INTRANET AS FORMATIVE CONTEXT: A STUDY OF AN UNDER-UTILIZED CORPORATE WEB

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Abstract

Although intranets are well-established organisational information environments, many companies experience that their intranets are left under-utilised by the organisational members. Consulting the standard management literature, it seems the strategy typically advocated is tighter management control. In this study, we examine the use of and the attitudes towards an international company's intranet. Although the respondents' testimonies seem to be in line with existing literature, advocating centrality and control, we argue this is only a superficial pattern. When the informants' statements are not accepted as facts but instead critically questioned to reveal the underlying beliefs and attitudes, an alternative view emerges. Applying the notion of formative context to the intranet, we uncover the institutionalised cognitive frames governing the actors reasoning and explain why the intranets tend to drift out of control. In compliance with previous studies of information infrastructure, we conclude that intranet management too is centred on control as the supreme management objective. Consequently, this deceptive image of the intranet as a hierarchical information environment must be replaced with a more de-centralised vision that allows intranets to harness the open-ended purpose for which the web was originally designed.

Keywords: Intranet management, formative context, strategy

Background

The pace with which the amount of available information increases in today's society is match only by the growth of the need for that information by the business organisations. Organisational members have to respond more quickly to new challenges in an increasingly complex and dynamic environment and base their decisions on a global organisational view rather than on individually based perspectives (Ba *et al.*, 1997). As a cross-organisational technology, corporate intranets were expected to address these needs and thereby become an important strategic tool. However, although intranet technology is implemented in most of today's organisations, not many seem to be taking full advantage of its potentials. Studies have shown that even multinational companies that regard themselves as technologically forward have been using their intranets only sparingly (Waddington, 1997). Reports concerning actual business value have been largely anecdotal and in addition complemented with negative reports on hidden costs and performance limitations (Scott, 1998).

Though a great deal of research has been put into diffusion and adoption of intranets (cf. Wachter & Gupta, 1997; Duane & Finnegan, 2000; Damsgaard & Scheepers, 2000), the literature does not explain convincingly why organisational members do not use their intranets. Lacking substantiated evidence, it is often assumed this is due to the intranets being poorly structured, which in turn is blamed on weak management control. However, lack of structure and control has not stopped the World-Wide Web from thriving. The absence of control and formal hierarchies is one of the design principles underpinning the Internet, and a fact that has contributed significantly to the popularity of the media. How can a design feature that has promoted use on Internet be a cause of failure for intranets? Based on an empirical study of why the intranet at an international organisation was not used to the extent that management had anticipated, we present in this paper a critique of the prevailing "structure and control" information management strategy and adopt the notions of formative contexts to suggest alternative interpretations.

The paper is organised as follows. In the next section, we shall introduce Ciborra's (Ciborra & Hanseth, 1998; 2000; Ciborra, 2000) notion of information infrastructure as formative context as the theoretical foundation from which to discuss intranet

implementation and use. Thereafter we specifically review and criticise the streamlined information management strategy advocated in previous intranet research. Section four then describes the research site and the method used before we in section five account for our empirical data, which is based on interviews with members of an international organisation. In the concluding discussion in section six, we discuss this data in the light of formative context and draw out the implications.

Views on Information Infrastructure

Infrastructure as a concept in corporate contexts surfaced in the 1980s in relation to the emerging large corporate information systems. The concept of infrastructure was used to emphasise the standardisation of systems and data throughout the organisation as a way to ensure at the same time centralisation of IS resources and distribution of applications (Ciborra & Hanseth, 1998). When we choose to speak of an organisational intranet in terms of infrastructure, we realise we invite critique. Dahlbom convincingly argues that the notion of infrastructure does not fit the information society very well. Infrastructure denotes a stabile foundation, a common (expensive) resource, and a standard for business activities. In contrast, information technology is a flexible means of communication, a (relatively) cheap resource that opens for competition rather than cooperation, and an adapter technology that makes standards obsolete. Therefore, we should not re-define the term infrastructure to better fit the information age, but abandon the notion altogether, Dahlbom concludes (Dahlbom, 2000). Although agreeing with Dahlbom, we yet see at least two good reasons for discussing intranet management from an infrastructure perspective. Firstly, the industrial society still has a profound impact on today's organisations and their management. As we shall argue, it is likely that their (mis)understanding of the infrastructure concept is what causes the problems noted with organisational intranets. Secondly, we would like to apply and benefit from the extensive work on information infrastructure presented by Ciborra (who shares Dahlbom's view of information systems as socio-technical networks), which we believe provides useful analytical constructs that help us identify and make salient the causes of those problems.

