Making Sense of Ambiguity in IT-Adaptation

An Interpretive Case Study of First Class in Social Services

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Abstract

This paper explores how people make sense of ambiguity caused by newly introduced information technology in organizations. A better understanding of these sensemaking processes might provide research as well as practice some basis for improving how information technology is adapted in organizations. On the basis of an interpretive study, the paper identifies how certain attention-structures facilitate as well as restrict how IT is constructed meaningful in a particular organizational context – social work. In this context, previous experiences of how IT-introductions have coincided with increasing administrative workload had considerable implications on how First Class was adapted. At a general level, it is concluded that resolving ambiguity is an important ingredient in successful IT-adaptation.

Keywords: ambiguity, interpretive case study, IT-adaptation, sensemaking.

BRT Keywords: AE, DD, GA

1 Introduction

Over the years, the primary concern of social work has been the economic and social security of disadvantaged people. Among the possible means with which to accomplish this concern, technology has played a relatively minor role in shaping what have become today's social services. Consider, for instance, that it is only during the last ten years that computers have entered Swedish social services departments. As social services has become increasingly complex to coordinate, however, quite a few Swedish social services departments experience an emerging need for information infrastructures supporting electronic communication. These social services departments feel that electronic communication might be one alternative among several to support the handling of this increasing complexity, as they perceive how the typical client investigation involves a growing number of circumstances relevant for assessing the particular client's needs. To be sure, it has become increasingly important for social services departments to communicate both internally and externally to grasp the whole picture of their clients' life situation.

On the basis of an interpretive case study (Klein and Myers, 1999; Walsham, 1995a), this paper explores one Swedish social services department's attempt to adopt an electronic communication technology in social work. The specific information technology introduced was First Class, which is a client/server system developed by

SoftArc Inc. that integrates email with group conferencing, real-time discussions and on-line communications. As can be expected from IT-introductions in large organizations (c.f., Hanseth, 1996), First Class was added to an installed base of applications, including standard off-the-shelf applications such as word processors and spreadsheets, but also more social work specific applications such as client register programs and a network of governmental databases.

As often happens when new information technology is introduced, First Class was initially attributed many different meanings by the staff at the investigated site. In parallel, the system was attributed the role of making the social worker an active information consumer, enabling vertical integration, establishing the learning organization and supporting the relationship between the department and the citizens. It showed out that this ambiguity was an important starting-point of actually making the new technology meaningful in social work. Building on Weick's (1979; 1995) thinking, this paper explores how the initial ambiguity about the role of First Class was a necessary component in making the new technology sensible and meaningful for those involved. The story gives no clear-cut answers, however. Exactly what meanings, and how these meanings come about, vary between situations. To be sure, even in cases where the same technology is adapted, different assumptions are formed (Orlikowski and Gash, 1994), different meanings are attributed (Lee, 1994), and, consequently, different outcomes evolve (Ciborra, 1996; Orlikowski, 1996a; Orlikowski and Hofman, 1997). Despite contextual differences, however, there are some general problems seeking answers here: How do sensemaking processes affect the outcome of IT-adaptation? How can ambiguity be managed for making the most out of IT-adaptation? On a general level, the answers to these questions can generate a better understanding of how IT becomes meaningful in practical day-to-day activity. On a practical level, such an understanding might become crucial for anyone wanting to manage IT in an economy of on-going development of new routines and transactions.

This paper is structured as follows. Section two explores what the literature offers for understanding how to successfully resolve ambiguity in IT-adaptation. Section three presents the case study of First Class in social services, while section four outlines an analysis of what happened, in order to present some implications for both practice and research.

2 Making Sense of Ambiguity in IT-Adaptation

The last few years, increasing attention has been paid to interpretive IS research (Walsham, 1995b). One might suspect that scholars as well as practitioners have begun to recognize Orlikowski and Baroudi's (1991) call for a plurality of research perspectives. This call asserts that the interpretive perspective (as any other perspective) is both valid and fruitful as long as researchers understand the implications of their chosen perspective. One such implication can be described as the presumption that reality is a product of social action (see e.g., Berger and Luckmann, 1967, Pinch and Bijker, 1987). For the IS researcher interested in understanding information systems in cultural and social contexts, this implication directs the research focus on people's assumptions, beliefs and desires. Subscribing to this focus, this paper investigates how ambiguity in the assumptions and beliefs held by organizational actors played a significant role in the process by which First Class was adapted and re-adapted in a Swedish social services department. Before attributing attention to the details and subtleties of the case study, this

section provides a theoretical assessment of prior research useful for understanding this topic.

2.1 What is Ambiguity and Why does it matter?

Going through the literature, one can see that ambiguity is generally referred to as a situation of unclear nature. Not often defined, ambiguity seems to be prevalent in organizational aspects such as decision-making (Ghosh and Ray, 1997), knowledge-intensive companies (Alvesson, 1993), leadership (Denis et al, 1996) and organizational choice (March and Olsen, 1976). Considering that all these aspects are important themes of the use and development of information systems, the relative absence of studies explicitly studying the role of ambiguity in IT-adaptation motivates a closer examination of the issue. What is ambiguity, then, and why does it matter?

