where a number of staff across the organization do have such expertise in depth) to evade such controls if they are so inclined:

> I'm told that you only need to be fractionally computer literate to step around it. And that's the problem we have if it's the generation that have been brought up on these machines- they just hack their way through and around a lot of this stuff. Why shouldn't they? (Test Systems M. 2).

It is one thing to have this expertise, but another, of course, to chose to use it, and it seems reasonable to assume that the inclination-and perhaps opportunity- of staff to do so will vary, both across different staff and the same staff over time (Hayes and Walsham, 2000a). As the QMS manager observed, at the end of the day, and given their wish to encourage and support experimentation, there is little that senior management and IS can do here:

> You can put down laws, but you still have got people in prison, you know, so you set down a set of ground rules and people know that they are allowed to work to, and you punish the ones that you catch. And if you do that publicly you might deter other people, but I don't think that abuse is any more than you can stop people from taking home pens...It's something that you live with and you hope you recruit the right people (QMS M. 1).

The latter part of the above interview extract takes us into the territory of 'recruiting attitude' (Callaghan and Thompson, 2002) through the recruitment and selection of employees who are anticipated to be able to both work innovatively with the technology whilst also being disinclined to attempt to circumvent the controls. Whether this is feasible in practice is another matter, as is what,

if anything (other than exhortation and/or a vicious circle of tightening surveillance and control) senior management can do about the orientation of such current staff towards the intranet.

DISCUSSION

In an earlier section of the paper we characterised the intranet socio-technical ensemble as a contested terrain (Edwards, 1979), and the case study provided a number of illustrations of this phenomena. In this concluding discussion, we draw out and discuss three key contested arenas: (i) change and its representations, (ii) form and usage, (iii) standardization vs. local shaping.

Change and its representation

Some people-the 'shapers and makers' (such as IS specialists)-represented the intranet as a radical innovation and as symbolic of 'how things have changed', and 'how they needed to change' from when the company belonged to the previous owner ('Customers will no longer see those green screens and think X' [the previous owner], as one interviewee put it). This was offered by managers as the main legitimation for the 'top-down', imposition strategy of introduction, to tight time schedules. At the same time, the intranet configuration was interpreted by others as an incremental change, and as being suitable for some people/jobs and not for others (who obtained more 'functionality' from the old technology).

Many of the staff we interviewed could only make sense of this company intranet through the evolving job and working practices which went hand-in-hand with its implementation (as one person put it, 'It's a very cultural thing'). It was seen as having little meaning for some staff (for example, those who had Taylorized, rule-bound jobs) as against others who were *expected* to be innovative. But the latter was sometimes seen to be a function of whether people *chose* to be innovative in their use of the technology, and this depended to some extent at least upon their degree of technological literacy.

Perhaps perversely the response to intranet implementation was to revert (as compared to the situation with the previous ICT) to non-ICT facilitated means of communication, for example by using the telephone more. This may, of course, have been a short-term effect whilst people were adapting. But it was viewed as a desirable state of affairs, even encouraged, by many managers in so far as email traffic is reduced and people spend more time talking to each other in a face-to-face mode.

Even after just a few months of implementation, for some of our interviewees there was a sense in which the organization, or at least a substantial part of it, had been collapsed into the intranet and vice versa, or at least this is how they represented the intranet to us. This was seen as being especially useful for external and internal auditing purposes. Others had identified some dangers here, such as the information on the web pages having not been 'validated' or being 'misinterpreted' by users.

There were indications that there may be self-serving purposes behind what people were saying through their web pages ('Look how entrepreneurial and up-to-date we are'). Change was being represented on the computer screen by some people, and not, for example, necessarily manifested by job changes or the physical movement of staff. When many IS staff were 'decentralised' to the business units, they remained at their existing desks.

Form and usage

What is available on a company intranet has much to do with how it has been set up, who has set it up, what their orientations and objectives are, and how its subsequent use has been configured. We

saw in Grangers that the IS department played a leading role in its introduction and that there was widespread acceptance that someone/some department had to design the basic 'shell' or 'engineering system' (Clark *et al*, 1988) within which all users would have to work.