In this article, we use the term infrastructure in the way Ciborra and Hanseth do, and hence see infrastructure as an installed base that more often than not is *out of control*, i.e., it does not readily lend itself to management but lives a life of its own. Infrastructure, it is argued, is in itself a powerful actor, influencing its future extension, size, and form. The installed base form new standards outside the scope or control of individual actors such as management. What starts as a small and insignificant addition to the installed base may, if it works well, receive enough positive feedback and generate enough interest to become a *de facto* standard. Once a critical mass is reached, competing technologies automatically dies, even if technologically superior (Ciborra & Hanseth, 1998). Under these conditions, infrastructures should not be managed using the managerial principles traditionally applied in the industrial society, i.e., rational, human control, but cultivated as actors in a socio-technical network (*cf*. Dahlbom & Janlert, 1996; Latour, 1991).

The view of social and technological components as actors with their own internal lives, linked together in networks, is generally referred to as actor network theory (ANT). From this perspective it is held that it is necessary to study technology and humans not in isolation but as heterogeneous networks (Ciborra & Hanseth, 1998). Ciborra introduces the notion of *formative context* to denote the set of institutional arrangements and cognitive imageries that the actor brings and routinely enacts in work (Ciborra & Lanzara, 1994). Infrastructures, it is argued, can be understood as formative contexts, where the tension between technology inscriptions and the process of translation causes the installed base to "drift": the way infrastructures are implemented and used seldom corresponds to the originators' plans and visions, and the design process often develops beyond the intention of the actors (Ciborra & Hanseth, 1998). The two constructs used above; inscription and translation, Ciborra borrows from ANT. Inscription denotes the way technical artefacts embody patterns of use and define the roles to be played by users and infrastructure. Translation refers to the social process of continuous negotiation between actors in order to achieve social order. As actors enter the field with different interests, they need to translate, i.e., re-interpret or re-present, others' interests and align them with their own.

The Web and its Management

Following a thorough review of the academic literature on infrastructure management, Ciborra concludes that one of the basic tenets is the centrality of control. The literature unreflectively argues in favour of aligned, rigid, and highly standardised information infrastructures (Ciborra, 2000). Analogously, we notice that the literature on intranet management carefully follows the path set out by the infrastructure management discourse. For instance, Hinrichs (1997) concludes that the ability to effectively manage the intranet is one of the most significant factors to successful development. Curry and Stancich (2000) similarly argue that intranets "must be well managed and planned, not allowed to evolve merely in an *ad hoc* manner, which can too often be the

case" (*ibid.*, p.250). A third example comes from Damsgaard and Scheepers (2000), who claim that intranet content and use must be controlled via standardisation and formalisation. Unless procedures and routines are established and enforced, the intranet will collapse, they argue, and therefore must rationalisation and management control be the superordinate goals.

In this paper, we question the appropriateness of these advices. Whilst most of previous IS environments were designed by and for the hierarchical organisations of the industrial society, the web, which deliberately was designed to break with bureaucracy, signals the advent of a new paradigm. What propelled the creation of the web was the observation that work and information flows at CERN were nominally organised into hierarchical management structures whilst the actual interactions needed to get the job done showed more resemblance with a web of evolving interconnections (Berners-Lee, 1989). In Berner-Lee's view, the traditional information systems in use did not model what went on in the real world, and he therefore deliberately designed an environment which would be less authoritative and more open-ended. The web is thus not a "given" technology created for a specific and static purpose. Instead, the web should be understood as a multi-purpose and highly dynamic technology, which is shaped by the organisation hosting it (Lyytinen *et al.*, 1998; Damsgaard & Scheepers, 2000). Is it then, we ask, useful to uncritically apply the same set of managerial principles to the web as were previously used to manage hierarchical systems? We think not, and instead see the inability to realise that not only should the rules be applied to a different system but the rules themselves should be re-evaluated as a case of single-loop learning. We shall argue that the voices heard in section five illustrate how the principles underpinning the web clash with the information governance strategy advocated in the industrial organisation, and that this tension causes the intranet to drift into something that nobody wants.

