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SOCIAL IMAGINARIES OF TECHNOLOGY AND WORK

A CONNECTIVE ETHNOGRAPHY

Vanessa Dirksen

SOCIAL IMAGINARIES OF TECHNOLOGY AND WORK

A CONNECTIVE ETHNOGRAPHY

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To my mother, Marly Dirksen

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Vanessa Dirksen, Zürich 2007

Preface

Contemporary social, cultural and economic life is permeated with 'great expectations' of technology. That these expectations often do not live up to what they promise is an understatement. That we as members of modern society cannot escape their influence in how we imagine our social existence is unavoidable. However, that individual actors are active co-authors in creating these narratives of modernity is not commonly acknowledged. This thesis is therefore about the ways in which societal expectations of technology not only shape but also become shaped by local practice.

In order to understand this 'micro-logic' of modern narratives, an understanding is needed of how people in certain local contexts *live* those ideas as a consequence of which new social imaginaries unfold. In order to expose the lived practice of modern ideas of technology, this thesis draws on ethnographic work. Distinctively, ethnographers are interested in depicting the lives of people as experienced by the actors themselves.

The ethnography is set in a large computer company in the beginning of the 21st century, a time marked by the so-called dot-com collapse and the beginning of an economic setback. Besides the fact that it is a technology-saturated environment, the selection of what is nowadays referred to as a 'knowledge-intensive' firm is based on my interest in the actuality of 'knowledge work'. Knowledge work allegedly typifies the changing nature of work in contemporary society and is a central concept in the modern narrative of the 'information society'. Another reason for the choice of setting is that ethnographic studies of such 'white collar' professions as managers, consultants, sales personnel and engineers are still relatively rare.

For a period of more than a year I participated in the organization with the aim of studying its use of an internal information and communication system. My participation concerned both the organizations' online and offline practices and hence urges for a new form of ethnography referred to as connective ethnography. The empirical object of the study, the use of the internal information and communication system, is regarded as an instance of modern narratives of technology and work, all the more since the technology is introduced into the organization in an attempt to create so-called virtual communities and community is another central concept in the narrative of the information society.

The study is not meant as a critique of the practice of this particular organization but should be taken as exemplary for the kinds of processes taking place when new technological images are introduced and cause a dynamic interplay of desired and actual behavior; promise and practice. Nonetheless, the organization not only provides the context of interaction in which this translation process unfolds. Rather, it is an actor in the negotiation process of modern images of technology in its own right. As such, the

thesis can be read as an ethnographic account of the work practices of IT professionals during a time of drastic contraction in the computing industry; the organization and the outside world in which these professionals operate in order to perform their jobs and in putting the increasing uncertainty of their everyday work practices under control.

Situated in narratives of modernity, anthropologically-inspired studies of organizations and social studies of technology, *Social Imaginaries of Technology and Work* is on the one hand about the dynamics of technology-mediated visions of organization and the role they play in shaping organizational practice. On the other hand, it provides insights into the ways in which these narratives of modernity are adjusted according to the 'little narratives' of practice.

The thesis is organized as follows: in chapter one I will lay out the theoretical underpinnings of the study, providing the necessary concepts to engage with the research topic. In chapter two I will explain the wide range of online and offline methods applied as part of the connective ethnography. In chapter three I will describe the characters and setting of the research. Chapters four to seven revolve around the ethnographic material of the study. Here the data gathered in the study are used to answer the research questions. In chapter four I will delve into the organizational discourse on virtual communities to understand how it has been translated, objectified and concretized by the managers of the organization. In chapter five I will show how the introduction of this modern change idea resulted in all kinds of divergences and tensions between promise and practice. Here I will pay attention to the kinds of arguments the partaking employees use while translating and enacting the ideas of community and information and communication technology (ICT). Next, in chapter six, the factors and conditions that may account for these divergences and tensions will be explored by explicating the deeper structures of employees' 'workaround' behavior. In chapter seven, this deviant behavior will be explained by considering the various interests of the employees as well as the pressures and inducements imposed on them. I will thereupon show how the various responses are materialized in practice in the form of four appropriation patterns. Lastly, in chapter eight, the central questions of the research are answered and conclusions and implications are given.

Chapter 1

The micro logics of 'technological ordering'

"If it is true that the grid of 'discipline' is everywhere becoming clearer and more extensive, it is all the more urgent to discover how an entire society resists being reduced to it, what popular procedures (…) manipulate the mechanisms of discipline and conform to them only in order to evade them, and finally, what 'ways of operating' form the counterpart, on the consumer's (…) side, of the mute processes that organize the establishment of socioeconomic order" (De Certeau, 1984: xiv).

1.0 Introduction

Late modern meta-narratives[1] reflect new visions of the world and allegedly capture what is changing in the Western world. Two influential meta-narratives of modern society are Bell's (1973) *The Coming of Post-Industrial Society: A Venture in Social Forecasting* and Castells' (1996-1998) trilogy *The Information Age*. Both works indicate the development of an information society as a specific social form characterizing late modern society. The increasing importance of information and knowledge is key in these macro-social stories of the information society. Put another way, "the conviction that quantitative changes in information are bringing into being a qualitatively new sort of social system" (Webster, 2005: 9).[2]

Bell introduced the concept of information society as a synonym for what he first termed *post-industrial society*. Post-industrial society is described as a progression of society in occupational terms, in the words of Bell, as "a march through the employment sectors" (Bell quoted in Webster, 2005: 442). "That is, he argued that over time one could see a transfer from a time when most people gained their livelihoods in agriculture (Pre-industrial Society), later moving into manufacturing (Industrial Society), and most recently transferring into service employment (Post-Industrial Society)" (ibid.: 442). Central to the idea of a postindustrial society is the coming to the fore of service work and, with it, the increased significance of information as both raw material and product of work.

More than twenty years later, Castells (1996) sees the development of the era of the information age from the 1970s. A central concept in the narrative of the information age is what he refers to as 'informationalism': "the attribute of a specific form of social organization in which information generation, processing, and transmission become the fundamental sources of productivity and power" (Castells 1996: 21). Just as in Bell's information society, special attention is paid to the employment sector as Castells mentions the increased importance of 'informational labor' as a fundamental characteristic of the information age. Informational labor refers to jobs predominantly embodying knowledge and information.

Writing more for an economics and business audience, Drucker (2001) uses the term 'knowledge economy', which he defines as one in which "knowledge will be the key resource, and knowledge workers will be the dominant group in its workforce" (p. 3) (his definition is identical to Bell's conception of an information society). *Knowledge work* is

1 According to Lyotard (1984), "a meta-narrative is a big story, a story of mythic proportions that claims to account for, explain and subordinate all lesser, little, local narratives" (quoted in Lim 2005, online).

2 Roszak (1986) refers to this as the 'cult of information'. As critics of the information society economy would have it, however, "to those innocent of social theory, it should be perfectly obvious that knowledge has always played an important role in the organization and advancement of society. In that sense, saying that we live in a knowledge [of information] society would seem no more informative than saying that we live in a power society or a money society or a culture society" (Fuller, 2001: 177).

here understood as having the following characteristics: (1) "it produces and reproduces information and knowledge" (Schultze, 2000: 5); (2) it "involves the manipulation of abstractions and symbols that both represent the world and are objects in the world" (ibid.) and; (3) "it requires a formal education, i.e. abstract, technical and theoretical knowledge" (ibid.).

Apart from the centrality of knowledge and information in the narratives of the information society/knowledge economy, assumptions are made about the changed nature of work demanding specific skills on the part of the knowledge worker or informational laborer. For instance, in Castells' account of information labor, jobs are performed by "the group in the information age that manages, initiates and shapes affairs, by being well-educated, having initiative, welcoming the frenetic pace of change which typifies the current epoch, and having, perhaps above all, the capacity to 'self-programme' itself" (Webster, 2005: 447). Similar to this notion of informational labor, Drucker asserts that "in knowledge work the task does not program the worker" (ibid.: 144). To this Drucker adds that "knowledge work requires continuous learning on the part of the knowledge worker, but equally continuous teaching on the part of the knowledge worker" (Drucker, 1999: 142). The knowledge worker or information laborer defies routinization (reproducible ways of working), has a heightened self-monitoring, and is inquisitive and creative (Drucker, 1993).

In both accounts of informational labor (Castells, 1996-1998) and knowledge work (Drucker, 2001) identified is thus a process of 'reflexive accumulation' (Lash and Urry, 1994). Reflexive accumulation refers to the fact that "the labour force becomes increasingly self-monitoring as well as develops an even greater reflexivity with respect to the rules and resources of the workplace" (Lash and Urry: 1994: 6).

The expectations of the information society/knowledge economy as discussed in the above are translated into the postulate of a *post-bureaucratic organization* in organizations. Post-bureaucracy is "a 'trend' encompassing a range of organizational changes which have as their espoused aim the erosion or dismantling of bureaucracy" (Grey and Garsten 2001: 230). In line with the notion of reflexive accumulation, and in stark contrast to the unwieldy bureaucratic organization, the post-bureaucratic organization appeals to characteristics such as fluidity, flexibility and creativity.[3]

Whereas the aforementioned thinking can be categorized under the heading of the information 'revolution', similar statements on the information society are made in the so-called computer or ICT revolution interpretation of the information society. In fact, the two interpretations are often found to converge.

3 As Barley and Kunda (2001) state, however, "most [academic and popular accounts of the post-bureaucratic organization] fall short of offering either a nuanced description of attributes of postbureaucratic organizing or a full account of why new forms of organizing have emerged" (Barley and Kunda, 2001: 77).

Modern technologies are often held to be central to modern visions of a changing society (cf. Bauman, 1991). Characteristically, meta-narratives of modernity tend to reflect a strong belief in the doctrine of progress and the unidirectional development of society with technology. Accordingly, in a dominant interpretation of the information society, modern information and communication technology (ICT) is believed to be the most important driver of change (cf. Webster, 2005; Zijderveld, 2001). In this interpretation the information society is typified in terms of the societal changes that coincide with the increasing employment of information and communication technologies. This does not presuppose, however, that this interpretation holds information and communication technologies to be the *sole* drivers of societal change. In fact, in these narratives, information and communication technologies are acknowledged to be both the cause and the effect of these changes (Webster, 2002).[4]

Similarly, modern information and communication technology is often viewed as one of the key drivers in generating new organizational forms (cf. Baskerville and Smithson, 1995; Schultze and Boland, 2000). The reasons for this are various: Information and communication technologies are credited with the undermining of job structures, the flattening of organizational hierarchies, the decentralization of work, the creation of more flexible organization structures, increased horizontal affiliation and global connection, to name but a few. Depending on the emphasis, the various kinds of post-bureaucratic organizations are known as the virtual, the flexible or the network organization.[5]

On the whole, meta-narratives of the information society – of knowledge work, the post-bureaucratic organization and information and communication technology – present a specific image of future societal ordering. This means that the idea of societal change or transformation is inherent to these macro-social stories of contemporary society and organization. This concerns the idea of social change as driven by information and communication technology in particular. Yet, other than promoting presumably innocent ideas of societal change or transformation, normative notions underlie these modernist expectations.[6] That is, they tell us "something about how we ought to live together in society" (Taylor, 2002: 92) and hence imply "the subordination of nature to human purposes organised via the colonising of the future" (Giddens, 1991: 144). To

4 I should note here, for instance, that Castells (2001) is modest on the role of technology as he acknowledges that "people, institutions, companies, and society at large transform technology" (p. 4) rather than vice versa. He sees technology merely as an extension of life.

5 The network organization, for instance, refers to the horizontal distribution and production alliances between companies: "that specific form of enterprise whose system of means is constituted by the intersection of segments of autonomous systems of goals (Castells, 2001: 171). As critics of the network organization as new organizational form note, however, "organizations have always been networks" (Barley and Kunda, 2001: 77).

6 And, as Hull (2000) says, "if these were merely debates and discussions between intellectuals then this would not pose much of an urgent issue, but these debates and discussions are tightly linked to policy prescriptions, management strategies and real changes in the character of work, education and even leisure" (p. 316).

paraphrase Thompson (1995), "the idea of progress is (…) a way of subsuming the future to our present plans and expectations" (Thompson, 1995: 37).

Notably, in organizations, narratives of the information society, knowledge work, the post-bureaucratic organization and information and communication technology are presented as so-called postmodern ideals of greater individual freedom and flexibility. Whilst in these visions organizations are believed to be less hierarchical and employees more autonomous and less 'programmed', skeptics argue that these kinds of postmodern idea(l)s are implemented all the more to enhance modern forms of disciplining in organizations (Poster, 1995).

This thesis is concerned with the narratives of late modernity and how they shape, or order, "how people imagine their social existence", referred to as 'modern social imaginaries' by Taylor (2002). But, as I will argue in this chapter, since ordering reflects not only the meta-narratives of modernity but also people's individual ordering, referred to as the 'little narratives' of practice, this thesis displays not only a preoccupation with the ordering capacity of modern expectations but also the extent to which these macro-social narratives are reconceptualized in light of what people do with these ideas in a micro-social context.[7] As I claim, it is in fact in the dialectic between the two, the meta-narratives of modernity and the individual imaginaries and practices, that order is negotiated. Moreover, "the mutation of (…) moral order into our social imaginary is the development of certain social forms that characterize Western modernity" (Taylor, 2002: p. 92).

To address this issue of 'co-construction' (Oudshoorn and Pinch, 2003), I have conducted a research which is concerned with the ways in which new information and communication technologies as mediators of meta-narratives of the information society, knowledge work, the post-bureaucratic organization and modern technology, become embedded in local organizational contexts (or not). In doing so, I have looked at how the meaning of information and communication technology is negotiated and what practices emerge directly or indirectly as a consequence of its deployment. In studying information and communication technology as an instance of modern narratives of technology (ICT) and organization, the empirical work has revolved around the study of virtual community in an organizational context.

In this chapter I will first discuss the theoretical background of the research. This should indicate 'where I come from' so to speak when the study of modern technology in organizations is concerned. This will be followed by the definition of the objectives and central questions of the research. In the second part of the chapter I will discuss how these ambitions are met with in my empirical work on virtual community in an

7 Modern social imaginaries should thus be perceived of as hybrid and heterogeneous (cf. Nygren, 1999), formed in negotiation with prevailing social structures and institutions.

organizational context. I will conclude the chapter by showing how the theoretical and the empirical parts of my work are integrated as regards the study's main components (i.e., 'what I will be using').

1.1 Theoretical background

The chapter begins by presenting the theoretical underpinnings of how, on the one hand, ordering may occur by way of modern narratives mediated by technology. On the other hand, it lays the theoretical foundation of how creative responses to this ordering may give rise to what I refer to as alternative modernities and at the same time reflect aspects of modern work practices in the 'information society'.

As I propose to investigate the local constitution of societal values through modern technology, the study's main reference discipline is known as the social shaping of technology.[8] More specifically, the study's main theoretical background is drawn from the social construction of technology (SCOT), script analysis or inscription theory and appropriation or domestication theory. To complement these theories of social shaping of technology, theoretical insights are drawn from De Certeau's (1984) practice theory. First, from SCOT comes the position that technology development is the outcome of a process of negotiation between the various actors involved, that technology is susceptible to various interpretations and that these interpretations represent people's interests. Second, from script analysis/inscription theory stems the premise that technology embodies the narratives of its 'designers' and that users of technology are affected by these 'inscriptions'. Third, from appropriation/domestication theory derives the notion of active consumption, meaning that users in consuming technology produce it as well and hence inscribe their own interests in the technology. Fourth, from De Certeau's practice theory the notion of individual tactics is used, which underlines the fact that consumption of technology is also incited and constrained by dimensions of social structure, the environment and others in that environment. In the following four sections I will specify how these various theoretical insights determine the perspective taken in my study of virtual community in an organizational context.