This paper starts from Weick's (1995, p.92) assertion that ambiguity, in contrast with uncertainty, cannot be resolved by more information. The experienced problem in case of ambiguity is rather that there are too many different interpretations of the same phenomenon. As a result, the co-existence of these interpretations makes it difficult for organizational actors to relate the phenomenon to his or her every-day working life. Orlikowski (1996b) provides an illustrating example of this in her case study of a large management consulting firm's (Alpha) attempt to adapt Lotus Notes to their specific organizational context. Confronted with ambiguity triggered by the new technology, people at Alpha constructed interpretations of this yet distinct but unknown object called Notes, as a way to understand its meaningfulness in their on-going projects and practice. "Big email", "new version of 1-2-3", "word processing power into spreadsheets", "database" and "network" were all different initial interpretations of the groupware technology. Over time, and with more experience, the initial ambiguity was resolved into a more solid and consistent interpretation of the meaning of Notes for this particular firm. In a process where persistent cognitive and structural elements were involved, Lotus Notes turned out as an individual productivity tool, despite initial intentions to create a system for knowledge sharing between individuals.

What can be learned from the Alpha-case in terms of ambiguity and IT-adaptation? Orlikowski suggests that it is considerably important that users understand the premises underlying groupware so that they more accurately can interpret the usefulness of this collaboration technology. Indeed, one way to accomplish this understanding would be to articulating the visions behind the technology introduction better. Learning from Orlikowski's own case, however, the forces at play here in forms of norms and value systems supporting individual behavior cannot be easily suspended by a collaboration technology, whatever well-communicated visions there are behind its introduction. Any IT-adaptation process seems to be guided by several organizational forces directing what organizational actors are alert to. But, what are the mechanisms underlying attention and ambiguity in IT-adaptation?

On the individual level, the practical problem for any organizational actor involved in IT-adaptation is to figure out how a new technology can be integrated in his or her specific organizational undertakings. There are, however, some cognitive limitations to what individuals can handle in doing that. To be sure, a single organizational member cannot pay attention to all relevant facts, values, ideas, interpretations and thought-trials that might be significant in any given moment. As early as in 1947, Herbert Simon emphasized that individuals in organizations cannot possibly consider all possible alternatives for action (Simon, 1997). Irrespective of today’s validity

of Simon's model of organization as a whole, 'bounded rationality' (Cyert and March, 1992; Simon, 1955) requires that the individual's continuos perceptual stream be reduced to a manageable set of perceptions even for the most competent professional, not the least to avoid what often is labeled as 'information overload' (see e.g., Schultze and Vandenbosch, 1998).

On a collective level, most interpretive researchers would subscribe to the view that there are certain mental models that help people reducing the stream of perceptions to a manageable amount of information. As pointed out by many interpretive sociologists (see e.g., Berger and Luckmann, 1967; Garfinkel, 1984; Giddens, 1979, 1984), these models cannot be separated from the cultural and institutional context in which they are developed and maintained. As people in organizations interact with technology, by analogy, they are socialized into certain 'interaction orders' (Goffman, 1983) guiding how to sort out relevant perceptions from irrelevant ones. They tacitly and unconsciously build 'models of the world' that direct perception to information that fit their practical undertakings and projects. Concepts such as 'theories-in-use' (Argyris and Schön, 1996), 'schema' (Weick, 1995), 'script' (Barley, 1986), Weltanschauung (Churchman, 1971; Checkland, 1981) and 'attention-structures' (March and Olsen, 1976), have been used to refer to these kinds of structures. For the sake of clarity, this paper refers to them as 'attention-structures', because this concept highlights how these structures direct our attention as long as we do not consciously choose to attend to something else.

2.2 From Ambiguity to Meaningful IT: Related Literature

The typical IT-adaptation process going back and forth between ambiguous and common-sensical usage of IT is all but straightforward. As mentioned earlier, the practical problem for the single organizational actor is to figure out what a new technology means in his or her specific work practice. Where actors have different projects and undertakings, however, this also becomes a collective process where what is meaningful technology is evaluated from different viewpoints. This represents the typical case of ambiguity in IT-adaptation. Indeed, in an organizational perspective, the problem is not primarily to generate meanings, but to 'choose' the tentatively most appropriate one out of a collection of meanings created and shaped by individuals and groups in the organization. This organizational 'choice' is definitely not a rational decision with well-defined alternatives, but rather a process of 'muddling through' (Cohen et al, 1972) this alternatives are molded in the realm of power games and improvisation. To be sure, these 'choice' is tentative. Suffice it to say that when surrounding contexts and institutions change, what used to be meaningful IT can severely hamper needed transformation as a consequence of the outdated meanings attached to it.