Research Site and Method

To illustrate how web technology inscriptions conflict with industrial management principles, we shall present a few accounts from Volvo Car International (VCI) – a fully owned subsidiary of Volvo Car Corporation and a multinational company who has been struggling with their intranet. At the time of our inquiry, VCI had approximately 1,100 employees worldwide, 51 of which worked at the head office in Göteborg, Sweden. VCI begun its operation in the early 1990s with the objective to discover and establish emerging markets outside Sweden, primarily in the Eastern (containing the Middle East, the Baltic States, and North Africa), Southern (Australia and the Pacific region, South Africa, and Latin America), and Asian (China, Korea, and Malaysia) markets.

VCI is part of an industrial organisation that for almost twenty years used email to distribute information through chains of command. This push-based model made the organisational members used to being fed the information needed for their job. A shift towards a pull-based model was initiated in the mid 1990's when VCI started building their own intranet. The first few years of work was characterised by enthusiasm and the intranet was populated without much control. In the three or so last years, however, VCI has pursued a more systematic strategy to its intranet development, but despite applying tight management control, the intranet has not become an integrated part of everyday work.

This research was initiated by VCI to investigate why the intranet was not used to the extent management had hoped for. Management at VCI initially provided us with list of people who we could interview but since this list contained mostly upper level managers we felt that in order to get a more nuanced picture, we had to include people from other organisational levels as well. We conducted 21 open-ended interviews with respondents from three categories: Upper level management based in Göteborg (6 interviewees); other personnel in Göteborg (6), and; personnel located outside Sweden (9). The last category contained both managers and non-managers, and these interviews were for practical reasons conducted over a telephone line. Once transcribed, we carefully analysed the data trying to identify the individual and organisational assumptions underpinning the responses. These assumptions were then traced back as being either inscriptions or translations, and further analysed to see how it affected intranet implementation and use.

Intranet Use at Volvo Car International

The establishing of an intranet initiated a shift in information policy from push to pull. Instead of having the information sent to them, the employees were now supposed to find it themselves on the intranet. The upside of this was that it put the user in control:

[A]   *"It's more and more so that we have to search for information ourselves. I think that's good. Then you have no one to blame but yourself if you, at the end of the day, are not in the know"*

The downside is that the web – unlike email – is quiet; it does not signal that new information is available. This places higher demands on the users, who has to be more active. The shift from push to pull is thus a shift from passive reception to active searching. This means that the employees must start to reflect upon their information needs in ways not needed before. Previously, information was pushed onto everyone, and although this caused a lot of frustration in form of information overload, it was convenient and the users did not risk missing anything

The VCI intranet is characterised by a standard management strategy of control and centralisation. This is illustrated by the fact that VCI's homepage – a page intended for an international company's international audience – contains a picture of the VCI head office in Göteborg; a building only a fraction of the employees has ever set foot in and a place that most probably cannot relate to. The homepage also contains organisational charts and other semi-static items, further reinforcing the connotation of hierarchy and central authority. Many of the respondents are unhappy with this situation and comment on it frequently during the interviews. A majority of the interviewees actually see little reason for visiting the intranet site.

[B] *"The homepage changes too seldom for me to actually go in and read it… It should be updated constantly– every day. Otherwise, why would anyone read what it says? Obviously, there has to be permanent archives somewhere, where you can go and get the information that doesn't change as often – stuff such as organisational charts and that kind of information. But information like that doesn't need to be on the front page, as it is now."*

Responsible for updating and maintaining the information are a small number of web editors, centrally located in the Göteborg office. Whilst they provided the content, a group of technical consultants make it appear on the intended pages. In addition, employees in cities other than Göteborg and countries other than Sweden can send in material from their local offices to these web editors for approval and editing. When interviewing some of these editors, it becomes evident that they are truly concerned about keeping the remotely situated employees up-to-date. The information staff members see it as their mission to deliver meaningful and relevant information to *every* part of the organisation, but knowing what information is required in other parts of the organisation is a non-trivial task. One member of the information staff explains:

[C] *"We need to give our users with a meaningful picture of the whole pie, using the intranet. But how shall we be able to provide a picture that is relevant to each individual employee? This puts much higher demands on interactivity – we need to know what is happening in different parts of the organisation".*

The central information staff members realises that they need the co-operation of the remote users to be able to deliver relevant information but the thought that the remote users might be able to add this information themselves never seem to have occurred. Information has to be sent in to the central site before it can be redistributed again. This routine makes web publishing a lengthy process. Most people do not even know whom to contact, so instead of sharing their information with the entire organisation via the intranet, they relapse to informing a small group of presumably interested people by email.

When it comes to sharing information, exchanging knowledge, communicating corporate visions, and fostering a sense of organisational cohesiveness and a common spirit, face-to-face interaction is the most important communication medium and a channel used frequently within the Göteborg head office. However, in global organisations it is not always feasible or possible to meet physically. Many respondents pointed to the intranet's ability to reach across borders and time zones and thus incorporate organisational members who would otherwise be marginalised. Nonetheless, the intranet contains mostly *formal* information, edited and approved by the Göteborg staff. People in close proximity to one another are able to share also *in*formal information, which never show up on the web. This creates a problem for the remote users, as one Göteborg manager observed:

[D] *"At our information meetings here [in Göteborg], we can provide our co-workers with the bigger picture. In that way, you get a sense of belonging… But the further out in the world you go, the harder it is to feel that you're part of the whole picture. If you're in Göteborg, you get so much by informal means […]. But it's not like that if you're sitting in Sydney or Kuala Lumpur."*

During the interviews, the respondents repeatedly point out that, in order to encourage and promote intranet use, the information and material made available must be useful in their daily work tasks. Though the VCI intranet contains organisational charts and company visions, these items are not useful on an operative level. When carrying out the everyday tasks, a completely different sort of information is needed. This can include also small things such as updated office addresses and telephone numbers, correct company logos in different formats, and online forms for ordering business cards and other stationary items. At VCI, this

information is not available on-line, and, accordingly, most respondents do not regard the intranet as their primary information-seeking source.

[E]   *"If I was looking for information about something, I would talk to my colleagues and find out where to obtain it. Or I would ask my secretary, or have her set up a meeting, or a phone conference… that sort of things. But I wouldn't use the intranet"*

Had this manager's colleagues published their information on the intranet, he would have been able to find it there, but they do not – and he knows that. They are not members of the information staff in Göteborg and hence they do not make their information available electronically.

Many respondents testify that the usefulness of the web depends not solely on information. For the web to be a truly useful everyday tool, it has to include applications and services that assist the users in accomplishing their tasks. Traditionally, information systems are designed for one sole purpose and although drifting occurs, such side-effects are unintentional and possibly unwanted. The idea is that the system is in control. Whatever the sole purpose of the VCI intranet is, many employees find it not useful. One of our interviewees confesses that he never starts his browser while at work because he does not consider the intranet being value-adding. However, when he gets home he uses his Internet connection to carry out tasks that otherwise would have taken him much longer. Suddenly, the technology *is* adding value.

[F]   *"I have the same equipment at home and I use it to pay my bills. It's almost fun to get bills nowadays. It's such a fantastic instrument. It's like I have overcome some threshold in using it – now the tool is serving me […]. Before, I never had control over the system – it had control over me."*

The web is an open-ended and malleable technology, where control is distributed and shared amongst all actors. However, when used *inside* organisations, this trait is deliberately repressed. When people start to realise the potential benefits of the technology – possibly by using Internet services – they begin to expect – and look for – the same things on the intranet. At the same time, our accounts imply that the respondents expect the structure and the standards of the intranet to differentiate itself from that of the Internet. Often, they conclude that not being able to find what they need is due to the intranet being poorly structured. Consequently, the respondents – managers and employees alike – advocate a centralised and standardised strategy for web publishing, which would guarantee strict adherence to guidelines and policies. The need for a variety of information providers is acknowledged, but the general understanding is yet that not everyone should be allowed to update the intranet directly. Instead, the respondents suggest that information should be organised and collected on different organisational layers, and by canalising all material through a small set of gatekeepers with sufficient training in corporate information policies, the quality of the information would be guaranteed:

[G]   *"I've recently asked permission to publish things on the intranet myself. It is such a bottleneck having to contact someone else about my work. I think every department should have one person responsible for putting things together. But there still needs to be someone who has overriding control and responsibility for the site and makes sure we stick to the general guidelines and adhere to Volvo standards."*

The respondents routinely subscribe to the belief that stricter adherence to standards and tighter control mechanisms will result in more relevant and better updated information. Exactly how this is supposed to happen, however, remains unclear. When collecting and compiling the respondents' testimonies, the emerging picture reveals conflicting goals, incompatible requirements, and contradictory statements – sometimes even from the same respondent. In the next section we shall discuss the causes and implications of these tensions.

Concluding Discussion

When seeing the intranet as a formative context, we pay attention to the institutional arrangements and cognitive imageries that are routinely enacted in work. At VCI, the formative context finds expression in the belief in central authority, which is projected onto the intranet. However, the web is a medium that rejects the dichotomy of a centre and a periphery, and the tension caused by this technology inscription brings about a translation process of re-establishing a common understanding of the situation. As a consequence of this negotiation, the intranet starts to act on its own in a way that results in an implementation that was not planned or foreseen at the outset. The tensions between the central and the remote, between static and vivid, between control and liberation that we have seen in the above text, suggest that we are facing a problem more complex than the literature leads us to

believe. For us to better understand how to turn the intranet into a strategic tool, future research should show a healthy scepticism towards the standard management literature and critically seek alternative interpretations.

Web technology is silent technology and by only providing *access to* information the intranet inscribes its own passiveness. Whilst the email inbox alerts that there are so-and-so many unread messages, the intranet does not demand the users' attention, and consequently, the users leave it unattended. The shift to pull-based information management pre-supposes active users, as quote A indicates, but the technology used to implement the transformation instead makes the users more passive. The irony is that whilst web technology tends to make passive the users, they expect the media to be kept up to date. As we learn from quote B, the users demand a frequently updated intranet, but who is suppose to add the information? The distributed nature that is inscribed in the technology is partly put out of play. Even when the central information staff discusses the necessity of involving the periphery, as in quote C, their talk of interactivity implies *another* media – telephone or email – but not to the web itself: to keep the intranet updated, people must first make a phone call or send an email. This translation further deactivates the intranet as a communication devise, quite contrary to the organisation's intention.

The vertical information sharing policy implemented at VCI shows itself in the central information department owning the intranet. They are expected to provide not only guidelines and policies but also the actual content. Being at the centre, they seem to believe they are better equipped to cater for the employees' information need, since they also have access to so many informal sources. However, quote D illustrates that "the whole picture" equals the central picture. One would imagine that people at remote sites also receive much informal information – *local* informal information – but that does not seem to count; it is tacitly assumed to be unimportant. When the Göteborg office exaggerates their own importance and marginalises that of the remote sites, it again suppresses the decentralising forces the web was suppose to unleash. The web meant to invite everybody to contribute by adding their own links and content. However, most actors do not utilise this possibility due to the institutionalised arrangement the formative context enforces. Organisational members routinely and without reflecting assume that information has to come via official channels and not from their peers or from themselves, and consequently they do not expect to find the sort of information they or their peers posses. Quote E testifies that rather than using the intranet, they would go talk to someone.

Only when leaving the intranet and the mental restrictions the corporate environment erects can people start to understand how multifaceted the technology is and what opportunities await them. Quote F shows that when allowed to experiment freely on the Internet, users can start to make things happen rather than have things happening to them. Being empowered in this way, i.e., to be put in control, is appreciated although it conflicts with the statement in quote G that there has to be management and control. However, these conflicts are often between what the users claim to do and what they actually do. The control mechanisms called for are in fact what causes the bottleneck they complain about. Rather than being a prerequisite for a useful intranet, which both the respondents and the literature assume, the pre-occupation with control is part of an organisational culture and a formative context that causes the intranet to drift from a creative chaos such the Internet to a marginalised electronic bulletin board.