8 These studies emerged as a corrective of technological determinist studies in which technology is posited as the main driver of social change. "Technological determinism is the notion that technological development is autonomous with respect to society: it shapes society, but is not reciprocally influenced" (Mackay and Gillespie, 1992: 686). In the social shaping of technology the focus is instead on the social forces that shape technology and how they are reciprocally influenced, or, mutually shaped.

1.1.1 Social construction of technology

The discussion of the theoretical background of the research begins with a description of the social construction of technology (SCOT). Whereas the meta-narratives of modernity tend to posit technology as the main driver of social change, the social construction of technology, in agitating against these technological determinist accounts, underlines the social aspects of technology development and asserts that technology is a socially constructed phenomenon. This social constructionist approach to the dynamics of technological change is derived from the sociology of scientific knowledge in which "it has been argued that knowledge is a social construction rather than a (more or less flawed) mirror held up to nature" (Bijker and Law, 1992: 13). Accordingly, in the social construction of technology, technology is not treated as 'given', i.e., as an object of the natural environment. As Bijker (1992) asserts, "technical artifacts do not exist without the social interactions within and among social groups" (p. 76). In fact, technology development in SCOT is posited as the outcome of the processes of everyday negotiation of meaning between, what he terms, the various *relevant social groups* (Bijker *et al.*, 1987). The idea of negotiation stresses technology development as a contingent process[9] and as "a process often seen as driven by the social interests of participants" (Bijker and Law, 1992: 13). In SCOT, special attention is paid to the conflict of interests at play between the various stakeholders. "Different social groups have different concerns, or simply different practices, and hope for or expect different things from their technologies" (ibid.: 105). Examples of such conflicting interests may be represented by "contradictory economic, social, professional, managerial, and military goals" (Misa *et al.*, 2003: 10).

Prior to discussing SCOT's merits and points of critique, I will here briefly summarize its main characteristics. First, central to SCOT is the idea of 'interpretive flexibility', suggesting that the development of technical systems is dependent on how people in different situations interpret technology in different ways, producing different outcomes. As it is claimed, technologies have interpretive flexibility until the stage in which certain meanings of a technology have come to prevail and the technology 'stabilizes' (Pinch and Bijker, 1987).

A second central concept utilized in SCOT is the concept of relevant social groups. It refers to those who "influence the creation, the demand for, production, the diffusion, the acceptance, or the opposition to new technologies" (Cowan, 1987: 262), including designers, policy makers, vendors, and users. "The key requirement is that all members of a certain social group share the same set of meanings, attached to a specific artifact" (Pinch and Bijker, 1987: 30). This is referred to as the sharing of a technological frame.

9 According to Law (1994: 96), "contingency says that things are the way they are for local reasons" (p. 96).

"The term 'technological frame' refers to the concepts, techniques, and resources adopted by technologists and others. It is thus a way of talking of the set of theories, expertises, values, methods of testing, and physical tools and devices available to communities as they negotiate about the putative character of innovation" (Bijker and Law, 1992: 19). [10] A main argument of SCOT is that "[b]oth social groups *and* technologies are generated in the contingent arrangements of concepts, techniques, and resources brought together in the relevant technological frame" (ibid.).

The social construction of technology has been extensively appraised as well as criticized (see Winner, 1993; Escobar, 1994; Klein and Kleinman, 2002). It is for this reason that I will only discuss the merits and criticisms of SCOT that I take as important points of departure in my research. To be precise, I will discuss what the value of SCOT is for my research, what it is that limits the value and what I propose to correct these shortcomings.

To begin with, in accordance with SCOT, I consider it important to prioritize the role of social groups in the development of technology and the various meanings they attach to technology. I thus hold key to my research the premise that "technologies are interpretively flexible" (Law and Callon, 1992: 46), that the meanings attached to technology by the people who are confronted with it vary and that this produces different outcomes in different contexts. I view the negotiation between different perceptions of technology as the natural course of technological projects.

Furthermore, of special value for my research is the realization that the processes of negotiation central to technology development are driven by the social interests of the people involved.[11] Upon revealing the various meanings attached to technology these interests will come to light. However, at this point, one of the theoretical flaws of SCOT becomes apparent. The criticism relates to the fact that "SCOT leaves no attention for constraining dimensions of social structure" (Bakardjieva, 2005: 4). Its treatment of interest is derived from interest theory in which it is purported that "people in different positions have different 'interests' (…) and they act accordingly" (Ortner, 1984: 155) as they seek to enhance their respective positions. This, however, puts too much rationality on the part of actors – actors as necessarily aware of what their interests are (Giddens, 1993) and who are always pursuing goals. Instead, included in any study of technology should be the pressures imposed on people and the extent to which they might not have much freedom of interpretation. Thus, in order to understand the ascribed meanings to technology, one has to know who creates them and to take into account the inequality in power and access to resources between the various relevant social groups (cf. Klein

10 In the words of Durbin (1980), "[i]t is that attitude to the world that is the foundation for, yet wholly present in, technological activity. It is simply the technological attitude toward the world" (p. 320).

11 "'Interests' can be simply defined as any outcomes or events that facilitate the fulfillment of agents' wants" (Giddens, 1993: 93).

and Kleinman, 2002).[12] For my research such constraining dimensions of social structure are indeed considered relevant.

Another concept that I hold valuable for my research is the idea of relevant social groups. I should say though that I employ the concept of relevant social groups in my research mainly owing to its blatantly outspoken actor orientation. However, by assuming *a priori* a "sharedness in meaning", in terms of technological frame, the concept of relevant social groups is treated in SCOT as if they are homogeneous social groups (Oudshoorn and Pinch, 2003). I argue instead that one should pay equal attention to the individual diversity of interpretation within these groups and not merely incorporate the diversity of interpretations between the different groups. Another shortcoming of the idea of relevant social groups is the fact that it is too static a conception. As I contend, people might be part of various relevant social groups simultaneously. For instance, people might be confronted with a technology as both designer and user (or, in my research, as both user and moderator). I therefore stress the need for a more dynamic conception of the idea of relevant social groups, in particular with reference to user groups, and as well as a focus on individual deviations within these groups. In my work the idea of relevant social groups is used as one of the means of framing the research population and selecting informants. The extent to which they do in fact share meanings and display similar behavior with respect to the technology is part of the empirical work of the research.

Whereas the previous points referred to concepts and premises of SCOT, albeit adjusted, that I hold valuable for my research the following issues refer to points of critique compensated for by the two theories described in the next two sections of this chapter; inscription and appropriation theory.

The first point of critique is that SCOT "disregards the possibility that there may be dynamics evident in technological change beyond those revealed by studying the immediate needs, interests, problems, and solutions of specific groups and social actors" (Winner, 1993: 370). Although Bijker and Law (1992) do, in later work, extend the notion of 'technological frame' to the way people account for the 'technology' seen as influenced by their 'cultural background',[13] these studies remain limited in the SCOT

12 Approaches that do take the inequality in power and resources of actors into account are known as the critical approaches to technology (Feenberg, 1992). Feenberg, as the main representative of this stream of social studies of technology, coined the term 'hegemonic technical code' to refer to the "widely accepted set of technical principles and procedures guiding the creation of technical objects, which is congruent with the interests of the dominant social forces" (Bakardjieva, 2005: 16). As the argument goes, the dominant rationality imposed by technology subjugates 'other' and inferior knowledges. I should say here, however, that although I do not rule out the possibility of such domination, in my study I do not *a priori* take this position. As I contend, the effects of inequality in power and access to resources will have to be investigated empirically and should not be *a priori* assumed. It is for this reason that the so-called critical approach to the study of technology is not part of the theoretical framework of my study. This, however, does not mean that in my research I do not pay attention to power differentials in and between the various relevant groups.

13 This 'cultural frame' refers to how "broad cultural beliefs and social patterns create and reinforce cognitive patterns and or ways of seeing the world?" (Carlson, 1992: 176).

tradition. My research, instead, pays considerable attention to the implicit meanings also. I argue that this can be done by positioning the ways in which the relevant social groups make sense of a technology as an integral part of their experience of everyday (work) practice, by going beyond the simple functionality of the technology in terms of what they use or intend to use it for and also investigate its symbolic meaning. It can also be done by positioning the meanings they attach to technology in the wider context of interconnecting and overlapping social worlds.

The biggest incommensurability with SCOT lies in its lack of attention to what users actually do with technology. This neglect is twofold: first, in the form of a lack of attention to the social consequences (Escobar, 1994) of technology and, second, in the form of an underexposure of the concept of user agency (Oudshoorn and Pinch, 2003). First, according to Winner (1993), SCOT displays an "almost total disregard for the social consequences of technical choice. (…) What the introduction of new artifacts means for people's sense of self, for the texture of human communities, for qualities of everyday living, and for the broader distribution of power in society" (p. 368). As Lie and Sørensen (1996) maintain, this is due to the fact that SCOT, in its reaction against technological determinist approaches, turned its focus to innovation rather than to impact studies. I would not go so far as Lie and Sorensen (1996) in saying that the consequence of this is "a lack of analysis of what happens with technology after it leaves the laboratory and the designers' desks" (Lie and Sørensen, 1996: 7). After all, SCOT does pay attention to the incorporation of user feedback into design processes (Pinch and Bijker, 1987).

Second, and despite the incorporation of feedback loops, it has to be said that SCOT does leave the notion of user agency unexplored (cf. Oudshoorn and Pinch, 2003). By user agency I am referring to users actually transforming technology as they use it. It involves "being if not author of what is consumed then author of how things will be consumed" (Strathern, 1992: xiii).

Overall, SCOT owes its value predominantly to the notion of interpretive flexibility, the understanding of technology development or technical change as a process of negotiation, its attention to conflicts of interests and its focus on the contingency of technology development. Its main shortcoming, namely its underexposure of user agency, is filled by appropriation/domestication theory. Prior to discussing the view of user agency in appropriation/domestication theory, in the next section I will discuss how the (extended) notion of inscription fills the lacuna left by SCOT with regard to the wider context of interpretation.

1.2 Inscription

Another important theoretical grounding of my study is provided by script analysis. Script analysis or inscription theory is proposed as part of the so-called semiotic approaches to technology (Woolgar, 1991; Akrich 1992; Latour, 1992), the basic premise of which is that "constructing a machine is like writing a text" (Woolgar, 1991) and, hence, using a machine is like reading a text. As Latour (1992) says, "the inscription of builders and users in a mechanism is very much the same as that of authors and readers in a story" (p. 236).

As describing the technology-as-text approach exceeds the purpose of this thesis,[14] I will confine this discussion to script analysis for, I argue that the extension of its leading concept, 'script', will enable me to bring in the wider context of technology development. "The notion of script is used by Akrich (1992) and Latour (1992) to capture the (implicit) messages and guidelines in artifacts" (Rip and Van Lente, 1998: 218, note 228). With the notion of script, Akrich (1992) purports that "conditions of usage – which usually correspond to certain user representations – are objectified in technologies" (Bingle and Weber, 2002: 28). Simply put, script analysis argues that the images of a projected collective user, inscribed in the technology by its designers and/or innovators, will *prescribe* the prospective user and prospective usage. Prescription, then, refers to the "behavior imposed back onto the human by nonhuman delegates" (Latour, 1992: 232).[15]

In the phase of technology use, the user is subsequently confronted with the image of the user as inscribed in the technology. As the argument goes, in case of a "gap between the prescribed user and the user-in-the-flesh [the actual user], a difference as big as the one between the 'I' of a novel and the novelist" (Latour: 1992: 237), the technology is believed to fail. If, in the unlikely event that the prescribed user coincides with the actual user, meaning according to Latour, when "it does what is expected" (ibid.), the technology is said to be successful.

In what follows, I would like to pinpoint the value as well as the shortcomings of the notion of inscription as introduced by Akrich (1992) and Latour (1992). First, the value of inscription for research lies in the realization that "technical objects (…) define actors and the relationships between them" (Akrich, 1992: 220). That is, the recognition that upon appropriation users are confronted with designers' preferred narratives as a consequence of which technology prioritizes and/or excludes certain users (Oudshoorn *et al.*, 2004).

14 See Oudshoorn and Pinch (2003) for a review of the semiotic approach in the social studies of technology.
15 This argument is comparable to what Grint and Woolgar (1996) describe as 'configuring the user'. Configuring the user refers to the idea that "dominant producer preconceptions of the user become embedded in the machine" (Bakardjieva, 2005: 22). "Configuration connotes 'making compatible'; 'identifying, defining, constructing, enabling and constraining' the user" (Grint and Woolgar, 1996).

A point of critique of script analysis concerns the exclusive attention paid to the immediate design context of inscription. With this I mean that the idea of inscription does not seem to go beyond specific images of the projected user. Conversely, I hold that scripts not only hold biases of user and usage, they are also incited by visions of technology in society at large as well as specific institutional inscriptions. This is comparable to the critique of SCOT with respect to the incorporation to the wider context affecting technology development (the technological frame).

Therefore, I propose extending the idea of inscription to reach beyond the design context and hence provide for a specification of the wider context that both script analysis and SCOT seem to lack. This extension is inspired by the notion of the "script of expectation statement" (Van Lente, 1993; Rip and Van Lente, 1998). The idea of the script of expectation statement is posited with a view to understanding "[h]ow story-lines may structure action before the fact and how prospective structure emerges" (Van Lente and Rip, 1998). Reconstructing the 'matrix of expectations', then, helps in understanding the "desired movements" the various actors involved in technology development want to make (Van Lente, online).[16] The point here is that the script of expectation statement specifically refers to the wider political economy of inscription, as it has an understanding of technology development taking place at various levels of interference. This is because, Van Lente (1993) says, "expectations are heterogeneous: occur at different levels with different specifities" (p. 58). These various levels include technological, institutional and societal levels of inscription.

This brings me to another point of critique, namely, the fact that script analysis does not "go beyond a rhetoric of designers being in control" (Oudshoorn and Pinch, 2003: 15). This point of critique relates to the fact that the idea of user agency, at best, is posited as reactive –"delimited in its structure by the designers agenda" (Bakardjieva, 2005: 23). Although Akrich (1992) does suggest investigating the negotiation between user and designer, i.e., between projected user and real user, and "to study the way in which the results of such negotiations are translated into technological form" (p. 208), the user is posited as the passive reader and not the author; the one who receives and reacts, not the one who initiates processes of inscription.

Whereas script analysis is in general concerned with encoding designer narratives, as is also the case with the script of expectations statement, it is my contention that inscription is not the prerogative of designers. That is to say, it is not only designers who do the work of inscription; inscription also includes user inscriptions. As a matter of fact, I contend that most of the work of inscription is done in the context of technology's use.

16 The matrix of expectations is a concept introduced by Belt and Rip (1987) and entails that: (1) "expectations concern the possibilities and difficulties of a technological development (theory, hypotheses)"; (2) "expectations guide the actions of the actors (shows, guides, routes, choices)"; (3) "expectations can be used as a resource for legitimation" (Van Lente, 1993: 51).