There are a few authors that have focused on the collective creation and shaping of interpretations used for understanding and enacting IT. Orlikowski and Gash (1994), for instance, show that assumptions, beliefs and values about technology can fruitfully be classified as technological frames of certain stakeholders. They argue that an understanding of people's interaction with a technology builds on the interpretations they have about it. In addition, various stakeholders such as users, designers and managers can often have different assumptions, beliefs and values about a specific technology, which is a fact critical to attempts to adopt this particular technology into organizational daily activity. Coming to terms with a technology, therefore, is much about coming to terms with stakeholders' technological frames, Orlikowski and Gash assert. Furthermore, they claim that it is important that the technological frames of stakeholders in the organization

have a certain congruency to avoid difficulties and conflict. Developing and managing IT, therefore, should be directed at managing technological frames. While the work of Orlikowski and Gash provides a useful framework with which to analyze how different stakeholders' assumptions of technology affect how information technology is adapted in organizations, they tend to downplay the potential source of innovation that resides in incongruencies. Instead of putting technology introductions into the broader context of, for instance, organizational learning, their prescriptions for practice seems targeted at introducing technology according to pre-defined objectives only. For Orlikowski and Gash, congruency tends to be the preferred condition over the systems lifecycle. Ciborra and Lanzara (1994), on their part, outline beautifully an interpretive vocabulary with which to better understand the subtle and ambiguous reality that systems developers find themselves in. As a central part of this vocabulary, 'formative context' is presented as a concept that embraces the "…the preexisting institutional arrangements, cognitive frames and imageries that actors bring and routinely enact in a situation of action" (p. 70). Ciborra and Lanzara suggest that this context works as a critical resource and restriction for organizational actors involved in IT-adaptation. Where limited learning and invention occur, there is a incapability in the organization to inquire into the existing formative context. Slightly different from Orlikowski and Gash, then, Ciborra and Lanzara view ambiguity and puzzles as unexploited sources of innovation, rather than incongruencies that require to be homogenized.

Subscribing to Ciborra and Lanzara's (1994) view that up-coming organizational puzzles, which this paper refers to as 'ambiguity', are essential ingredients in IT-adaptation, the research questions remain: How do sensemaking processes affect the outcome of IT-adaptation? How can ambiguity be managed for making the most out of IT-adaptation? The following section of the paper explores what can be learned from assessing these questions empirically in a Swedish social services department.

3 First Class in Social Services: Ambiguity, Attention-Structures, Bracketing and Self-Fulfilling Prohecies

This section presents a case study of First Class in a Swedish social services department. In particular, the section presents the interpretive research methodology used and the sensemaking process by which ambiguity was resolved at this department.

3.1 Research Strategy and Methodology

This study can be classified broadly as an interpretive case study (Walsham, 1995a). Over a 2 years period (December 1996-December 1998), intensive research was conducted in a Swedish social services department including data collection methods such as interviews, archival studies and observations. A total of 18 formal interviews were conducted with interviewees within three job categories (for further information, see section 3.2), where questions covered topics such as technology, attitudes towards change, technology diffusion, clients, IT strategy, managerial commitment, departmental culture and the information systems department. First Class was introduced in early 1996, though, which made it necessary to reconstruct the first year of use historically.

As one of the most important principles of interpretive research (Klein and Myers, 1999), I adopted the hermeneutic circle for interpreting and analyzing the data. The

hermeneutic circle suggests that understanding stems from the inter-relation between parts and wholes of the phenomenon studied. To understand IT-adaptation in social services, therefore, this phenomenon was put into context of the surrounding societal change in Sweden, at the same as intimate details and micro-stories were assessed as important parts of understanding this over-aching whole. In other words, the iteration between parts and whole that can be found in the forthcoming analysis of this case is an attempt to be consistent with the interpretive research philosophy of this paper.

While concurring with the principle of the hermeneutic circle, the intensive field study was divided into three phases of slightly different character. The first phase was primarily *explorative*. The purpose was primarily to get a general understanding of the introduction of First Class and the character of social work. This phase primarily involved unstructured interviews and document reviewing, but it also contained informal contacts with two informants that helped me with details and contextual backgrounds to what was going on. One important outcome of this phase was that I had to revise some of the assumptions I entered the study with. It showed out that the staff in general was much more positive towards technology than I expected. In addition, the initial broad assumptions about First Class changing the nature of work were gradually revised when confronting a much richer and complex every-day life. The second phase was primarily *generative*. During this phase emergent themes were generated out of the material collected. One theme was related to the relative abstract vocabulary used by organizational members when describing what IT could do for social services. Another theme concerned how the staff had learned and appropriated First Class in an 'ad hoc' fashion. Yet another theme was related to how departmental members described their interaction with First Class, and, in particular, how they described what First Class meant for their practical day-to-day activity. Even though these themes are inter-related, one might perhaps say that this paper analysis primarily the last theme. The third phase was primarily *verifying*. The gathered material was re-considered in a two-step process. First, counter-evidence to the themes generated were searched for, in order to test their stability. Second, all material supporting the themes was re-assessed with the intention to find the best possible labels to describe the themes adequately.