With respect to the emerging configuration, there was a conflict between the wish of a number of people for some standard operating procedures and templates (for example, in order to facilitate the auditing process) and the view of others (and sometimes the same people) that one of the key benefits realizable was the encouragement of innovative activity (for example through reflection upon how jobs were carried out). Thus, for example, the intranet was seen as encouraging the sharing of data and information across the organization *in so far as* it was subsequently configured to do so-access to certain information being restricted to particular people, and some information simply not being placed on the intranet at all. A more general view was that the intranet was the 'only way to go' with ICT: some customers were requiring that Grangers link up with them electronically; some staff, especially the new graduate entrants, expected it.

The usability of the intranet for a number of people was related not only to their present job, but also to their previous experience of this and other forms of ICT, both inside and outside the organization. Their family context appeared to be especially influential in the latter case. Family connections manifested themselves in other ways too, for example when the IS Manager devoted some time at an early stage of introduction to demonstrating the benefits of the new system to selected secretaries, one of whom was a relation; it was anticipated that the secretaries would readily recognise how the intranet could be of benefit to them in their work, and hence 'spread the word'. In a similar vein, the user representatives were to a large extent 'selected' by the IS staff, a key criteria of selection being that they would be enthusiasts, and, along with the secretaries, would 'carry the message deep into the organization' (Pettigrew and Whipp, 1991).

Standardization vs local shaping

Having played a significant role in its selection and introduction, the central IS department came over time to take a lower profile with respect to intranet implementation, as pockets of expertise built up around the organization, and the business units-or at least some of them-came to be the main 'drivers' and shapers of the intranet. This was facilitated by the subsequent restructuring of the IS department, which resulted in the majority of IS specialists working directly for the business units. At the latter level, it would appear that a key reason why people were using the intranet was that they perceived that they ought to be *seen* to be doing so. Group and peer political influences were at work here, both within the business units and more widely, for example across (and in comparison with) other business units. Similarly, in their study of the use of Lotus Notes in a medical products company, Hayes and Walsham (2000b) suspected that 'young careerists' were trying to draw attention to themselves through their use of the technology, whilst the 'old stages'/non-careerists took much less trouble to input information/data. What was put up also seemed to bear a relationship to who was known/suspected to be looking. At the same time, it is important to note that some people recognized that having the facility to present information in this way for all the organization to see did not mean that the company was in any sense more 'open': the key questions were *what* information was put up (and, conversely, what was *not* put up), *why* was it put up, and what was the *quality* of that information?

All the events and contests in the arenas are linked in some way, and at their centre lies the centralization/standardization vs decentralization/local shaping issue. McLaughlin *et al* found through their case study research that "...there is considerable pressure by management to ensure that systems are 'de-localised', that is, deployed in standardized ways, precisely because this is where *they* see the value of MIS technologies lying" (1999, p.7). However, our data show that this is not necessarily or always the case. Yes, there are pressures in this direction from *some* managers, but with the kind of ICT under consideration here, other-and sometimes the same-managers also

want to encourage innovatory activity within both managerial and non-managerial jobs. There is a tension here. To illustrate, the Manufacturing Director informed us that Business Unit managers had been 'encouraged' to monitor who in their unit was using the intranet and for what purposes, including those who were using it innovatively. Senior management did not want the intranet/internet to be 'abused', such as 'glossy pictures' being pulled down. Yet, at the same time, there was a recognition that they might defeat a key objective of intranet introduction, that is encouraging innovative behaviour, if they started to issue edicts about its use and took a high-profile policing role. Nonetheless, whatever they and IS staff communicate about intranet regulation, it appears that employees will always harbour suspicions about what is going on-and rightly so! (IS, for example, do have a surveillance capability, which is used). That said, there are some highly computer-literate people in this organization, who are probably able to circumvent whatever controls and monitors are put in place- *if they so choose*.

At Grangers, then, the emerging intranet configuration represented different things to different people, was used in different ways by different people (and the same people over time), and was both shaped by and in turn used to shape a range of organizational and personal objectives and intentions. Some people were willing and able to go along with this, if not always necessarily to embrace this brave new world, whilst others did not have the opportunity to do so, or were not convinced of the net benefits to be obtained either for themselves and/or the organization.

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