As I will explain further in the next section, power is on the consumption side as much as it is on the production side. Users, in their various roles, are also believed to have the capacity to inscribe the technology with their preferred narratives in my research.

In the phase of technology use, then, various levels of inscription can be distinguished: first, the work of inscription is done by the expectations at the societal level referred to as the meta-narratives of modernity. These might, for instance, hold biases with respect to the belief in progress with technology. Second, the work of inscription is done by the institutional setting in which the technology is deployed (cf. Douglas, 1986).[17] This level of inscription represents the organizing narrative.[18] According to McLaughlin *et al*. (1999), "[o]rganising narratives are, at their most fundamental, accounts of 'how the organisation should operate' or 'what we do' or 'what sort of organisation we are'. (...) They also meditate the possible interpretations available to make sense of changing conditions, such as the arrival of new technology" (McLaughlin *et al*., 1999: 25). For instance, technological expectations in modern organizations are often accompanied by expectations about organizational change (McLaughlin *et al.*, 1999). Third, the work of inscription is done by the 'little narratives', the stories of users confronted with the technology in the various kinds of roles.

Thus, technology "encapsulates" not only the "preferred narratives of the designers" (Bowker and Star, 2000) but should also be conceptualized as the instantiation of expectations about technology in society, expectations about technology at work, and expectations about practice and actors the technology is meant for. Technology 'development' perceived as such includes aspects of the wider context of inscription and extends the notion of design to the ways in which the various relevant user groups inscribe the technology.

My research takes a closer look at the effects of the various levels of inscriptions in a micro-social setting. Unlike script analysis, I am not so much concerned with the 'dynamics of expectations' (Van Lente, 1993), that is, with understanding how and why certain expectations prevail and others do not, but more with how they embody the interests of the various user groups involved and how they materialize in practice (if at all). This can be referred to as the 'situatedness of expectations' (Brown, 2003).

I should add, furthermore, that my research is not so much concerned with the previously mentioned idea of failure or success of technology as a consequence of the gap between the various levels of inscriptions and actual practices. Rather, unlike script analysis it addresses the experiences of users in their 'reading' of technology and how and "why users may react in ways different from those prescribed by producers" (Bakardjieva, 2005: 22). My research tries to account for this gap and investigates the

17 As Douglas (1986) says, "institutions do the classifying" (p. 91).
18 Organizing or "organizational narratives are both inscriptions of past performances and scripts and staging instruction for future performances" (Czarniawska, 1998: 20).

consequences of the negotiation between projected and real user and usage and how these negotiations are materialized in both practice and technology.

In sum, I have argued in this section that inscription should be confined neither to the immediate context of inscription nor to the work of designers as it is incited by various levels of interference and also occurs in use contexts. As a consequence, modern technology represents narratives of design, organizing narratives, meta-narratives and little narratives. As I will explain further in the next section, any study of technology should include the macro, meso and micro-level narratives it represents.

So far, I have dealt with social constructivism and script analysis and their value for the investigation of the social study of technology. The third theory discussed is known as appropriation/domestication theory. As appropriation/domestication theory acknowledges both the encoded nature of technology and its interpretative flexibility (Mackay and Gillespie, 1992) and makes up for some of the flaws of SCOT and inscription theory, it seems the logical next step to take.

As discussed, one of the main shortcomings of both SCOT and script analysis is their lack of attention to the idea of user experiences and agency, as in both theories users are positioned at the receivers' end of technology, not exercising any control over its development. Consuming/using technology is portrayed in this way as a passive process. Instead, one of the main premises of appropriation/domestication theory is that "the consumer/user should be perceived as an active party" (Lie and Sørensen, 1996: 13). Appropriation/domestication theory not only deals extensively with the notion of user agency; the wider context of technology interpretation also receives elaborate attention.

1.1.3 Appropriation/domestication theory

In this section I will discuss the main premises of appropriation/domestication theory and how it fills the lacunas left by SCOT and script analysis. In the subsequent section (1.1.4) I will thereupon highlight and extend some of the most important assumptions of appropriation/domestication theory for my research. These are subsumed under the heading of 'creative appropriation' and underline the subjectivity and creativity of technology use.

The theory of appropriation/domestication was originally proposed for the study of technology incorporation in the household. However, nowadays appropriation/domestication studies are no longer confined to the domestic sphere and have come to denote the study of technology in bounded everyday life settings in general. The work organization, for instance, is such a bounded setting. As appropriation theory moved its attention from the "moral economy of the household" (Silverstone *et al*., 1992) to other

everyday environments of technology use, its most important features persisted, i.e., its attention to technology-in-use and its focus on users and their everyday world of social relations.

To begin with, rather than revolving around matters of innovation and design, as is the case with both SCOT and script analysis, appropriation theory is largely directed toward *technology-in-use* (Lie and Sørensen, 1996). This entails a focus on use and users (Bingle and Weber, 2002; Jamison and Hard, 2003; Weber, 2005). The consequence of this is that appropriation theory deals with what people actually do with technology and what technology actually does with people in a specific local context. Appropriation theory, therefore, fills in for the shortcoming of script analysis "by emphasising the relationship between human being and object" (Bingle and Weber, 2002: 17).

Second, appropriation theory is furthermore based upon the notion of interpretive flexibility, i.e., how technologies' meanings change over time as people use them in everyday settings. In addition, appropriation is understood to include both interpretation and social interaction as "technologies acquire meaning only when they interact with everyday life" (Lie and Sørensen, 1996: 17). Appropriation theory's main preoccupation is thus how people experience, perceive and interact with technology.

Third, an important premise of appropriation theory is that "meaning is not inherent in the object, but is related to its context" (Mackay and Gillespie, 1992: 704). As appropriation theory incorporates both technical and social aspects in the study of technology (Lie and Sørensen, 1996: 4) it recognizes that people's interpretations are prompted by their positioning in a specific context – the household or the work organization – and others confronted in that context. Ascription of meaning is here aknowledged not only to occur in the face of the technology but with respect to the wider context of appropriation (cf. Bingle and Weber, 2002).[19]

Fourth, not only is the interaction of user and technology underlined in appropriation theory, the forces at play influencing that interaction are also taken into account. As Mackay and Gillespie (1992) assert, "[a]s well as being encoded, technologies constitute a site on which various social forces converge. This is the sphere of appropriation" (Mackay and Gillespie, 1992: 709).[20] The perception of technology use as an outcome of the internal struggles in a given environment makes up for the lack of attention paid to such struggles in SCOT.

Fifth, in appropriation theory consumption of technology is posited as an active process (cf. Carrier, 1990). The idea of active consumption is derived from cultural and

19 Appropriation as situated activity is explained by Thompson (1995) as follows: "it always involves specific individuals who are situated in particular social historical contexts, and who draw on the resources available to them in order to make sense of media messages and incorporate them into their lives" (p. 174).

20 And as Lie and Sørensen (1996) add, "[c]onflicts and negotiations about the employment of technology, between designers and users and among users, are forces shaping the complex and composite relations of everyday life" (p. 12).

media studies and refers to the fact that "the users/consumers make active efforts to shape their lives through creative manipulation of artifacts, symbols and social systems in relation to their practical needs and competencies" (ibid.: 9). Consumption is neither a matter of having no choice nor a matter of being determined by directives inscribed in technology in how to use it. As Mackay and Gillespie (1992: 699) put it:

> *"People are not merely malleable subjects who submit to the dictates of a technology: in their consumption they are not the passive dupes suggested by crude theorists of ideology, but active, creative and expressive – albeit socially situated – subjects. People may reject technologies, redefine their functional purpose, customize or even invest idiosyncratic symbolic meanings in them. Indeed they may redefine a technology in a way that defies its original, designed and intended purpose. Thus the appropriation of technology is an integral part of its social shaping".*

I should note here, however, that in the context of the work organization, people might find that in appropriating organizational artifacts they do not experience the same amount of freedom as they would in other environments such as the household. An important point about the differences in context between the household and the work organization is that "there is less scope for a variety of forms of appropriation in work than in the domestic sphere. In the former, users are generally told to use particular technologies, and in particular ways. (…) At home, however, there is a far greater choice – starting with whether or not one buys the product in the first place" (Mackay and Gillespie, 1992: 699).

The final characteristic of appropriation theory I would like to draw attention to is that it goes beyond utilitarian concerns of technology. This means that apart from issues of function and use, it also includes the symbolic expression of technology (Mackay and Gillespie, 1992; Lie and Sørensen, 1996). A symbolic expression is "something that stands for or suggests something else by reason of relationship, association, convention, or accidental resemblance" (Fischer *et al*., 1996: online). An example of symbolic expression is the consumption of certain goods in order to express a belonging to a certain social grouping. Consumption, in this view, is "an activity of self-expression, and is concerned with the production of identity" (Mackay and Gillespie, 1992: 704).

So far, I have discussed the main premises of appropriation theory and how such an orientation makes up for the shortcomings of both SCOT and inscription. In the next section I will highlight and extend some of the most important assumptions of appropriation theory for my research. Together these inform the main elements of a 'theory' of creative appropriation.

1.1.4 Elements of a 'theory' of creative appropriation

> *"That [we] have become enmeshed in processes of commodification and rationalization does not mean that [we] will lose any ability to construct creative responses to modern life (Kahn, 2001: 664).*

In order to explain the main elements of a 'theory' of creative appropriation and how they relate to each other, one has to go back to the meaning of the word appropriation. In its most literal sense, appropriation is "the work of making a personal possession out of the anonymous commodity" (Carrier, 1990: 583). According to the 9th edition of *The Concise Oxford English Dictionary*, appropriation refers to "taking as one's own or to one's own use; the assignment of anything to a special purpose or special attribution or application". The appropriation process of technology as "taking to one's own use" within the closed confines of the household is defined by Silverstone (1999) as: "fitting and fixing the new into the familiar and the secret, *molding* its novelty to the needs, and desires, and culture of the family or household. It is therefore, essentially a *conservative process* in which consumers try to incorporate new technologies and services into the patterns of their everyday lives in such a way as to maintain both the structure of those lives and their capacity to control that structure" (p. 252). [emphases are mine]

There are two basic premises in this citation of Silverstone that point to the essence of appropriation theory: the assumption that appropriation is a conservative process and the assumption that appropriation is a process in which users mold the technology. First, appropriation theory asserts that people make technology 'their own' in such a way as to ensure the essence of their own economic, social and cultural ordering (cf. Sahlins: 1998). In anthropology, this is referred to as 'alternative modernities' (Taylor, 1999). People are not necessarily resisting new technologies, and with them, the inscribed narratives of modernity, but are making them into something that reflects the way they perceive the world. The rubric of alternative modernities acknowledges that modernization does not necessarily entail a homogenizing process (cf. Fischer, 1999) and stresses the non-linearity, discontinuity and multiplicity of such ordering processes.

Apart from the notion of alternative modernities, I would like to introduce the concept of 'individual tactics'. In his conception of individual tactics, De Certeau (1984) underlines the different kinds of readings of 'consumers', comparable with the idea of interpretive flexibility, *and* stresses the fact that consumers have their own ways of manipulating, referring to the idea of active consumption. To illustrate this, De Certeau (1984: 32) depicts how after the arrival of the Europeans in Mexico, the Indians took their assimilation into their own hands:

"Indians often used the laws, practices, and representations that were imposed on them by force or by fascination to ends other than those of their conquerors; they made something else out of them; they subverted them from within – not by rejecting them or by transforming them (though that occurred as well), but by many ways of using them in the service of rules, customs or convictions foreign to the colonization which they could not escape".

I employ the term 'individual tactics' as it emphasizes, first of all, the individual creative responses to technology, that is, as a reaction against the implied sharedness in meaning of SCOT's relevant social groups and domestication theory's moral economy of the household.[21] I furthermore opt for the concept of individual tactics to underline the fact that people have different responses to the environment and to each other. Accordingly, the appropriation of technology occurs with regard to individuals' assessments of future and other anticipations. De Certeau (1984) refers to these anticipations as individual tactics. Individual tactics are defined in interaction with the environment: they are responses to strategies (for instance, as objectified in technology) as well as the context in which they are implemented. In short, they are the creative, multilayered, everyday response to the "property of others" (ibid.: xii). Appropriation should thus be understood as the everyday/ordinary negotiation of meaning within a multi-layered context. Considering outside forces impinging on individual practices, as well as the reaction at the grassroots level to these forces, employees' individual tactics can be understood with reference to local practice, the larger institution, and the society of which it is a part.

De Certeau (1984) makes a distinction between strategies and tactics to distinguish between the ordering of the 'elite' and the ordering of the 'underdog'. While I agree with De Certeau that 'common people' "see different things", I do not want to rule out the fact that the so-called elite, likewise, is compelled by forces placed upon them. Their appropriation should therefore also be looked upon as a form of creative appropriation.

The notion of creative appropriation refers not merely to using and molding technology in other ways than intended by 'design', referred to by De Certeau as 'subversive use', but also to how technology is appropriated as a form of cultural expression (Stewart, 2003). The cultural expression of technology is twofold: first, as taken from studies of material culture in anthropology, [22] (technological) objects are understood to facilitate social relationships and define social identities (Douglas and Isherwood, 1978). Appropriation of technology is likewise understood to define aspects of social identity and belonging to. This includes both the *going along with* as well as the *resistance to* technology. This is

21 The household as a moral economy implies an *a priori* shared value system comparable to the idea of relevant social groups (cf. Bingle and Weber, 2002).

22 See for instance Lemonnier (1992) on material culture as an expression of social identity. For other efforts in the anthropology of technology, see Harris (1995) and Magnarella (1993).

because, apart from processes of identification, appropriation of technology might just as well express processes of 'disidentification'.

The second kind of cultural expression is comparable to Turkle's (1984) idea of the computer as 'evocative object'. In *The Second Self*, Turkle calls "the personal computer an evocative object because it provokes self-reflection and stimulates thought" (Turkle, 1997). In a similar vein, I contend that interacting with technology entails taking a stand with regard to the various narratives the technology represents. In appropriating technology in the work organization, not only is technology's meaning negotiated, but also people's sense of self. For instance, as the technology incorporates assumptions about knowledge practices and relations to other actors in the setting, exactly that which renders the technology a thing-in-context (cf. Suchman, 2001), confrontation with the technological object evokes aspects of subjectivity (Orr, 1996: Noble and Lupton, 1998). More generally speaking, because the "meaning [of technology] is immanent in the relational contexts of people's engagement with their environments" (Ingold, 2000: 314), the appropriation of artifacts as part of their everyday (work) life expresses the relationship to practice in which it is applied and others one is confronted with in that practice.[23]

Not only does technology make people rethink and contemplate matters of subjectivity, it also triggers new subjectivities. In this sense, appropriation is believed to *encourage* engagement and identity formation (cf. Turkle, 1984). Together, these practices (both existing and new) are referred to in my study as the 'emergent practices', letting us understand how "the social and material are entangled and make up everyday work practices" (Law, 1994: 24) in new ways.

The last element of creative appropriation I would like to draw attention to is that it entails a recursive relationship between user and technology (Silverstone, 1992), as both practice as well as technology are negotiated. "The technologies in question are affected by [practice], while at the same time they confirm, adjust, or question relations of [practice]" (Lie and Sørensen, 1996: 19).[24]

As I argued in section 1.1.2, technologies are encoded with narratives about users and their practices. When they interact with technology, users are confronted with these, often ideological, biases in technology and determine their own individual tactics. This confrontation influences actors in the perceptions of practice and their professional identity as they tend to define themselves in the face of them, whether or not users' experiences agree or disagree with these narratives; whether they conform to or resist them. As users challenge the encoded meta- and organizing narratives, they inscribe the technology with their own meanings. As a consequence, both practice and technology are shaped in the processes of negotiation as technology redefines users and their practice and users redefine technology.