My role in what was going on at the investigated site resembles what Walsham (1995) calls an 'outside observer'. This is not to say that the conducted interviews and observations did not influence the material gathered at the research site. In fact, living in a pre-interpreted world, the interpretations of the researcher are based on interpretations of the respondents (Van Maanen, 1979). However, I did not actively take part in introducing First Class. On the spectrum outlined by Nandhakumar and Jones (1997), the data-gathering method used in this study can be placed somewhere in the middle between maximum distance and maximum engagement. As part of an attempt not to over-direct, I was very careful in explaining for the respondents that I did not have any assignment by any stakeholder in the municipality. In addition, this was also a way to encourage the study of any potential inconvenient opinions that existed.

3.2 The Research Site: A Swedish Social Services Department

No doubt, social services has been an important cornerstone in the Swedish welfare system for long. The social security act was instituted as early as 1871, and has since then been the subject of four major revisions. This act outlines the principles for social and economic of disadvantaged people, but it also lays down conditions for how Swedish municipalities – in exchange for government subsidies – are responsible for guaranteeing

a certain level of social and economic security for their citizens. Organized as specific departments within Swedish municipalities (at the time of the study, there were a total of 289 municipalities in Sweden), the typical social services department offers social and economic support for individuals and families in need, as well as for people with different forms of physical and psychological disabilities. As being responsible for the social and economic wellbeing of a total of 103151 people in 1997 (5181 households were entitled to some kind of social allowance), the investigated social services department was one of the biggest in Sweden.

Of a total of 3440 employees, there were ** First Class-users in 1997. This figure corresponds to all people using personal computers in their work. Non-users, which therefore are excluded in this study, were people employed, for instance, at old people's home and in the long-term medical care. For the sake of clarity, First Class-users can be divided into three job categories: social workers (S), group leaders (G) and managers (M). Six individuals within each category were interviewed. The selection criteria was the goal of covering a wide range of nominally different opinions. Social workers spend most of their time in scheduled meetings with clients. Between meetings, they investigate client affairs to make informed decisions. Most information is kept under professional secrecy. Group leaders spend much of their time in meetings with social workers and managers. Besides supervising less experienced social workers in complex cases, they deal with budget planning and staff allocation. Managers spend most of their time interacting with other managers and group leaders. Their responsibilities cover mainly financial and staff matters. Comparatively free to plan their own work, managers are often under pressure from many stakeholders.

3.3 First Class in Social Services

First Class is a client/server system developed by SoftArc Inc., which integrates email with group conferencing, real-time discussions and on-line communication functions. As a result of a decision taken by the municipal council in late 1995, the social services department – as one department among others – acquired and installed First Class on all staff PCs a few months later. At the municipal level, the decision was motivated by a perceived need of an information infrastructure that could promote internal information exchange. The management of the social services department shared this view and was quite committed to the higher-level decision, as it felt that developments in the Swedish society had made it even more complicated to make informed decisions concerning the economic and social security of disadvantaged people. Improved internal exchange was seen, therefore, as an important means for accomplishing good social work. In addition, the acquisition of First Class was also seen as one step towards establishing the vision of the learning organization. First Class was added to an already installed base of information technologies including standard off-the-shelf applications such as spreadsheets and word processors, but also social work specific applications such as client register programs and a network of governmental databases.

The actual introduction of First Class was quite intensive and straightforward. The client software was installed on staff PCs before either training or guidance. Users were expected themselves to make the most out of the system. This ‘ad hoc’ approach to IT-adaptation was partly a result of the felt urgency in this matter and partly a result of the low budget for development activities in Swedish municipalities. Courses were offered later on a voluntary basis. Rather than covering the role and meaning of First Class in social work, however, these courses primarily concerned the functionality of

First Class.

Early interpretations

As can be expected from introducing information technology without either guidance or training, there only existed vague notions of First Class at the time the system was installed on staff PCs. A few managers had taken part in the process that lead to the establishment of the department's IT-strategy, and could, therefore, see First Class as one part in the general intention to establish the department as a learning organization. The main part of the staff, however, did not have any clear conceptions of the intended role of First Class in departmental activities. Not surprisingly, quite a few in the staff reported confusion, because they were not sure what to use the new piece of software for. At this point, there were critical voices raised about what was considered as a general lack of planning and strategy. One group leader (G1), for instance, meant that "the strategy in practice is half-done and half-thought".