In this article, we have argued that the common assumption that corporate intranets need to be tightly and centrally managed in order to be useful should be questioned. However, the control paradigm is firmly grounded in today's industry and the attitudes surfacing in this study are not unique to the VCI but typical for companies with a strong industrial heritage. The power of the formative context makes breaking free of what Ciborra and Hanseth (2000) refer to as the "vicious circle" a non-trivial task. This is particularly so when management is not motivated, interested in, or culturally ready for the implications of a more relaxed attitude towards intranet management. Nevertheless, returning the initiative to the users is what most likely would propel intranet usage. Instead of requiring a hand-full of content providers to understand and anticipate the information needs of the employees, the individuals should be empowered to decide for themselves what they need in order to fulfil their tasks. The organisation's job should be to provide powerful applications permitting individualised searching, filtering, and tailoring of the information and the interfaces towards it. A future where the intranet would be a natural part of the daily work would therefore need to put the end-user in charge.

References

Ba, S., Lang, K. R., and Whinston, A. B. "Enterprise Decision Support Using Intranet Technology", *Decision Support System*, 20, 1997, pp. 99-134.

Berners-Lee, T. "Information Management: A Proposal", CERN, March 1989. Available on the web at: **http://www.w3.org/History/1989/proposal.html** (May 7, 2003)

Ciborra, C. "A Critical Review of the Literature on the Management of Corporate Information Infrastructure", in Ciborra *et al*. (eds.) *From Control to Drift*, Oxford: Oxford University Press, 2000, pp. 15-40.

Ciborra, C., and Hanseth, O. "From Tool to Gestell", *Information Technology and People*, (11:4), 1998, pp. 305-327.

Ciborra, C., and Hanseth, O. "Introduction: From Control to Drift", in Ciborra *et al*. (eds.) *From Control to Drift*, Oxford: Oxford University Press, 2000, pp. 1-11.

Ciborra, C., and Lanzara, G. F. "Formative Contexts and Information Technology: Understanding the Dynamics of Innovation in Organizations", *Accounting, Management and Information Technologies*, (4:2), 1994, pp. 61-86.

Curry, A., and Stancich, L. "The Intranet – An Intrinsic Component of Strategic Information Management?", *International Journal of Information Management*, 20, 2000, pp. 249-268.

Dahlbom, B. "Postface: From Infrastructure to Networking", in Ciborra *et al*. (eds.) *From Control to Drift*, Oxford: Oxford University Press, 2000, pp. 212-226.

Dahlbom, B., and Janlert S. *Computer Future*, Göteborg University, 1996.

Damsgaard, J., and Scheepers, R. "Managing the Crises in Intranet Implementation: A Stage Model", *Information Systems Journal*, (10:2), 2000, pp. 131-149.

Duane, A., and Finnegan, P. "Managing Intranet Technology in an Organizational Context: Toward a 'Stages of Growth' Model for Balancing Empowerment and Control", in *Proceedings of ICIS 2000*, Brisbane, Australia, 2000, pp. 242-258.

Hinrichs, R. J. "Intranets: the New Internet", *Windows Magazine*, October 1997, p. 47.

Latour, B. "Technology is society made durable", in Law (ed.) *A Sociology of Monsters. Essays on Power, Technology and Domination*, New York: Routledge, 1991, pp. 103-131.

Lyytinen, K., Rose, G., and Welke, R. "The Brave New World of Development in the Internetwork Computing Architecture (InterNCA)", *Information Systems Journal*, 8, 1998, pp. 241-253.

Scott, J. E. "Organizational Knowledge and the Intranet", *Decision Support System*, 23, 1998, pp. 3-17.

Wachter, R. M., and Gupta, J. N. D. "The Establishment and Management of Corporate Intranets", *International Journal of Information Management*, (17:6), 1997, pp. 393-404.

Waddington, P. *Dying for Information – An Investigation into the Effect of Information Overload in the UK and Worldwide*, London: Reuter Business Information Ltd., 1997.