23 Thus, the ways in which individuals appropriate technology lets us begin to understand the way they make sense of their environment and their position in it as actors.
24 Originally, this quote relates to the gender bias encoded in modern technology.

My point here is that even though the 'design' of technological artifacts does not converge with the reality of practice (Lie and Sørensen, 1996), as is often the case, it does entail a renewed positioning, or redefinition, of people and their practices. The intricate level of ordering is somewhere in between the promise and practice of technology. In appropriation processes, not only does the gap between the image of practice as inscribed in technology and as experienced by participants become clear, in my research referred to as the promise/practice divergence, it is in the dialectic between the two that both technology and practice are constructed. Or, as Lie and Sørensen (1996) say, the essence is in the dialectic between embedding and re-embedding. It is for this reason that my research stresses the inter-relatedness of the two spheres; between promise and practice. In my study this is referred to as the dynamic interplay of negotiations.[25]

In sum, creative appropriation examines the individual tactics employed by the various users in their efforts to (re)define and hence reinscribe technologies to make them fit into the everyday activities of the work environment (cf. Bakardjieva, 2005). Creative appropriation acknowledges the fact that technologies are subjectively appropriated as well as technologies' encoded nature (Mackay and Gillespie, 1992). This entails the incorporation of the wider context of both interpretation and inscription (which, in the case of users, may very well refer to the same context). To paraphrase Mackay and Gillespie (1992), a theory of appropriation recognizes "the social forces in front of the technology, not only those behind it: a technology can be seen as a site on which a number of forces converge; it may bring to the user preferred forms of deployment (symbolic, functional, ideological encodings); while the user may at the same time bring to the technology his or her own specific intentions for the deployment of the technology" (p. 108).

The exposition of the theoretical background of the research results in the formulation of two main research interests. First, the ways in which modern societal expectations are enacted at the local or micro-social levels. Second, how ordinary people not only influence the shape and form of technology, but also how they eventually constitute new social imaginaries. Together, the research, as I will discuss in the following part of the chapter, revolves around the following issues: the dynamic interplay of negotiations between design and responses to that design (individual tactics); the inscriptions at play at the various levels of interference in this continuous process of negotiation; the actions that are constituted by means of it and the practices that emerge in the course of that work.

The objective of my research is to capture the specifics of the processes of negotiation or mutual manipulation in view of the rich array of contingency factors. This objective is best phrased by De Certeau (1984) as follows: "the goal is not to make clearer how the violence of order is transmuted into a disciplinary technology, but rather to bring to light

25 This appeals to the meaning of 'appropriate', referring to the concern that "all technologies ought to be well adjusted to their respective cultural environments" (Jamison and Hard, 2003: 87).

the clandestine forms taken by the dispersed, tactical, and makeshift creativity of groups or individuals already caught in the nets of 'discipline'" (p. xiv/xv).

In order to investigate how professional practice and technology are negotiated in everyday (work)life, the following two central questions are formulated:

1) *How are technologies creatively appropriated in local contexts?*
2) *How does this creative appropriation recursively order practice?*

The nature of the central questions is explorative, i.e., they are "[c]oncerned with discovering patterns in research data and to understand and illuminate them in context" (Miles and Huberman, 1994: 90). The related research objectives are descriptive and interpretive. Description refers to "making complicated things understandable by reducing them to their component parts" (ibid.). Interpretation is directed toward what certain phenomena or practices mean to the actors involved. In order to answer the central questions and realize the study's objectives, the empirical work focuses on the appropriation of the idea of virtual community in a large Dutch IT company.

1.2 The scripting of an ICT-enabled, community-specific, organizational modernity

In aiming to capture the significance of modern narratives of technology and organization in a micro-social context, the empirical work of the study concentrates on two ideas influencing the 'design' of contemporary society: ICT and community. Both these ideas are captured by the modern phenomenon of 'virtual community', which is the artifact of the study. I should note here that virtual community is preeminently studied as an instance of modern forms of work and technology. It is for this reason that it is the empirical object of the research and not due to a theoretical interest in the topic of virtual community. Apart from briefly introducing the artifact of the study in terms of its ICT and community component, in this section I will pose the research questions to be answered in the empirical work.

First, the technology my informants are confronted with as part of their everyday work practice, and subject of my research, can be broadly characterized as an internet-based groupware technology. "The intent with groupware is to provide support for coordination and collaboration through shared access to technological capabilities such as common repositories, discussion forums, and communication facilities" (Orlikowski, 1996: 23). In short, groupware technology is said to enable groups of people to share information, communicate, cooperate and interact with each other online. I refer to chapter four for more information on the technology.

Whereas its designers describe the groupware technology as 'a tool for team collaboration', the organization's managers explicitly introduce the groupware technology with the language and promise of community. Communities experienced through technological mediation are referred to as virtual community. In the words of Rheingold (1994), a virtual community is "a group of people who may or may not meet one another face to face, and who exchange words and ideas through the mediation of computer bulletin boards and networks" (p. 57/58).

Virtual community is thought of as a form of postmodern community:

> *"Virtual communities are formed and function within cyberspace – the space that exists within the connections and networks of communication technologies. They are presented by growing numbers of writers as exciting new forms of community which liberate the individual from the social constraints of embodied identity and from the restrictions of geographically embodied space; which equalize through the removal of embodied hierarchical structures; and which promote a sense of connectedness (or fraternity) among interactive participants. They are thereby posited as the epitome of a form of postmodern community within which multiplicity of self is enhanced and difference proliferates uninhibited by external, social structures" (Willson, [1992] 2000: 647).*

It should be noted here that while ICT is posited as a common characteristic of meta-narratives of the information society, community can equally be considered a narrative of modernity. In fact, and rather paradoxically, the concept of community is highly central to modern expectations of the information society, knowledge work and the post-bureaucratic organization. 'Paradoxically' since community has traditionally been opposed to modernity. In European sociology from the nineteenth century, the transition from a traditional to an industrial society was characterized as the transition from *Gemeinschaft* to *Gesellschaft*. In this antithesis, Gemeinschaft (community) is the opposite of the egocentric and cold Gesellschaft (society) in which relationships are fleeting, impersonal and established on the basis of contract or rational exchange (cf. Maine, 1861). Gesellschaft denotes the rational and instrumental aspects of social reality (De Valk, 1977) and represents a society characterized by individual selfishness. Gemeinschaft, on the other hand, is a society characterized by solidarity, affectivity, a "society of intimacy" (Cohen, 1985: 22) in which relationships are informal and mostly based on family, friendship or religious bonding (Zijderveld, 2000).[26] Thus, Gemeinschaft

26 Such accounts of the transition of society from Gemeinschaft to Gesellschaft are typical for social scientists of the late 19th century such as Durkheim, Weber, Tönnies and Maine, working within the tradition of early contact theories (evolutionists).

is portrayed as being unspoiled by the detrimental effects of the 'cold', hard formal, businesslike society that industrialization and capitalism have brought about.

Community not only gained renewed interest in the social sciences, the "remarkable comeback" (Zijderveld, 2000: 109) of the nineteenth century concept of community increasingly manifests itself in political, bureaucratic and also organizational discourse.[27] Initiator of this so-called 'new communitarianism' is the sociologist Etzioni (1994). It is interesting that the American Etzioni explicitly appeals to the idea of community in European tradition, meaning the nineteenth century idea of Gemeinschaft. An important distinction between the American and the European concept of community is that whereas the former refers to the "concrete social and cultural environment of a distinct group of people" (Zijderveld, 2000: 110), the latter takes shared values as points of departure for the concept of community. In chapter four I will further describe the connotation of community.

In order to study the negotiation of the modern phenomenon virtual community in the various micro-social contexts, the empirical work of the study was performed in a large nationally distributed Dutch IT company. The advantage of such a bounded yet distributed research setting is that it enabled me to investigate the appropriation of virtual community in terms of both online and offline interaction in the various use contexts.

The informants of the research are the various professionals working at one of the offices of the company. They referred to themselves as managers, consultants, project managers, data warehouse architects, sales account managers, and software engineers. For the purpose of my study, these divers IT professionals are classified into three relevant social groups with respect to their use of the artifact: managers, moderators nd partaking employees. Both setting and characters of the research will be more elaborately introduced in chapter three.

Whether and how virtual community becomes embedded in practice depends on how it is 'designed', the way it is introduced, and how it is interpreted, used and molded by the various relevant social groups. For the empirical work, therefore, the following set of research questions are formulated:

1) *How are the ideas of ICT, community and virtual community as advanced in management and popular literatures respectively related to organization, social and cyber-culture theory (cf. Joerges, 1989), and how are they modified when transposed from one discipline to another?*

27 In Dutch politics for example, one of the adherents to the trend of 'new communitarianism' is prime-minister Balkenende. 'Modern' community thinking has attracted attention mainly in the form of the controversial 'norms and values' debate, posited as the solution for the irrefutable failure of the 'multicultural society' (2004 – present).

2) *What expectations about the people, groups of people, and their practices are inscribed at the various levels of inscription and what does the difference between them reveal?*
3) *What does their adherence to, agreeing with or resistance to the various levels of inscription reveal about employees' individual ordering?*
4) *What generalized patterns of appropriation emerge as a response to the various elements the artifact represents?*
5) *How are these appropriation patterns to be understood in light of the experience of everyday work practice?*

Formulated as such, the research questions refer to the four main elements of the empirical work: (1) the 'translation' of the ideas of ICT, community and virtual community in academic and popular discourse: (2) the images construed of prospective user and usage; (3) the materialization of individual tactics in patterns of appropriation and; (4) the emergent practices of modern work practices in the 'information society'. In the next section I will describe the approach taken in the research and the suitability of the approach for answering the research questions.

1.2.1 Approach: the travel of community and ICT

In order to make the transition to the 'research technical design' (Verschuren and Doorewaard, 1998), as will be described in chapter two, in this section I will discuss the approach taken in the study of virtual community. This will lead to the specification of the 'research material', referring to the sources of information used in answering the research questions, and the kind of empirical work involved. To begin with, I will have to take a stand with respect to the phenomenon of virtual community in terms of what exactly I am studying: "A group of people? Their machines? A group of people and/ or in their machines? Or something else?" (Stone, 1992: 504).

Like 'groupware', virtual community "includes two distinct elements: a socio-organizational one: the 'group', a collective way of working, collaboration, the intimacy of staying together and sharing; and a technical one, the 'ware'" (Ciborra, 1996: 4). It is for this reason that the artifact of the study can be rightly referred to as a socio-technical artifact. The adjective socio-technical "stands for the recognition that organizational, social and larger societal aspects are inextricably bound up with technical aspects" (Rip, 1995, 428 note 8). The result of this is that it is equally studied in terms of the capacity of internet-based technology to mediate community and in terms of the actual inherent online social activity. In the first instance, a virtual community is defined as "a community in which most interactions are enabled by information technology" (De

Moor, 1999: 3). In the second instance, a virtual community is first and foremost thought of as a social entity; "a number of people who relate to one another by the use of a specific technology" (Stolterman *et al.*, 1998: online). As it contains both expectations of community and group-based computer-mediated work, I propose to study virtual community as the intermingling of social and technical worlds (cf. Willson, 2000).

The approach taken in the study of virtual community relates furthermore to the theory of appropriation as it takes into account the encoded nature as well as the subjective appropriation of virtual community. This entails that the empirical work should focus, first, on the discursive, material and social factors of its 'production' and, second, on the ways in which people 'consume' it in "systems of social signification" (Pfaffenberger, 2001: 1).

As the process of appropriation refers both to the study of appropriation as interpretive flexibility– technology as a form of cultural interpretation– and the study of appropriation as action, central to the study are the various meanings the relevant social groups attach to the artifact as part of their everyday work life as well as their actual use of it. The core of my empirical work thus aims to explicate the various meanings the organization's management, moderators and employees attach to the community and ICT ideas as part of their everyday work practice and how they employ these "resources in action" (Suchman, 1987) accordingly.

Together, the study of the appropriation of virtual community in terms of both perception and use of technology requires, first, the tracing of the development of ideas about community and ICT in society at large, to incorporate the larger political economic context of appropriation. Second, it requires tracing the ideas of community and ICT in the organization and seeing how they are translated in the expectations in context. Third, in order to see how the ideas are enacted in practice requires approaching technology appropriation as situated social interaction, denoting the actual encounters with the artifact. The approach taken in my study is therefore best referred to as the 'travels of ideas' (Czarniawska and Sevón, 1996).

Czarniawska and Sevón (1996) launched this approach with the aim of studying how organizational change comes about. Even though it is not specifically intended for the study of technology appropriation, I contend that it is suitable for answering the questions of the research. The reason for this is that, in accordance with appropriation/domestication theory, the travels-of-ideas approach posits the appropriation of organizational change ideas both as perception and action. Accordingly, the concepts of translation and enactment are key to the approach. Translation, a concept derived from actor-network theory, refers to "converting data into representations in other media" (Law, 1994: 49). "Translation aims at the appropriation of an external thing, which is then given another function, an altered meaning and often a new shape in

the new context" (Rottenburg, 1986: 214).[28] In the words of Czarniawksa and Sevón (1996), "[t]he concept of translation is useful to the extent that it captures the coupling between arising contingencies and attempted control, created by actors in search for meaning" (p. 47). Enactment refers to turning ideas into action. This is also understood as the process of materialization; "ideas turned into objects or actors" (ibid.: 22).

In a nutshell, the travel of ideas evolves along the following phases: "Ideas are turned into things, then things into ideas again, transferred from their time and place of origin and materialized again elsewhere" (Czarniawska and Sevón, 1996:18).[29] First, ideas evolve into (quasi) objects. Czarniawska and Sevón (1996) claim that this translation process inevitably involves a process of disembedding (Giddens, 1991). That is to say, in order to travel, images of community and ICT in organization and popular discourse have to go through a necessary process of abstraction. Subsequently, in the case of my research, they are quite literally objectified, i.e., objectified in technology, which presumes an even further abstraction of the ideas.

Second, ideas are "landing in localities" (Czarniawska and Joerges, 1996) – the research setting. This 're-embedding' implies the turning of (the abstracted) ideas into actions. In the case of my study this refers to the introduction of virtual community in the organization and involves a process of concretization, meaning; the ideas of community and ICT are translated into specific rules and blueprints in context – however implicit or hidden these may be. In my study this concretization in practice into the blueprints of practice is referred to as 'the promise'.

Third, ideas are turned into action. If the travel of an idea is 'successful', a process of institutionalization follows this process of enactment or materialization; ideas becoming institutions. To come full circle, the institutionalization of ideas (into social imaginaries) might shape the meta-narratives of modernity again.[30]

As I have previously argued, any study of the technology appropriation should include the three levels of analysis the artifact represents; the discursive, material and institutional/practical levels. Therefore, these lines of research are represented in the travel of community and ICT. Tracing the translation and enactment of ideas about community and ICT in an organizational context necessitates moving from the expectations on the societal level to managerial appropriation of the artifact, to participants' interpretation in everyday work life. This is not to say, however, that there is necessarily a linear causal relation between macro, meso and micro levels, or meta-, organizing and little narratives (Latour, 1999).[31]

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28 As Latour (1993) says, translation entails "displacement, drift, invention, mediation, creation of a new link that did not exist before and modifies in part the two agents" (p. 6).