Despite the critical voices, it turned out that many people in the staff welcomed First Class *itself* as an information technology that would benefit social work in general. There were quite a few early adopters fascinated by what First Class could do for smoothing things up. As can be expected in the early phases of any IT-adaptation process, interpretations were quite diversified. Especially among managers and group leaders, there existed a wide range of interesting interpretations. One district manager (M2), for instance, viewed First Class as *a way of supporting and enabling vertical integration*. She said that this was the whole point of using IT in social service, while one of her group leaders (G1) meant *that First Class would require that social workers became active information consumers*. Using First Class, this group leader meant, it would no longer be possible to justify your own ignorance by saying that nobody told you. To put these interpretations in context, one might note that the district manager mentioned was regarded by the IT-coordinator (M1) as one of the most far-sighted managers at the department, while the group leader mentioned has found the general social worker irritatingly passive for long. Among social workers, however, there did not exist many interpretations at that time. The relative lack of interpretations might be explained by the observation that while managers and group leaders were early adopters, the growth of users among social workers was more gradual. As one can see from the early interpretations, there existed several interpretations side by side. The existing ambiguity and sensemaking here were both a potential for innovative use of First Class and a threat for its further integration into the exiting work practices.

Congealed interpretations and patterns-of-use

Many of the early meanings associated with First Class were indeed quite ambitious and visionary. As people had experienced a couple months use of the communications technology, however, interpretations congealed on a more down-to-earth level. Even though some of the managers still emphasized that First Class was an important part of an on-going learning process at the department, a commonly shared and enacted interpretation was First Class seen as a communications booster. It was held that First Class was primarily a good way to get in touch with people easily. Because social workers are busily scheduled throughout a working day, First Class was considered as a convenient tool for contacting people that were in meetings or in client interactions of some kind. Consider these representative comments:

> "I think First Class is especially good for brief interactions. There are many occasions when I cannot reach the district manager or other group leaders. In such cases, First Class is a very good alternative. Most of all, I like the opportunity to view the history of the message. I can check whether my message is read or not. I can see that my message was delivered, and I did not have to use several days for doing this over the phone." (G5)

> "I'm positive. First Class has meant a lot in terms of efficiency; this is especially the case when exchanging files. With the internal paper mail system, for instance, messages can be delayed two or three days before it reaches its recipient." (M4)

Typically, the down-to-earth interpretations of First Class were reflected in the way First Class was used by departmental members. In addition to frequent exchange of Word- and Excel-files, managers, for instance, had quite extensive contact with their group leaders. They used First Class for distributing economic and financial information to those concerned, and they scheduled meetings and conducted brief interactions with group leaders as well as with social workers. Consideration this, there is little doubt that the managers' ways of using First Class to a large extent corresponded to the procedures and ways of organizing that existed before introducing First Class. Evidence supporting this observation includes the fact that the distribution lists created and used mapped the formal organization, but also that little communication over departmental borders resulted from introducing First Class. It seemed like First Class primarily intensified existing work procedures. Despite the relative absence of changes on a more substantial level, however, the managers *perceived* First Class as an important change agent. One manager (M6), for instance, expressed that she did not remember how they worked before using First Class. It felt like she had used First Class all her life, she said, giving words to the thoughts of quite a few of the respondents at the managerial level. Looking at group leaders and social workers similar patterns could be observed. However, one notable difference between social workers and the two other job categories was that the relative difference between the perceptions of First Class as a change agent and the observed change in work practices was not as striking in the case of social workers.

Despite the general affirmations of First Class as an efficient way to get in touch with people as well as the changes perceived at a qualitative level there did not evolve any substantial learning of new work routines around First Class. Functions such as sending mails, exchanging files, viewing the history of messages, and creating distribution lists were acquired, but, ultimately, First Class primarily intensified existing working routines. It seemed like the sensemaking processes started out in utopian visions of vertical integration and the social worker as active information consumer, but ended up in viewing First Class as a substitute technology to the internal paper mail system, the telephone and face-to-face interaction. Why did the visions end-up in down-to-earth interpretations? Can we expect that new visions will pop up where existing interpretations do not match new requirements for conducting social work? In what follows, an attempt is made to understand this confusing picture by exploring how certain attention-structures, bracketing processes and self-fulfilling prophecies affected the sensemaking process around First Class.

Attention Structures, Bracketing and Self-Fulfilling Prophecies

One interesting observation was that among several functions of First Class, it was primarily the less fancy functions such as sending messages and exchanging files that were appropriated by departmental members. Indeed, these functions made most sense in

the practical day-to-day activity of the social worker. On-line communications and real-time discussions were obviously not attractive enough for the social and economic security of disadvantaged people. However, the relative minor use of fancy functions cannot explain why existing communication patterns were intensified only. For instance, a potential restructuring of communication patterns would not require on-line communications, but could easily emerge as a consequence of email functions and distributions lists only (see e.g., Finholt and Sproull, 1990; Sproull and Kiesler, 1991). So, instead of a technology-based explanation, one might perhaps look for signs indicating explanations of a more social and organizational character. In fact, the evidence suggests that there were strong and viable organizational mechanisms and routines enforcing how First Class was made sense of. Not easily framed and conceptualized from the relatively complex themes of social work, there were inter-related attention-structures that seemed to go far beyond whatever influence the fancy functions mustered.

Considering that making a difference for disadvantaged people is at the core of social workers' professional identity, it comes as a lesser surprise that First Class was approached primarily as a communications booster. To be sure, administrative work has been viewed as a necessary evil for long in social services, often considered as in the way for the caring side of social work. This view was especially viable among social workers, who historically have experienced a relative unbalance between the amount of information fed into information systems and the amount of information retrieved from them (c.f., Grudin, 1994). Among group leaders, and especially managers, administrative work has been viewed to cut both ways. On the one hand, administrative duties consume time that could be used for client interaction, but, on the other hand, such duties are also seen as necessary components of a sound and fair welfare system. One of the most important consequences coming out of seeing 'administrative work as a necessary evil' concerns how this view made people very alert to things that decreased the administrative workload. In very concrete terms, First Class – in contrast with substitute media such as the internal paper mail system or the telephone – had some important features that decreased the amount of unsuccessful communicative intents. For instance, because of its ability to transcend temporal constraints, First Class made it easy to conduct brief interactions even when the recipient was in a meeting. An email message is readily waiting for the few minutes available for social workers between client meetings, while a telephone call requires timing from the caller's account. Moreover, the history function allowed that the sender could check whether the message sent was read or not, a confirmation that seemed to be enough for compensating the directness in the telephone media. There is little doubt that these aspects of First Class were very attractive to staff that has seen earlier technologies only leading to increased administrative workload, despite the fact that they most of all wanted to make a difference for disadvantaged people. In sum, the integration of First Class into the practical work at the investigated social services department can be described as a bracketing process (Weick, 1979, pp. 153-157). There were certain institutionalized and historically grounded attention-structures that *made people alert to decreases in administrative workload*. These structures bracketed out certain information from the potentially available information in people's interaction with First Class. The selected bracketing constructed First Class as a communications booster.

Moreover, there is little doubt that departmental members considered that social work is not about technology. At the managerial level, the efforts to further develop the department were very alert towards organizationally defined constructs such as quality

assurance and workflow. Never talking in terms of technology in other than abstract ways, they constructed a very instrumental conception of IT, where the realization of an intention such as quality assurance was perceived as only depending on the staff's willingness to learn the technology. For social workers, on their part, there were many urgent issues on the agenda for improving their own ability to help their clients that could not be solved with IT. In practice, although for slightly different reasons, managers, group leaders and social workers enacted a solid separation between social work and First Class. This is understandable when considering that earlier information technologies at the social services department have always coincided, more or less, with new reporting procedures or routines. Despite the fact that First Class as a communications technology was different than former technologies in terms of flexibility, however, this factual difference was too weak as a counter-force to the attention-structure seeing *information technology as administration*. Concurring with the traditional role of technology in social work, social workers wanted First Class to be an invisible part of their practical day-to-day activity. As a result, one can observe that dealing with First Class as an administrative technology also created such a technology. In practice, the enactment of First Class as something distinct from social work produced a barrier between the use of First Class and social work, justified by the attention-structure saying that information technology equals administration. As a result, a self-fulfilling prophecy was created (Weick, 1979, pp.159-164) – enacting First Class as an administrative tool made First Class such a tool.

What is the meaning of First Class? Indeed, First Class meant a lot in the early phase of introducing the system. The early interpretations expressed several visions of what might come out of First Class in terms of social work. The meanings associated and attributed by the staff included making the social worker an active information consumer, enabling vertical integration, establishing the learning organization and supporting the relationship between the department and the citizens. As the process of making sense of the system was influenced by strong and viable organizational attention-structures, however, the initial ambiguity was relatively soon transformed into a more homogenous interpretation in practice. Despite that some of the initial visions survived on the espoused level, the actual interaction with First Class demonstrated a convenient tool for intensifying existing communication patterns. As outlined in this subsection, enactments such as self-fulfilling prophecies and bracketing were important ingredients in these transformation processes.

3.4 Implications for the investigated social services department

One might perhaps look at the adaptation of First Class in the investigated social services department as a success. Exceptionally few in the staff had anything negative to say about the system and its use in their organization. In fact, most of them looked at First Class as a technology of great value for making their everyday activity smooth and efficient. Considering what is said in interviews and written documents, there is little doubt that First Class was considered as a supportive technology in social services. Despite the general conception of First Class as an efficient and beneficial technology, however, a potential problem for the department was that there were few signs of organizational learning as a result of the sensemaking processes around the actual introduction.

Any fruitful meaning-creation process around technology requires that the sensemaker goes back and forth between ambiguous and common-sensical conceptions of the particular technology. At the time I ended the study presented here, such switches

between ambiguity and familiarity could be observed only at an individual level. However, at an organizational level, the ambiguous nature of First Class was quite rapidly resolved into an interpretation as communications booster, which was in the interest of both the people caring for disadvantaged people and the existing institutional mechanisms for carrying this out. In other words, the department learned how to use First Class to intensify already existing patterns. The actual use observed at the time this study ended, however, did not reflect any signs of a new phase of ambiguity. This might be a problem if strategic proclamations like the goal of renewing social services with innovative use of IT are to be realized.