29 In the case of the artifact of the study, the translation process is understood to evolve as follows: from idea into object, into action, into institution and into idea again.

30 I should say, however, that this phase of the travel of ideas is not explicitly included in my empirical work.

31 "There is no zoom going from macro structure to micro interactions [since] both micro and macro are local-effects of hooking up to circulating entities" (Latour, 1999: 245).

Since I contend that the travel of ideas can only be studied properly if one examines the micro-level of negotiation, the emphasis lies on the translation and enactment of the ideas of community and ICT in the context of the organization. As Morris and Lancaster (2005) say, "the translation process needs to be studied at different levels but especially at the company level, where active translation occurs" (Morris and Lancaster, 2005: 210). In doing so, I pay special attention to the ways in which the managers, moderators and employees of the organization mold ideas to fit the existing practices and their sense of social and cultural ordering.

1.2.2 Deconstructing technology, reconstructing practice

After having introduced the travels-of-ideas approach, in this last section of the chapter I will explicate the kind of empirical work this involves. In order to understand the various appropriations of virtual community in the organization, the first part of the empirical work is dedicated to the specific translations of community and ICT as objectified by the artifact. The second part of the empirical work is concerned with the multitude of responses to the promise, the concretized ideas in context, and hence investigates how the prevailing ideas behind the introduction of the technology become enacted (or not) in practice. In concrete terms, tracing the travels of community and ICT requires the work of deconstructing and reconstructing, that is, the deconstruction of the artifact into the ideas that lie behind it and the reconstruction of the practices that inform and are informed by these modern ideas (cf. Edwards, 2003).

In order to investigate the translation and enactment of modern expectations and to show how the introduction of modern change ideas results in all kinds of divergences and tensions between promise and practice in context, the research in general is posited as a discourse analysis. Discourse analysis is here understood as the study of social reality as discursively constructed and maintained (the shaping of social reality through language)" (Alvesson and Karreman, 2000: 1126). This approach to discourse analysis is commonly associated with the work of 'cultural analysts' as influenced by Foucault and Said and "takes discourse more globally to refer to particular areas of language use" (Barnard and Spencer, 1996: 162) as opposed to the conversation-analysis-understanding of discourse analysis. As Barnard and Spencer (1996) add, "this approach blurs together three levels of meaning: discourse is the act of talking or writing itself; it is a body of knowledge content; and it is a set of conditions and procedures that regulate how people appropriately may communicate and use that knowledge" (p. 163).[32]

32 "Discursive practices are characterized by the delimitation of a field of objects, the definition of a legitimate perspective for the agent of knowledge, and the fixing of norms for the elaboration of concepts and theories. Thus, each discursive practice implies a play of prescriptions that designate its exclusions and choices" (Foucault, 1977: 199).

Discourse should be viewed not so much as a discourse of truth but as a discourse of representation. "Discourse, then, is not so much a reflection of material reality but a construction of it; a particular way of representing the world through language and practice" (Grint and Woolgar, 1997: 32). This approach to discourse "pursues the connections between orders of communication, knowledge and power" (Barnard and Spencer, 1996: 162/3). However, (for reasons mentioned earlier in the text) it is not my intention to assume *a priori* the idea of a hegemonic discourse, that is, discourse understood as a body of knowledge content serving domination of, for instance, the social sciences over the management discipline, of managers over employees, etc.

First, tracing the travels of the ideas of community and ICT is done by means of deconstructing or decoding (the inscriptions in the artifact). Decoding is "the process of converting a signal in some communication system back into the original message" (Akmajian *et al.*, 1990: 481) the purpose of which is to "make visible the [organizing] narrative-in-the-making" (Star, 2002: 119). "A deconstructive reading" of community and ICT is thus employed as a means to get a grasp of the promise. A note of caution should be sounded with regard to decoding the meanings of an artifact and reading backwards to shared cultural meanings "as they may very well exaggerate, misrepresent, or recombine in novel ways meanings that are actually shared by the society at large" (Pfaffenberger, 1999: 161).

Second, the translation of ideas requires the reconstruction of social practice as the enactment of ideas. This refers to the idea of encoding –the effort "to translate [technology] from a material object into social relations" (Lie and Sørensen, 1996: 25). However, reconstructing practice should also be "aimed at recovering the projects, identities, and interests that inform" (Suchman *et al.*, 1999: 392) technology and modernity. Reconstructing practice therefore includes both the practices that shape and are shaped by the narratives of modernity (cf. Edwards, 2003).

The empirical work on deconstruction is done by tracing how ideas of community and ICT are translated in the relevant literatures, the language practices surrounding the technology and the technical features of the technology. The empirical work on reconstruction is done on the basis of narratives of use and actual practices. In this way, the various sources of negotiation, for all relevant social groups involved, are incorporated in the study; organization discourse, metaphors of use, 'affordances' of technology, and practice.

The deconstructive reading starts off with the textual level of discourse represented by both academic and popular literature on community, ICT and virtual community. I will here, first, investigate how the ideas of community, ICT and virtual community are introduced in their respective disciplines of origin; social theory, organization theory and cyber-culture studies. Subsequently, I will investigate how these ideas are taken over,

imitated, by the relevant management literature, including the more business-oriented and popular literature. Thereupon, I will examine how the ideas of community and ICT are modified when transposed from one discipline to another.

Tracing how ideas of community and ICT travel, furthermore, means taking into account the language practices surrounding these new technologies (Wilson and Peterson, 2002). I will here concentrate on the metaphors used in designating virtual community. A metaphor is an "illustrative device in which a term from one level or frame of reference is used within a different level or referential frame" (Tilley, 1999: 4).[33] It usually concerns concepts we are already familiar with in other domains. In the case of computing, for instance, "metaphors are suggestions to the user that working with the computer artifact is similar to the work the user is familiar with in ordinary work situations" (Ehn, 1988: 410).[34]

Metaphors can be used in research as a means to understand what meanings people attach to technology. Moreover, the metaphoric assertions people make about technology are said to exemplify the movements people desire to make (Fernandez, 1986). This is referred to as the cognitive aspect of metaphor. As such, they potentially enrich our "understanding of the interests at work" (Thomas and Wyatt, 1999: 695).

Furthermore, metaphors used in designating a technology not only exemplify the way people relate to technology but are also believed to structure collective experience. This is the normative aspect of metaphor. Paying attention to metaphor is particularly useful in this regard because "not only does it reveal how people make sense of experience but also how in different institutional settings different metaphorical uses nudge participants towards different kinds of experience" (Simpson, 2001: 106).

In my study I pay special attention to the kinds of metaphors the relevant social groups use in designating virtual community, referred to as metaphors of use. In analyzing the various kinds of metaphors of use employed, I will pay attention to what the deviation between the various metaphors reveals, what constellation of interests lies behind them, and how the metaphors employed relate to how people use or intend to use the artifact of the study.

However, I contend with Tilley (1999) that "any if not most material symbols do not work through rules of representation, using language-like syntax. Rather, they come to have abstract meaning through association and practice" (p. 707). This means that the metaphors used do not necessarily represent work practice as it is and might even produce deliberate misrepresentations of practice. Another note of caution refers to the

33 This refers to the Greek meaning of metaphor –"moving a thing from one place to another" (Star, 2002: 112).

34 Think, for instance, of the following computer terms: desktop, office, workspace, file, document, to name but a few. They are referring to familiar phenomena acquiring new meaning in computing. Using metaphor as study object is thus a "means of linking subjective and objective experience" and "provides an interpretative thread by means of which we can weave together into a fresh constellation the brute 'literal' facts of the world" (Tilley, 1999: 8).

fact that describing new phenomena in familiar terms may not necessarily do justice to their newness (cf. Fernback, 1999).

In addition to organization discourse and language practices, the technical features of the technology are also a source of negotiation. Deconstructive reading of the artifact in this case entails the deconstruction of "the boring, backstage parts of infrastructure, to disembed the narratives it contains and the behind-the-scenes decisions" (Star, 2002: 110).[35] This refers to the fact that the technology is acquired by organizations with a certain view of what it can and should do in context. This inevitably refers to the 'materiality' of the artifact holding prescriptive elements of prospective user and usage and, hence, revealing aspects of the promise.

Moreover, explicating the technical features is of vital importance to understanding just how they could possibly be translated when in use. This is referred to as the 'affordances' of technology. As defined by Norman (1988), affordances are "the technical features combined with the possible uses of the technology" (p. 9). The affordances refer to hypothetical instances and in some cases even to ideal situations; to 'what could be' and 'what ought to be'. They are thus "at once a permission and a promise" (Latour, 2002: 250) and can therefore be studied as indicating both potential as well as prospective usage. At the same time, however, that the technology may 'afford' certain usages, it does *not* permit or promise and even constrain or forbid others (Akrich and Latour, 1992). It enables as much as it constrains activity and is therefore also what it does *not* afford (Oudshoorn, 2003).

An important point to make here is that "the affordances of technology do not necessarily derive from the natural features of the artefact's materiality" (Hutchby, 2001: 448). Nor are the affordances of the technology in all instances necessarily translated when in use. A technology may afford something but that does not automatically entail that it is actually used as such. This is because its users determine what it eventually will be used for in a given context; whether it will be used and if so, to what purposes. Another point to consider is that the affordances concern not only perceptions and intentions but are also related to people's capabilities to use the technology to begin with.

Together, academic and popular writings, metaphors and affordances reveal the ways in which individuals' inscriptions interact with the narratives inscribed in technology and "how they combine to create new ways of viewing and talking about the world" (Wilson and Peterson, 2002: 460). In order to subsequently go beyond matters of representation, the research calls for the incorporation of utilitarian concerns of artifact appropriation. Therefore, in order to see how the idea(l)s of community and ICT are enacted in actual working practices, further empirical work is devoted to reconstructing technology as social practice (Suchman *et al*., 1999).

35 As Star (2002) says, this is done by "listening first for lies, secrets and silences" (p. 119).

An important point to make here is that for my study resistance to ideas is as interesting as, if not more interesting than, conforming to ideas, i.e., turning ideas, whether modified or not, into substance. As I am equally interested in the materialization of and the resistance to change ideas, the travels of ideas approach, in my study, also includes the unraveling of 'what is not', meaning, how the ideas of community and ICT are not materialized in practice and how people are deviating from the promise. Paying attention to how technology is appropriated in manners other than intended reconstructs 'what is instead', meaning what the practices and people's senses of self are that do not converge with the ideas of user and usage as inscribed in the technology. These are equally the practices that inform. Reconstructing practice, therefore, not only concerns the ways in which the ideas are enacted, modified or not, in practice, but also how people resist them and do not enact them, or only partly enact them.

Together, practice is reconstructed by how people say they use the technology and the practices 'captured' by the artifact. First, the so-called narratives of use reflect how the relevant social groups say they appropriate the technology. These stories revolve around the use of the artifact and reflect the ways in which people in organizations employ virtual community as part of their everyday work practice, as informed by their routines, habits, norms, values and ideas of professional identity. They tend to reveal what people do with modern technologies and what modern technologies do with people. "The function of the narrative is to find an intentional state that mitigates, or at least makes comprehensible, a deviation from a canonical cultural pattern" (Bruner quoted in Czarniawska, 1998: 6).[36]

Second, apart from the narratives of use, information and communication technology also 'captures' practice so to speak. That is to say, the virtual space of information and communication technologies makes practice visible as it records information, communication and interaction as it passes through it. According to Markussen (1995), "it renders public what is to be discretionary" (p. 170).[37] The enactment of ideas can thus be observed as (objectified) interaction online.

However, in studying online activity one should bear in mind that the online workspace is only one site or source of negotiation in people's everyday work life. And, due to the material attributes of the medium, it is also a site that influences the *kind* of interaction it produces. Therefore, just as information and communication technologies are said to make practice visible, they could very well render aspects of practice invisible (Markussen, 1995). One could think of the invisible work of file management as a form of classifying (Bowker and Star, 2001), revealing but also concealing aspects of work. I am

36 Put differently, talking about ICTs shows the "socially embedded sociotechnical activities that produce these artifacts" (Pfaffenberger, 1999: 148).

37 They also reveal aspects of work that are not considered to be part of people's job description, referred to as 'invisible work'. See for manifestations of invisible work, Strauss and Star (1999).

referring here to the missing categories, the under-represented voices and the absence of specific sorts of information.

The enactment or non-enactment of the ideas of community and ICT can also be approached from a relational stand, i.e., in terms of actual information sharing and communication relations between people. Since both ideas of community and ICT hold expectations of connections between people and information resources, in questioning the extent to which these ideas are enacted in practice one has to examine the degree to which people are connected by means of it. To investigate the extent to which the idea of virtual community is enacted in practice in the form of relationship formation requires a network approach. In a network approach, "the focus is on the relationship(s) between entities and the unit of analysis is their density or quantity, and sometimes the content of the communications and exchanges between entities" (Clarke, 1991: 127). To approach the study of virtual community from a network perspective, a social network analysis is also part of the research.

Together, the focus on organization discourse, language use, affordances, and social interaction shows the relationship between the discourse and practice of the change ideas. Departing from such a promise/practice optic enables a description and an understanding of how the processes of negotiation between the managers and moderators of the virtual communities and the employees as the projected users of these technologies evolve.

The different appropriations of the socio-technical artifact are to be constructed in the various organizational contexts, by revealing the meta-, organizing and little narratives, and by reconstructing practice through the collection of texts, narrative and practices of technology-in-use. In order to disclose these resources (texts, narratives and practices) and given the nature of the inquiry aim (constructivist, critical and micro-logic), the explorative nature of the research questions and the descriptive and interpretive nature of the related objectives, the research incorporates predominantly qualitative methods of data gathering. The method applied is referred to as ethnography. Ethnography, in short, refers to engagement, or immersion, through participation, observation and description in order to understand people's behavior as well as their symbolic world (Schensul and LeComte, 1999a). The choice of ethnography has to do with its preoccupation with 'little narratives' which enables the comprehension of the processes of translation and enactment 'from within'. Furthermore, since ethnography aims at paying attention to both the formal and the informal, "making the implicit explicit" (Schwartzman, 1993: 53), it throws new light on the ordinary and enables the search for the 'deeper structures' of appropriation. Apart from 'offline ethnography' I have also conducted what is referred to as 'virtual ethnography' (Paccagnella, 1997; Markham, 1998; Hine, 2000). Virtual ethnography is made up of observation *of* and participation *in*

the virtual workspaces (Mann and Stewart, 2000) of the virtual communities of the study. Together, the online and offline ethnography enable the contextual investigation of the various levels of technology appropriation.

In sum, in my empirical work I attempt to trace the travels and modifications of narratives of modernity between the claims of societal and organizational expectations on the one hand and local tactics on the other. For the translation and enactment of the meta- and master narratives into micro level practices, I will look at how the various relevant social groups perceive and use virtual community embodying modern narratives of technology and work, how they mold it, and what interests they inscribe in it as they interact with it.

1.2.3 Synthesis

As a conclusion to the broad theoretical background as presented in the first part of the chapter and the proposed empirical work in the second part of the chapter, in this section I will recapitulate the ideas I am working with in my research and how they determine how I engage with the empirical material of the research. The section will begin with the necessary explication of the notions of order and ordering, technology and organization that are implied by the theoretical background.

The theoretical ideas outlined in the preceding sections hold premises with respect to the notion of order and ordering. First, in the social shaping of technology, ordering is posited as a recursive process and understood as occuring through processes of mutual manipulation. This perspective is based on Giddens' structuration theory which states that "the structural properties of social systems are both medium and outcome of the practices they recursively organize" (Giddens, 1984: 25). Structuration theory acknowledges that individual interpretations as reactions to structures render structures susceptible to gradual change. Consequently, in my empirical work I will underline the interdependence of individual human conduct and social structure. This is done by including in the research the wider societal, institutional and technical contexts of inscription as well as the individual human responses to each of these properties.

A second and related premise with respect to the notion of ordering is that technology orders only to the extent that one acknowledges the social arrangements behind it (Mackay and Gillespie, 1992).[38] Subsequently, if one maintains that technologies are shaped by the context of their appropriation, what the technology mediates is also a matter of practice influencing practice *through* the technology. Therefore, I contend that

38 I contend with Mackay and Gillespie (1992), that "[i]n thus suggesting that a technology's social appropriation is shaped, or constrained by its physical nature, we are not resorting to some sort of technological determinism. For the physical technology itself embodies the social arrangements which gave rise to its production" (p. 700).

if one is to develop a full empirical account of the process of technology appropriation, one "will need to address ways that these pre-existing meanings affect those who consume the objects that carry those meanings" (to Carrier (1996: 128). In my empirical work, this effect is deduced from the outcome of the recursive ordering process in the form of the alternative modernities.

Third, ordering is never absolute and most of all a continuous and contingent process (Law, 1994). Ordering "is a process filled with tensions rather than a state or a solution […], a continual and incomplete process" (Law and Moser, 1999: 13). The consequence of this for my empirical work is that its outcome, referred to as alternative modernities, can only be interpreted as a temporary state.

Last, the premise of order and ordering presented in the idea of creative appropriation (section 1.1.4) is that "everyone orders" and that ordering is not confined to the so-called (administrative) elite. To paraphrase Law (1994), "[o]rdering is certainly not the preserve of those who give the orders, though it may be sometimes the latter's wish that this were so" (p. 3). Despite the fact that their position in the work organization is not equal in terms of available resources and power, I hold that the various relevant social groups are equal in the processes of negotiation (cf. Sillence, 1999) as they all have the capacity to manipulate the technology. Thus, "however unequal the relationships are, there is always a 'dialectic of control'" (Giddens quoted in Baert, 2000:101). Accordingly, in my empirical work, ordering is understood to involve processes of negotiation in which various strategies and tactics are developed, by employees as well as managers, to produce particular outcomes (Coombs *et al.*, 1992). The difference between the various user groups relies on the fact that they have different (formal) roles to fulfill in the organization. As a result, managers are more likely to "pre-energize" technology, so to speak, whereas employees merely "energize" it (cf. Pfaffenberger, 1999).

Another concept central to the theoretical positioning of the research is the concept of technology. As predominantly derived from the idea of script (of expectation statement) discussed in section 1.1.2, technology in my research is understood to include the whole range of actual technical devices, discursive and social practices – from language to objects – 'designed' to alter the material and/or social world (cf. Hess, 2001). Such a conception of technology, "linking material, discursive, and social technologies together" (Rabinow, 1992: 171), refers to Rabinow's notion of 'modern forms of life'.

I should note here that I refer to the technology of the study as the *artifact*. This is "to distinguish between the thing itself and the thing-in-context" (Suchman, 2001: online). According to Levinson and Ember (1996), the notion of the artifact implies that "it has been shaped to just such a preexisted design" (p. 1298). In my research, the artifact refers to the technology embodying the expectations-in-context, i.e., the promise of ICT and community in a formal organization, or virtual corporate community.

Virtual community as a modern form of work life preeminently represents the entanglement of discursive, material and social ordering as put forward in the definition of technology presented in the above. First, the discursive mode of ordering of technology refers to the discursive practices surrounding (new) technologies: the language practices and ideologies of technology that emerge from *and* inform (new) technologies (cf. Wilson and Peterson, 2002). In my empirical work, these discursive practices include academic and popular writings on virtual community and the metaphors of the artifact-in-use.

Second, with social technologies I am referring to technology as the "carrier of institutions" (Czarniawska, 2001: 3). An institution is here understood as "at once a system of social relations, economic arrangements, political processes, cultural categories, norms and values, ideals, emotional patterns, and so on and on" (Ortner, 1984: 148). In my empirical work, the technology as social world refers to the complex amalgam of rules, routines and regulations of the organization as well as to the ways in which social relations and practices are objectified in the artifact of the study (cf. Suchman, 1996).

Third, the material mode of ordering of technology does not necessarily refer to its physical attributes (Hutchby, 2001).[39] Instead, it connotes the technical attributes with a view to certain usage and users. These are referred to in the previous section as the 'affordances' of technology. In my research, the affordances of both ICT and community provide the indications of how and why the various relevant social groups interpret and use virtual community in the organization.

An important matter to point out here is that in the conception of technology as discursive, social and material ordering, the mediating aspect of technology is underlined. By assuming that "norms of action and cognition are objectified into artefacts" (Miettinen and Virkkunen, 2005: 443), modern information and communication technologies are posited as new forms of technologically mediated language, materiality and human interaction.[40] Altogether, in my research the artifact is understood to represent the language practices surrounding it, the materially mediated socialities/culturalities and the socially/culturally mediated materialities.

Finally, the theoretical background holds implicit premises with respect to the concept of work organization. The concept of work organization is an important concept in my study, in so far as it constitutes the everyday environment in which the appropriation of technology is studied and, hence, is an actor of its own accord in the negotiation process of practice and technology (cf. Hassard, 1993). In accordance with SCOT's focus on processes of negotiation and conflicts of interest, I propose studying work organizations

39 As Hutchby (2001) says, "'materiality' here need not be thought of only in physical terms. We may, for instance, think of the telephone as having a materiality affecting the distribution of interactional spaces, through the promotion of what can be called conversational 'intimacy at distance'" (Hutchby, 2001: 444/5).

40 According to Miettinen and Virkkunen (2005), "the concept of artefact mediation helps to connect the ideas of institutional contradictions and human subjectivity in a more satisfactory manner" (Miettinen and Virkkunen, 2005: 451).

as "coalitions of interest groups" (Clarke, 1991). In this definition of work organization, Clarke (1991) underlines "groups' linkages to other environmental entities. That is, […] cross-cutting social worlds such as groups of professionals (e.g., disciplines, specialities) who are committed to and participate in both the focal organization and 'external' professional worlds" (p. 124). Thus, compliant with my criticism of SCOT's conception of relevant social groups, the organization as a coalition of interest groups emphasizes the heterogeneity and dynamism of social groups, their power inequalities, and their linkages to people with similar interests in the 'outside world'. The consequence of such a conception of the work organization for my research is that considerable attention is paid to *interconnections* of people and ideas (as put forth in the travels-of-ideas approach discussed in section 1.2.1).

In summarizing the positioning of the research with respect to the conceptions of order and ordering, technology and organization, I contend that ordering should be studied as a recursive process, technology should not be treated as 'given' and work organization should not be looked upon as entailing an *a priori* sharedness in meaning. In what follows I will summarize the theoretical ideas that occupy a central place in the research and determine what exactly I will be studying. Actually, and ironically, in positivist research such a specification would be referred to as the definition of the 'research constructs'.

The main 'constructs' of the study are predominantly drawn from the theory of creative appropriation as discussed in section 1.1.4. They can be summarized as follows: the micro-logic of expectations, the dynamics of creative appropriation, the emergence of alternative modernities, the individual tactic as 'multi-layered response' and the emergent practices. In what follows, I will briefly specify each of these research constructs and the relationship between them.

First, the starting point of the research is the *micro-logic of expectations* or the narratively encoded nature of technology as discussed in section 1.1.2. This refers to the fact that the dynamism of meta- and organizing narratives shapes practices on a micro-social level (Giddens, 1991). In my research, these narratives concern the narratives as mediated by technology. The micro-logic, or micro-social, is represented by technological practice, the practice of virtual community, in a modern organization.

Second, the dynamics of creative appropriation refer to the fact that users are not merely manipulated by the various narratives modern technology carries. On the contrary, as discussed in section 1.1.4, in appropriating modern change ideas, individuals attempt to preserve their sense of ordering and define their own answers. The employees, in being confronted with the technology, respond to the inscribed messages and, in turn, inscribe their own interests (cf. Akrich and Latour, 1992). In doing so, they will consciously or unconsciously manipulate the technology. This is referred to as *active consumption*.

Active consumption thus refers to the various ways in which employees perceive, use and accordingly mold the artifact of the study.

Third, users transforming the technology according to their own interests leads to the co-existence of different meanings around the same change idea (McLaughlin *et al*., 1999) and hence, to borrow a term from anthropology, the emergence of *alternative modernities*. What the technology becomes, i.e., the way in which it becomes embedded or not in the context of the organization, is thus treated as an obvious result of the mutual manipulation or recursive ordering, continuously shaping and reshaping its outcome.

Fourth, the investigation of technology appropriation in a modern work organization does not end with the alternative modernities as the materialization or non-materialization of modern narratives. I am referring here to the idea of *individual tactic* as 'multi-layered response' (Beck, 1992) to the various elements the technology represents. By explicating the various responses to the artifact the variety in individual tactics comes to light. Because individual tactics are not only creative responses to the imposed strategies (design), but also involve interactions with contingency factors such as the state of the industry at large, the nature of work, and in particular the threats and chances the organization as an institution poses to individual employees, they tend to elicit the constellation of interests (Czarniawska and Sevón, 1996) and constraints behind them. This means that these interests and constraints reveal the reality of everyday work practice as experienced by the actors.

Last, the individual tactics hence reveal what is specific with respect to processes of negotiation in a modern formal organization and the interference of modern technologies. These *emergent practices* are "a new way to perceive that just happened to manifest itself in a new material situation" (Pickering, 2001: 168). It may well be that these emergent practices, or social imaginaries of technology and work, change our understanding of what the information society, knowledge work and information and communication technologies are all about. The point is here that while the emergent practices become visible as a side-product, so to speak, of the continuous, contingent and non-linear processes of negotiation with the artifact, they are not merely the practices that are informed by modern technology. They are at the same time the practices (people's individual ordering) that inform (cf. Edwards, 2003). In the long run, it is these practices that will shape the meta-narratives of modernity.[41] This is commonly referred to as the "co-construction of technology and modernity" (Misa *et al*., 2003: 10).

41 "The actual co-construction process will determine the specific outcomes and thus technological modernity. That is why it is important to understand the contextual dynamics of the development of new technologies and their actual embedding in society" (Rip, 2003: 369/70 in, Misa *et al*., 2003).

Overall, in revealing the processes of creative appropriation and the dynamic interplay between the promise and the practice of technology, my research aims to contribute to a critical discussion of the diffusion of prescriptive technologies of modernity, the responses evoked to these technologies and the consequent impact they have on the everyday sphere of human behavior in organizations. Holding elements of social constructivism, script analysis and appropriation theory, the common denominator of which is the interpretive nature of inquiry, my study is geared towards a critical understanding of the constructed nature of both technology and practice.[42] This is done with a sensitivity to the little narratives of practice, hence presenting alternatives to the processes of modernization.

42 A critical stand entails identifying issues of power and equality but, as I stated earlier in this section, this does not mean that one should *a priori* perceive the relation between those of a privileged position and those of a less privileged position in an organization as one of domination and subjugation as is done in the so-called the critical approaches to technology.

Chapter 2

Connective ethnography revisited

"To understand technologies ethnographically, it is required to locate artifacts within the sites and the relations of their everyday use"
(Suchman et al.: 1999: 392).

2.0 Introduction

To comprehend the various appropriations of the artifact 'from within,' I have conducted an ethnographic study. Traditionally, "ethnography generates or builds theories of cultures – or explanations of how people think, believe, and behave – that are situated in local time and space" (LeComte and Schensul, 1999: 8). Because computer-mediated communication is both located in local time and space *and* occurs across time and space,[1] in accordance with Hine (2000), I call for a revision of the traditional concept of ethnography. Such a 'connective ethnography' extends the notion of context with the idea of connectivity.

To extend in turn the notion of connective ethnography as suggested by Hine (2005), I will in this chapter argue for the incorporation of both online and offline methods in the study of interpersonal computer-mediated communication. This means that for my study, data were drawn from discourse analysis, interview and participant observation in the research organization, participant observation in and textual analysis of the virtual workspaces, and a social network analysis of the log file data stored by the system. Such a connective ethnography redefines not only the concept of context; it integrates the various levels of translation and enactment of the virtual community idea.

In this chapter I will discuss each of the online and offline methods employed during my study, the challenges posed and the problems encountered. I will conclude the chapter by discussing the different kinds of data generated by means of the various online and offline methods employed. Before doing this, and in order to assess the contribution of such a modern approach to ethnography, in the next section I will summarize the main principles of, traditional, ethnographic research.

2.1 Introducing ethnography

The tradition of doing ethnographic research in organizations, also referred to as corporate ethnography, is well established (Van Maanen, 1988; Dubinskas, 1988; Kunda, 1992; Schwartzman, 1993; Orr, 1996; Schultze, 2000; Barley and Kunda, 2004). Also, when ethnographic accounts of modern information and communication technologies in organizations are concerned, the method of ethnography found a great many applications (Suchman 1987; Zuboff, 1988; Randall *et al.*, 1994; Despres, 1996; Forsythe, 1999).

1 People use CMC to connect to people with whom they share a physical place but connect to people from other locales just as easily.

However, what is understood as ethnography seems prone to many interpretations. My aim in this section, therefore, is to highlight some of the typical insights an ethnographic study is able to provide. After this, I will discuss the difficulties and problems come across in recording, analyzing and writing up research about computer-mediated communication (CMC) in a modern, distributed, organization, both on- and off-line.

"Ethnography means literally "to write a people, to help construct a people's identity by writing them" (Hess, 1992: 4). Hence, "ethnography refers both to study of the distinctive practice of particular human groupings and representations – pictures of a people – based on such study" (Hess, 1992: 38). It is both the process of describing a people and the end result; the product of that writing (Van Maanen, 1988; Hess, 1992; Law, 1994; Tedlock, 2000).

Principally, ethnographic writing is characterized by a cultural perspective (Van Maanen, 1988; LeComte and Schensul, 1999a; Hess, 1992) and a sensitivity to the 'making of context' (Sahlins, 1998). The first characteristic, the culture perspective, entails representing the 'native's point of view' or, the reality as experienced by the actors themselves. Culture, then, refers to "the knowledge members ('natives') of a given group are thought to more or less share; knowledge of the sort that is said to inform, embed, shape, and account for the routine and not-so-routine activities of the members of the culture" (Van Maanen, 1988: 1). As I will explain later in this chapter, the computer-mediated text as ethnographic object presents new opportunities for representing the native's point of view.

The second characteristic of ethnographic writing is sensitivity to the making of context. This refers to the fact that ethnography situates people and phenomena in the context of their natural habitat rather than isolates them. Only in the context in which they naturally occur can behavior and artifacts be understood. As I will point out later, this contextualization takes on new meaning in the case of computer-mediated social interaction.