Despite the institutionalized character of social work, one suggestion for the management of the social services department would be to consider mobilizing the interests and alliances needed for reviving the initial ambiguity around First Class. Perhaps such an effort could be combined with an attempt to formulate a general communications strategy where also Internet is considered. This, in turn, would perhaps be a trigger for the critical and committed attitude needed for creating the social work of the future. However, the lessons learned in this case study say that new visions of First Class in this particular social services department need some sort of institutional support in form of attention-structures in order to survive. In other words, innovative visions need to be bracketed in such a way that it fits current attention-structures without maintaining or reinforcing them. In this way, the vision is less likely to be dismissed as utopian when being scrutinized in the light of these deeply embedded contextual forces.

4 Conclusions

Considerable evidence has emerged that information technology gets adapted and re-adapted when situated in organizational practice (Ciborra, 1996; Orlikowski, 1996a; Suchman, 1987). Where this growing body of knowledge deals with the general phenomena, one might suggest that further research should be targeted at assessing particular aspects of this phenomenon. This paper is intended to make such a particular assessment where the role of ambiguity in IT-adaptation is in focus. The primarily wisdom presented on this subject matter is that IT-adaptation processes – and the potentially innovative use of IT that might emerge from them – often are influenced by deeply embedded attention-structures that can be both enabling and restricting for how IT is adapted. When being enabling, these attention-structures work as resources for people situating IT to be meaningful in their organizational practice. In the social services department case, this enabling aspect facilitated the adoption of First Class as a technology that lowered the administrative workload. When being restricting, these attention-structures can lead to self-fulfilling prophecies and vicious circles. At the investigated social services department, this happened when certain historically rooted attention-structures had much stronger institutional support, in forms of identity and technology tradition, than the new and visionary ideas about what to use First Class for.

This paper assumes that fruitful IT-adaptation requires transitions – back and forth – between ambiguity and common-sensical usage of IT over time. During ambiguity, organizational members tend to see the technology as a distinct artifact, not yet part of their day-to-day activity, but still seeking its role. While ambiguity is an equivocal situation, where many interpretations of technology exist side-by-side, it is also a chance to invent new innovative use of technology. During common-sensical use, on the other hand, work tasks are at the center of attention. Technology is enacted as a

meaningful, but yet almost unnoticed, part of organizational day-to-day activity.

So, what is the meaning of First Class? Indeed, there is no single answer to this question. Meanings vary between individuals, organizations and over time. Indeed, there is no meaning in searching for a single meaning of technology, but there is much meaning in the sensemaking processes themselves. On-going sensemaking is part of what make organizations tick. In addition, re-considering the investigated case with existing IS research in mind the non-occurring learning organization does not come as a surprise. In fact, a considerable amount of literature shows how IS implementations fail (Lyttinen and Hirschheim, 1987; Sauer, 1993) and result in unintended consequences. This research study intends to overcome the dichotomy of success/failure by revealing a case where the outcome cannot be measured on a one-dimensional scale. Assessing the rate of success here requires that emphasis be put on the whole layer of dimensions at play in IT-adaptation. Realizing the complexity in this issue, one might perhaps consider dropping this dichotomy in favor of other conceptualizations. One such conceptualization suggested in this paper could be to view IT-adaptation as a process where IT is constructed meaningful by sensemaking people in conditions of ambiguity.

5 References

Alvesson, M. (1993). Organizations as Rhetoric: Knowledge-Intensive Firms and the Struggle with Ambiguity. *Journal of Management Studies, 30*(6), 997-1015.

Argyris, C., & Schön, D. A. (1996). *Organizational Learning II: Theory, Method, and Practice*. Reading, MA: Addison-Wesley.

Barley, S. R. (1986). Technology as an Occasion for Structuring: Evidence from Observation of CT Scanners and the Social Order of Radiology Departments. *Administrative Science Quartely, 31*(1), 78-108.

Berger, P., & Luckman, T. (1967*). The Social Construction of Reality - A Treatise in the Sociology of Knowledge*. London: Penguin.

Checkland, P. B. (1981). *Systems thinking, systems practice*. Chichester: Wiley.

Churchman, C. W. (1971). *The design of inquiring systems: Basic principles of systems and organization.* New York: Basic Books.

Ciborra, C. (1996). Introduction: What Does Groupware Mean for the Organizations Hosting It? In C. Ciborra (Ed.), *Groupware and Teamwork* (pp. 1-19). New York: John Wiley & Sons.

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

Cohen, M. D., March, J. M., & Olsen, J. P. (1972). A Garbage Can Model of Organizational Choice. *Administrative Science Quartely, 17*(1), 1-25.