To realize a contextualized understanding of the 'other' from the point of view of the other, ethnography as method of research or, ethnographic fieldwork, necessitates an inductive examination of facts, first-hand experiences, long-term engagement or 'immersion' in the field and a reflexive stand. First, looking upon matters through the eyes of the other entails the inductive examination of facts, also referred to as the bottom-up perspective. This means that the fieldworker is expected to enter the field without any preconceived ideas; not to depart from collective structures but to take 'the small' as point of departure.

Second, the fieldworker is believed to attain the perspective of the 'other' by means of his or her own lived experience in the field. As Ortner (1984) says, "if we are to make sense of a culture, we must situate ourselves in the position from which it was constructed" (p. 130).

Third, the fieldworker depends heavily on personal contact with informants and therefore needs to be physically present in the 'field', the natural environment of the other, for a longer period of time. This sharing of time and place with informants is referred to as 'being there'. Bringing the investigator to the field, rather than bringing the field to the investigator (Schwartzman, 1993), allows the fieldworker to experience what it is like to be a member of the group or society studied. While doing so, however, the fieldworker risks the danger of 'going native' (Mann and Stewart, 2000). This would inevitably entail no longer being able to perceive the ordinary as the strange.

Fourth, since the fieldworker is him- or herself understood as a research tool, an awareness of his or her position in the research setting in shaping the outcome of the research is needed. An important question to ask here is: How do informants perceive the researcher? Such a reflexive stand entails furthermore that the "researcher has to be clear about his or her objectives and the limitations he or she is working under" (Hirsch and Gellner, 2001: 8).

In the following sections I will illustrate how these characteristics of ethnography are incorporated in my research, how I dealt with each of these principles and, where the study of computer-mediated behavior is concerned, how some of these take on new meaning.

2.1.1 Research activities: gathering and analyzing ethnographic data

After a brief description of ethnography as both process and outcome, in this section I will describe how in my research the principles of ethnography translated into specific methods of data collection. In addition, I will here describe how the various information resources of the research were disclosed and the resultant data were analyzed.

To investigate how ideas of ICT and community are translated and enacted in the organization, the design of the empirical work corresponds to the various phases of appropriation: (1) the selection/ acquisition of the technology by management;[2] (2) the introduction of the artifact in the context of the organization and; (3) the reception of the artifact by employees in terms of meanings attached to it and their actual use of it. As I contend that societal expectations of technology and community also impinge on the appropriation of the artifact in the organization, another phase of appropriation is added: a limited discourse analysis.

Studying the appropriation of technology as the travel of ideas from discourse to practice requires, first, an understanding of how ideas of community and ICT evolve in the relevant literature. This provides the necessary context for the processes of translation and enactment in the organization. Therefore, a discourse analysis of the

2 The translation of ideas into object is represented by the choice of the technology.

relevant literature is considered an essential method of data collection in the (connective) ethnography. This entailed the investigation of the translation of community, ICT and virtual community in managerial/ organizational discourse, as respectively taken over from social theory, the information systems discipline and cyber-culture studies.

Next, my fieldwork, concerned with the subsequent translation and enactment of ICT and community in the context of a large IT organization, lasted for a period of 16 months. 'Doing fieldwork' in the organization entailed the cultivation of 'insiders' – referred to as key informants (Hess, 1992: 4), the conduct of both formal and informal interviews, participant observation, amongst others in meetings, and document analysis.

First, the cultivation of 'insiders' – who were all seasoned employees highly involved in the project – acted as a ready source for (informal) consultation and convenient help over the course of the study. In the beginning of the study key informants accessible to me were members of higher management responsible for the introduction of the virtual community in the organization. As I focused more on employees' appropriation, I increasingly also developed relationships with IT professionals holding various positions at different levels of seniority.

Second, data were collected by means of formal interviewing. In the 16-month research period 59 formal interviews were conducted in the various locations of the firm. The general objective of the interviews was to construe the different images of prospective user and usage and the distillation of use experiences of the real user ("the user-in-the flesh"). All semi-structured interviews included at least a brief biographical inquiry into the informant's background, working experience, and job description.

The first round of interviews concerned the managers, or initiators, of the virtual community project. These interviews were mainly about the goals, purposes and the prospective meaning and functionality of the technology and hence were revealing the technological biography as well as aspects of the technology's prospective users and usage.

The second round of interviews concerned the moderators of the individual virtual communities. These interviews revolved around the goals and purposes intended with the virtual community for a particular group. I should mention here that since the moderators tend to act as both managers and partaking employees in the community initiative, the boundaries between the various groups involved with the artifact were not always clear-cut (see the description of dynamic user groups in chapter one).

The third round of interviews concerned the employees 'inhabiting' the virtual communities and made up the largest part of the interviews. They were directed toward the meanings of the virtual communities for their everyday work practice. As the fieldwork progressed, interviews held contained at least the following two themes: (1) purpose of participation and value of use and; (2) the wider context of information resources employed.

Third, data were collected from participant observation in the organization, which allowed for direct and sustained observation of, and interaction with, a broad sample of the actors involved. For instance, I frequently participated in (offline) meetings (Schwartzman, 1989) of the members of the communities, attended 'in-take conversations' of management with moderators, and management meetings concerning the 'community project'. Also, at the start of my fieldwork, I participated in a three-day socialization program for new employees.

By participating in the research situation, following the events, and interacting with people I experienced what it was like being part of the organization. Combining interview data with direct observation (as based on the work of Malinowski) is of particular importance to the research strategy. Its importance lies in the fact that direct observation enables the fieldworker to distinguish between 'what people say they do' and 'what actually is', bringing to light people's everyday interests and whereabouts. Thus, participant observation enables the fieldworker to *connect* the stories people tell to their natural setting.

Fourth, investigation of the internal documentation data provided important background information about the organization, its view on virtual communities and the groupware technology implemented to support the virtual community idea. Examples of relevant documents and records were documents on the acquisition of the technology and annual reports. The former allowed the investigation of the intended purpose, prospective meaning and functionality of the technology of the study. The latter were used as a representation of the company's history and as a starting point for deconstructing the organizing narrative (cf. Rowlinson and Procter, 1999).[3]

To validate my interpretations of the data and to establish confidence in my findings, I have repeatedly registered my field observations, analyzed preliminary data, and acquired feedback from the informants at various stages of the fieldwork (Spradley, 1980). Such interactions refined my understanding of the phenomena observed and assisted in further data gathering and eventually in the emergence of various patterns of appropriation. This "continuous interaction between data and hunches or hypotheses until a stable cultural pattern appears" (LeComte and Schensul, 1999b: 15) is referred to as recursive analysis.[4]

The coding of the interviews, observations, field notes and other relevant documentation was done with the help of ATLAS.ti, software for computer-assisted qualitative data analysis. The interpretation of the interviews, observations, field notes

3 Organizational documents "are 'social facts', in that they are produced, shared and used in socially organized ways. They are not, however, transparent representations of organizational routines, decision-making processes, or professional diagnoses. They construct particular kinds of representations with their own conventions" (Atkinson and Coffey, 1997: 47).

4 The uncovering and explicating of the patterns of appropriation is thus treated as an inductive process as they emerged through the process of continuous (context) description and data analyses.

and other relevant documentation starts out with a full text. Subsequently, excerpts are marked in the text with codes. After the first round of coding I derived the so-called 'sensitizing concepts', or the sensitivities of the study on the basis of which the next sequence of interviews revolved. By grouping the codes (total: 65; see appendix, table 3), themes and patterns were recognized and the 'deep structures' of the research were outlined (Miles and Huberman, 1994: 91).

In what follows I will briefly reflect on the kind of problems I encountered in doing fieldwork in a modern work organization. These problems can be characterized as typical features of the 'new ethnography' (Hess, 1999). First, since the offices of the organization were distributed across the country, immersion in the field proved difficult. This can be referred to as the problem of 'being there' of 'multi-sited ethnography'.[5] Moving back and forth between the various locations of the organization in order to meet my informants did not always allow me to spend a long time on site so as to get a proper experience of participation. This problem was aggravated by the fact that due to the peripatetic nature of consulting and outsourcing work my informants were most of the time not even located at one of the offices of the 'core organization'. To 'meet me halfway' informants often suggested impersonal places such as airports and train stations. Occasionally, due to the increased occurrence of working at home, interviews were conducted at their homes. As I will explain later in the text, such a multi-sited ethnography strengthens the case for a connective ethnography.

A second problem is described by Hakken (1999) as follows: "the extent to which one must/should master and/or identify with the professional field(s) relevant to her research" (p. 57). As I encountered in my research more than once, being an anthropologist, getting people to talk sometimes needs a bit more convincing. This problem I frequently came across when talking to people with technical expertise as here in particular I experienced being in a position of less authority than the informant (Traweek, 1988; Forsythe, 2001). This is also described as the problem of 'studying up' (Nader, 1972). Studying up refers to the power differences between the researcher and the researched.[6] Studying up is a typical feature of the 'new ethnography', as the field moves increasingly closer to the home (Jackson, 1987) and sometimes even is the home.

In studying up, the fieldworker and the informant are educated in the same institutions and have to make a living in the same society. The informant is therefore more endowed with the capacity to judge the skills and expertise of the ethnographer (Forsythe, 2001). This is in sharp contrast to the traditional fieldwork situation in which

5 In the realization that "the line between the local worlds of subjects and the global world of systems becomes radically blurred" (Marcus, 1986: 171), the ideal of multi-sited or multi-locale ethnography is to take into account the larger political economic context of ethnography.

6 By introducing the idea of studying up, Nader (1969) discusses the challenges of doing research in powerful institutions and organizations: "What if, in reinventing anthropology, anthropologists were to study the colonizers rather than the colonized, the culture of power rather than the culture of the powerless, the culture of affluence rather than the culture of poverty" (p. 289).

the ethnographer literally comes from a different world. Thus, while the expert setting may make the fieldworker more insecure, "ethnography at home" also provides the informant with "a more solid basis for critique" (Forsythe, 2001: 125). In an attempt to overcome this problem, I regularly consulted my colleagues from university with a background in information systems.

2.1.2 Virtual methods

Apart from the traditional, offline, methods, virtual methods were also part of the ethnographic research. With virtual research methods I am referring to the whole range of research methods that involve using the internet itself as a research tool. The virtual ethnographic methods applied in the research are participant observation online, textual analysis of the virtual spaces and analysis of the log file data that were automatically stored by the system. In this section I will comment on each of these methods.

2.1.3 Virtual ethnography

> *"Cyberspace ethnography is no more (and no less) at risk of collapse under the critique of ethnography than is any other ethnographic practice"*
> *(Hakken, 1999: 67).*

Observations *of* and participation *in* the virtual spaces is usually referred to as virtual ethnography (Markham, 1998; Paccagnella, 1997; Hine, 2000). Virtual ethnography treats the virtual workspace as both text and social interaction. As Hine (2000) says, there is no definite line between the two: "[i]nteraction tends to be thought of as entailing a copresence of the parties involved, and a rapid exchange of perspectives which leads to a shared achievement of understanding (…). "What we call text could be thought of as a temporarily shifted and packaged form of interaction" (Hine, 2000: 50). Whether as text or as social interaction, the virtual space can be perceived as an ethnographic object itself. This refers to the fact that my research attempts not only to 'write a culture' but to investigate also the way the culture is represented by means of the virtual space.

If anything, the virtual space as either social interaction or text refers to the distinction between gaining direct experience of participation and using the internet as a recording tool (Hine, 2000). Whereas the virtual space as social interaction asks for the method of online participant observation (and social network analysis), the virtual space as text requires textual analysis of the virtual encounters – whether elapsed in time or not.

First, the virtual space as text enables the researcher to do observations in retrospect. This kind of observation refers to the practice of 'lurking'. The researcher is a passive

observer, not a *participant* observer. In the case of textual analysis, "the ethnographer's job is to develop an understanding of the meanings which underlie and are enacted through these textual practices" (Hine, 2000: 50).

In the virtual environment of the research, virtual texts are both the sediments of social interaction in the form of discussions and chats, as well as the records of posted documents and self-descriptions of members in the membershiplist. The textual analysis initially entailed the observation of the members ('who'); what kind of information is being shared in the virtual space ('who posts what kind of information') and to which purpose. Above all, "a textual focus places emphasis on the ways in which contributions are justified and rendered authoritative, and on the identities which authors construct and perform through their posting" (Hine, 2000: 53). Textual analysis enabled me to investigate the relationship to these virtual representations and the variation in representations according to the various groups of people involved.[7]

The convenience of the virtual text as an ethnographic object is that the medium records all texts and interaction that pass through the medium. Research can therefore be done independent of the informants' time (Hine, 2000).[8] Yet, online content analysis does not act as a substitute of actual participant observation. Another note of caution refers to the fact that the texts should not be studied in isolation but in relation to other texts and messages posted in the virtual environment. Although my research included offline ethnography as well, linking online texts directly with offline authors, however, is unfeasible (let alone for ethical reasons).

The virtual space as cultural representation/ethnographic object raises interesting issues of authenticity and authorship for, in the virtual space, it is in fact people representing themselves (cf. Willson, 2000). Since a high degree of autonomy is ceded to its users, computer-mediated spaces "allow for a greater degree of input from recipients" (Thompson, 1995: 86). Further, the virtual representations are dynamic representations for they are in constant interplay with their surroundings; they are changed while interacted with. Therefore, they do not represent a random snapshot like the traditional ethnographic text does. While virtual ethnography might be more polyphonic[9] and dynamic, one should not forget that the virtual environment does constrain *who* and the *ways in which* people represent themselves.

Second, defining the virtual space as social interaction entailed participant observation in the virtual workspaces of a selection of the virtual communities. Participant observation online means active engagement in real time online interaction. In general, it gave me a sense of the dynamics of online activity and what it means to be a participant (Hine,

7 I should note here that the various virtual texts were analyzed and coded in Atlas.ti according to the coding scheme of the offline interviews and observations.

8 "Ethnographers and participants no longer need to share the same time frame" (Hine, 2000: 23).

9 As virtual ethnography involves "surrendering authorship of the ethnography to one's informants" (Hess, 1992: 9) it tends to reflect multiple voices.

2000). Although it might be tempting to base the observation on archived texts and interaction, only active participation allows for an understanding of what it means to be a participant. As Hine (2000) puts it, "an ethnographer of the internet cannot hope to understand the practices of all users, but through their own practices can develop an understanding of what it is to be a user" (p. 54). Participant observation, furthermore, enabled me to present myself as a researcher to the members of the communities and approach participants online for interviews – people that I would not have come across in the organization.

As the computer allows access to the 'field' so to speak, virtual ethnographic fieldwork can be done from the seclusion and safety of the own home or office environment. A consequence of this is that the ethnographer and the online participant do not necessarily share the same locale. Howard (2002: 559) describes the problem as follows:

> *"For some researchers claiming to do ethnography online, going into the field is little more than a state of mind because there is so little convergence between their lives and the subjects' lives: there is no physical entry into or exit from the community. There is no territorially-based field site, and the social cues that are available are unbundled from much of the context in which the content was produced."*

As online fieldwork does not entail sharing a geographic location with participants, earlier in the text introduced as one of the ideals of ethnographic fieldwork ('being there'), it has been said that the problem of virtual ethnography is that "it is harder to form a prolonged engagement with [informants'] online activities" (Hine, 2000: 40).[10] As Hine (2000) would argue, however, such a focus on physical place attests of a narrow conception of ethnography: "by focusing on sites, locales and places, we may be missing out on other ways of understanding culture, based on connections, difference, heterogeneity and incoherence" (p. 61).