Cyert, R. M., & March, J. G. (1992). *A Behavioral Theory of the Firm. (2 ed.).* Cambridge, Mass.: Blackwell.

Denis, J.-L., Langley, A., & Cazale, L. (1996). Leadership and Strategic Change under Ambiguity. *Organization Studies, 17*(4), 673-699.

Finholt, T., & Sproull, L. S. (1990). Electronic Groups at Work. *Organization Science, 1*(1), 41-64.

Garfinkel, H. (1984). *Studies in Ethnomethodology*. Cambridge: Polity Press.

Ghosh, D., & Ray, M. R. (1997). Risk, Ambiguity, and Decision Choice: Some Additional Evidence. *Decision Sciences, 28*(1), 81-104.

Giddens, A. (1979). Cental Problems in Social Theory - Action, structure and contradiction in social analysis. London: Macmillan.

Giddens, A. (1984). The Constitution of Society - Outline of the Theory of Structuration. Cambridge: Polity Press.

Goffman, E. (1983). The interaction order. *American Sociological Review, 48*, 1-17.

Grudin, J. (1994). Groupware and Social Dynamics: Eight Challenges for Developers. *Communications of the ACM, 37*(1), 92-105.
Hanseth, O. (1996). *Information Technology as Infrastructure*. Gothenburg: Department of Informatics, Göteborg University.
Klein, H. K., & Myers, M. D. (1999). A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems. *MIS Quartely*.
Lee, A. S. (1994). Electronic Mail as a Medium for Rich Communication: An Empirical Investigation Using Hermeneutic Interpretation. MIS Quartely, 18(2), 143-157.
Lyytinen, K., & Hirschheim, R. (1987). Information Systems Failures - a survey and classification of the empirical literature., *Oxford Surveys in Information Technology (Vol. 4*, pp. 257-309). Oxford: Oxford University Press.
March, J. G., & Olsen, J. P. (1976). Ambiguity and Choice in Organizations. Bergen: Universitetsforlaget.
Nandhakumar, J., & Jones, M. (1997). Too close for comfort? Distance and angagement in interpretive information systems research. *Information Systems Journal, 7*, 109-131.
Orlikowski, W. J. (1996a). Improvising Organizational Transformation Over Time: A Situated Change Perspective. Information Systems Research, 7(1), 63-92.
Orlikowski, W. J. (1996b). Learning from Notes: Organizational Issues in Groupware Implementation. In R. Kling (Ed.), Computerization and Controversy (pp. 173-189). San Diego: Academic Press.
Orlikowski, W. J., & Baroudi, J. J. (1991). Studying information technology in organizations: Research approaches and assumptions. Information Systems Research, 2(1), 1-28.
Orlikowski, W. J., & Gash, D. C. (1994). Technological Frames: Making Sense of Information Technology in Organizations. ACM Transactions on Information Systems, 12(2), 174-207.
Orlikowski, W. J., & Hofman, J. D. (1997). An Improvisational Model for Change Management: The Case of Groupware Technologies. *Sloan Management Review(Winter)*, 11-21.
Pinch, T. J., & Bijker, W. E. (1987). The Social Construction of Facts and Artifacts. In W. E. Bijker, T. P. Hughes, & T. J. Pinch (Eds.), The Social Construction of Technological Systems. Cambridge, MA: MIT Press.
Sauer, C. (1993). *Why Information Systems Fail: A Case Study Approach*. Orchards: Alfred Waller.
Schultze, U., & Vandenbosch, B. (1998). Information Overload in a Groupware Environment: Now You See It, Now You Don't. *Journal of Organizational Computing and Electronic Commerce, 8*(2), 127-148.
Simon, H. A. (1955). A behavioral model of rational choice. Quartely Journal of Economics, 69, 99-118.
Simon, H. A. (1997). *Administrative Behavior: A Study of Decision-Making Processes in Administrative Organizations. (4 ed.).* New York: The Free Press.
Sproull, L., & Kiesler, S. (1991). *Connections - New ways of working in the networked organization*. Cambridge, MA: MIT Press.
Suchman, L. (1987). Plans and situated actions - The problem of human-machine communication. Cambridge: Cambridge University Press.
Tyre, M. J., & Orlikowski, W. J. (1994). Windows of Opportunity: Temporal Patterns of Technological Adaptation in Organizations. Organization Science, 5(1), 98-118.
Van Maanen, J. (1979). The Fact of Fiction in Organizational Ethnography. Administrative Science Quartely, 24(4), 539-550.
Walsham, G. (1995a). Interpretive case studies in IS research: nature and method. Eur. J. Inf. Systs., 4, 74-81.
Walsham, G. (1995b). The emergence of interpretivism in IS research. Information systems research, 6(4), 376-394.
Weick, K. E. (1979). The Social Psychology of Organizing. (2 ed.). New York: McGraw-Hill.
Weick, K. E. (1995). Sensemaking in Organizations. Thousand Oaks: Sage.