I tend to agree with this view[11] but want to add that as the online space is deprived of social cues we might very well misread participants' conduct online. The account not anchored in our experience of interacting with participants offline might then very well be a distorted picture. It is for this reason that I argue for a combination of online and offline ethnography.

Although my research does use a combination of offline and online ethnography, still a one-on-one 'check' of online and offline 'personae' cannot be done as people observed online were usually not the people observed offline. Besides, the online participant observation was more concerned with group dynamics and not so much with individual participants. Also, for reasons of anonymity I considered it unethical to trace people's

10 See also Hakken (1999).
11 As "contexts are regarded as piling on layers of understanding" (Strathern, 2002: 303).

individual behavior online and to question them about it (as if they then had to justify their behavior).

Another limitation of online participant observation is that only the active participants, that is, the participants that actually post messages, are visible online. The so-called lurkers or people that only retrieve information from the online space are invisible to the virtual ethnographer (Hine, 2000). An important point that Hine makes with respect to the invisibility of the lurker is that "the absence of the lurker in the ethnographic text enhances the perception of the newsgroup as a coherent bounded entity" (Hine, 2000: 25). Lurkers make up an important part of the online environment or community and I would go so far as to say that they are as important as the active participants. The reason for this is, first, that lurkers make up the necessary audience that posters are presenting themselves to. Second, lurkers may retrieve in one environment and act as posters in another (boundary spanning). Third, lurking may very well turn into active posting behavior once a participant feels confident enough to do so.

For both content analysis and participant observation I gained access to four communities with permission of the moderators of these communities. Upon entering the virtual communities for the first time, I presented myself as a researcher to the other members of the group (Jacobson, 1999) and guaranteed to treat data anonymously. From time to time I reported on my findings in these communities and asked for people's feedback.

2.1.4 Online social network analysis (OSNA)

Apart from participant observation in the virtual workspaces, my colleague Bas Smit and I have conducted a sequential observation and a social network analysis of the log file data of the virtual communities, further treating the virtual workspaces as social interaction. A log file registers the actions that have occurred online and therefore enables to track online activity of participants – their 'digital footprints'.[12] Prior to explaining both methods, I will first describe the kinds of data that were available for analysis.

For the sequential observation and social network analysis of the online activity in the virtual communities, we used a 'customized log at the application level of the virtual community environment'. In short, this is referred to as an event log. In an event log, each mouse click is evaluated by the application and together with the session data results in several 'events' being triggered (total: 51). Simply put, these events indicate what actually occurs, meaning what kinds of activities users perform. Examples of such

12 In the case of sequential observation of the log file data, these digital footprints are: frequency of activity, kind of activity and content of postings. In the case of online social network analysis, the digital footprints concern the extent to which the imposed groups are enacted in terms of social networks, the degree of information resource concentration and the emergence of alternative group structures on the basis of content.

activities are: adjusting authentications in the virtual environment, posting a message and moving, opening or deleting a page.

The important point here is that an application-level event-log enables the online researcher to distinguish between events for reading, posting and administration. Reading entails obtaining information from the community and refers to behavior related to information seeking only. Posting entails providing information in the virtual space (and hence, to other community members) and involves also knowledge production in the case of collaborative work on documents. Administrative events are those events used for creating and changing the structure of the community such as creating or changing the folder structure, changing the layout, moving and deleting documents.[13] The distinction between reading, posting and administrative action is relevant to the extent that people can be responsible for a relatively large share of the activity but only as a lurker or administrator and less so as a poster of information.

Another feature of the event log is that it contains some of the content of the messages posted. With the command responsible for creating a new page, a 256 characters subject line is given. The following example illustrates the kind of information such an event-string/entry might contain:

> 08-Nov-2001^08:14:16^ Peter Zoethout ^11/08/2001 08:14:16 AM^/ instantlocus^^^^^030^"CN=Peter Zoethout/OU=client community/OU=IL/ O=ASPX"^"Working as consultant in the field of quality management such as the INK model and Information Security"^""

I should mention here that we gained access to the log file data with permission of the managers of the community project, under the condition that we were to report back to the organization about the general statistics of the online activity. I occasionally reported on my findings from the log file analysis in a special column on the intranet of the organization. Nevertheless, the majority of participants of the virtual communities were most probably not aware of our analyses of the logs. This is justifiable in this case as it concerns structural data and not individual behavior.

The social network analysis of the log file data, however, was conducted for research purposes only. During the course of analysis we were well aware of the fact that this kind of detailed observation of information behavior should not be used for any purpose other than research. To protect the anonymity of the participants, names are changed in the presentation of the findings in this thesis.

13 In the community environment of the study these administrative events are not confined to the community moderators but may include all participants.

During the course of the study we monitored the activity in the virtual communities for a period of nine months.[14] Since the total number of records was considerable (1,500,000 events; 1,55 gigabyte) events were taken together or categories of events were singled out (this concerned predominantly the events for reading and posting) and sometimes analyzed for a selection of the communities only.

As I mentioned earlier in this section, two kinds of methods were applied to the log file data: a sequential observation and a social network analysis. First, a sequential observation of log file data generates general statistics of online activity and potentially reports on patterns of information behavior. These statistics concern: the number of participants, the number of memberships participants hold across the various communities, the degree of activity and sort of activity per participant. This kind of 'information visualization' (cf. Smith, 1999; Erickson *et al.*, 2002)[15] was used for understanding the diffusion of the technology in the organization and the share of the population represented in the virtual communities. In particular, it was used for the selection of research informants and enabled me to include the various kinds of users in the research. In this way, sequential observation of the logs makes up for a shortcoming of online participant observation as it enables to include those who lurk and those who, after an initial period of participation, do not return to the online space (in my study referred to as 'deliberate non-users').[16] Thus, while lurkers might be invisible to the participant observer of the online workspace, they are visible to the observer of the logs.

Second, a social network analysis using social network analysis software was applied to the log data. Social network analysis allows the empirical investigation of information sharing *between* people and groups of people. Hence, it pre-eminently enables the determination of the actual groups people engage in, that is, the observed social networks instead of the prescribed, formal, groups (Haythornwaite, 1996; Wellman, 1997).[17] This kind of online activity might therefore show the extent to which the proposed virtual communities are enacted (or not) in terms of actual information sharing relations between people.

With the purpose of showing how our approach to social network analysis distinguishes itself from other work done in the area, in this section I will briefly discuss some recent studies where the structural analysis of computer-mediated communication is concerned.

14 From 8 November 2001 through 19 August 2002. Missing values range from April 5 to June 24 and are due to technical problems.

15 The term information visualization stems from Smith (1999), a 'Microsoft sociologist' who developed a set of tools for illustrating the structure of discussion threads and the patterns of participation in Usenet newsgroups, referred to as 'social accounting metrics'.

16 I use the term 'deliberate non-user' to refer to the people who were aware of the existence of the virtual communities and gained some experience with participation, to distinguish them from the people who were left out of the virtual community project altogether. See Wyatt (2003) for a discussion of the various kinds of non-users and why non-users should be incorporated into technology studies.

17 The value of social network analysis is thus the fact that it does not "treat formal group boundaries as truly social boundaries. (…) Boundaries become important analytic variables rather than a priori analytic constraints" (Wellman, 1997: 179).

To begin with, I should say that applying social network analysis to computer-mediated communication cannot be regarded as wholly novel or original. Work done in the area includes the extent to which computer-mediated communication reinforces already existing social networks offline (Pettigrew and Durrance, 2000) and how different media support different kinds of relationships (Wellman, 1997; Haythornthwaite and Wellman, 1998). However, the bulk of these studies use social network analysis as it is traditionally done, i.e., on the basis of questionnaires or interviews. In traditional social network studies, people are asked to point out their relations with the members of a certain group, department or organization and the content on the basis of which this relationship was formed.

Where the application of social network analysis to digital data is concerned, studies are still limited however. With this I am referring to collecting 'digital footprints' directly from log files. The few studies that have been done, i.e., studies in which social network analysis is applied to computer-mediated environments, concern most of all the investigation of the structure of the World Wide Web.[18] Simply put, these studies investigate the extent to which websites are connected to other websites; they make visible the "network of sites" (Adamic, 1999; Rogers and Marres, 2000). The networking of sites is done through the concept of 'hyperlinking'. As defined by Park and Thelwall (2003), "a hyperlink is a technological capability that enables, in principle, one specific Web site to connect seamlessly with another" (online). The majority of these hyperlinking studies are done on the basis of what I refer to as the method of 'surfing and counting' (Park *et al.*, 2002). "It requires a researcher to surf Web sites and many Web pages within each site carefully" (Park and Thelwall: 2003, online). Not only are the links counted, also the content of the linked pages is examined (see Tateo, 2005). In studying the interconnectedness of websites, social researchers are increasingly using computer-assisted measurement also. For instance, Rogers and Marres (2000) designed a web crawler program to "collect the data directly from Web sites" (Park and Thelwall: 2003, online).

Whether by means of surfing and counting or with the application of social network analysis software, the main objection to hyperlinking research is that "hyperlinks typically do not represent connections between people" (Park and Thelwall, 2005: 78). Instead, hyperlinking indicates the relation between web sites and hence, the connection of texts. My point here is that this 'intertextuality' is based on links between published sites and not the ways in which people actually 'surf and click'; how they navigate from one site to another. To contrast, we applied online social network analysis (OSNA) to the study of *interpersonal* communication. In the remainder of this section I will discuss how we applied OSNA to the log file data using social network software and what kinds of findings were generated by means of it.

18 These studies also concern the structure of social interaction in Usenet (Smith, 1999). "Usenet is a worldwide system of discussion groups, with comments passed among hundreds of thousands of machines" (Mann and Stewart, 2000: 221).

I should start the description of our social network analysis by pointing out that while it initially only concerned the frequency and kind of activity users were involved with, in our later work we also included the content of the subject lines in the analyses. Thus, the online social network analysis of the research includes attention not only to structure but to the content of the information relations also. It could therefore also be referred to as a semantic online social network analysis (Rosen *et al.*, 2003).[19]

The log data were kept in a custom file-format and were converted to a flat-text file, after which they were exported to a database in which the content lines were organized according to the keywords appearing in the subject lines. The keywords were coded in the database (total: 89 codes, see appendix, table 1).[20] For the social network analysis, the data were arranged in N x M matrices in which the N rows indexed either the users or the groups and the M columns indexed either the groups or the content, depending on the kinds of pairs used for analysis. The matrices were subsequently analyzed with UCINET social network software (Borgatti *et al.*, 2002).

As the N x M matrix already indicates, the network analysis was performed on the basis of 'affiliation networks'. Affiliation networks are special types of two-mode networks. That is to say, "affiliation networks are two-mode, but have only one set of actors [as opposed to person-to-person matrices]. The second mode in an affiliation network is a set of events (such as clubs or voluntary organizations) to which the actors belong" (Wasserman and Faust, 1994: 40). An affiliation network arises when "one set of actors [the first mode] is measured with respect to attendance at, or affiliation with, a set of events or activities [the second mode]" (Wasserman and Faust, 1994: 30). For our work, this means that people are either connected by shared membership in terms of actual participation (reading and/or posting) or people/groups are connected by a shared involvement with a certain topic. In our study, affiliations are thus either represented by person-to-group, group-to-content or person-to-content matrices.

I should note here that since the analyses are based on affiliation networks, the links between people can only be inferred indirectly. This means that participants are interconnected on the basis of actual activity in a common group or on the basis of an expressed interest in a mutual topic. Thus, the relation to others is inferred from the relations engaged in with groups or topics.

The main measure of social network structure used for the analysis of affiliation networks is *degree*. Degree refers to 'degree of connectivity' and provides information on the density of the networks. Network density denotes "the number of actually-occurring

19 See Rosen *et al.* (2003) on their use of neural-based content analysis software – "a developed and proven semantic network analysis package which has the capability to extract word patterns and clusters" (Rosen *et al.*, 2003: online).

20 The codes were subsequently organized according to the following 'super codes': (1) Sociability; (2). Institutional; (3) Formal representation of practice; (4) Social Expertise; (5) Technical expertise and; (6) Community related communication. These categories are explained in chapter five. See appendix, table 2.

relations or ties as a proportion of the number of theoretically-possible relations or ties" (Garton *et al.*, 1997: online). This makes it apt for the investigation of the extent to which the imposed structures (the virtual communities) are enacted in actual relational patterns as it does not only show the actually existing links but directs attention to the missing links also.

Results were subsequently generated in the form of (bipartite) social network graphs,[21] depicting the social networks as nodes and connections between nodes. In our study, the nodes refer to the following units of analysis: participant, group and content. The connections between the nodes represent the degree of participation in the selected group or with regard to a selected topic.

The person-to-group network provides insights into the extent to which the imposed groups/virtual communities are enacted in practice. These social network graphs furthermore show the alternative groups people are connected with and their relative share in these groups. Together, the degree of activity in the selected groups and the connectivity to other groups represent the degree of cohesion of the selected group. The group-to-content and person-to-content networks provide insight into the degree of information resource concentration.[22] As such, these networks illustrate the extent to which imposed group boundaries converge with boundaries on the basis of actual topic involvement. Together, from the various kinds of network graphs the 'groups of belonging' on the basis of actual information behavior emerge.

To subsequently account for the patterns of information behavior as represented by the network graphs I used the data drawn from both interview, online participant observation and textual analysis of the online spaces. Examples include attributes such as group constellation, purpose of the virtual community and kind of information exchanged.

A problem of social network analysis in general is the inevitable loss of the context of the phenomenon, its subject isolation. I would like to stress, however, that the online social network analysis is regarded as *only one* of the (virtual) methods used in the study, aside from (virtual) participant observation and textual analysis of the workspaces. As I argue, it is the combination of methods that makes OSNA a valuable method in the study of computer-mediated communication. Performed as such, as an integral part of virtual ethnography, OSNA provides the context of online interaction. Just as hyperlinking provides context to the electronic text by indicating the relation to other texts – their intertextuality, online social network analysis provides context to online interaction by showing the *interconnection of people* through texts (their reading or

21 Affiliation networks require the construction of a bipartite graph of actors/participants and the groups to which they belong or the information (content) they are involved with.

22 Cohesiveness describes attributes of the whole network, indicating the presence of strong socializing relationships among network members, and also the likelihood of their having access to the same information or resources" (Haythornwaite, 1996: 332) – information resource concentration.

posting of messages). Sensitivity to the making of context in virtual ethnography thus means showing the larger discourse or the wider network of social relations of which it constitutes a part.

It is for this reason that the ethnography is referred to as 'connective ethnography'. Connective ethnography is a term coined by Hine (2000) denoting the decreased importance of the sharing of a time/space with informants. Instead, connective ethnography presents the idea of connectivity to provide for the meaningful context of ethnography. This broader conception of ethnography was heralded by the coming to the fore of multi-sited ethnography (Marcus, 1986, 1995). As Hine (2000) says, "the emergence of multi-sited ethnography, conceived as an experiential, interactive and engaged exploration of connectivity, is encouraging news for ethnography of the Internet" (p. 61). As opposed to traditional ethnography, which is commonly based on fixed geographical locales with static, closed, boundaries, connective ethnography "offers possibilities for designing a study which is based on the connections within and around the Internet and enabled by it but not reliant on any understanding of it" (Hine, 2000: 61).

Although I agree with Hine's basic views on the need to revise the concept of ethnography to the whims of the modern world, I want to criticize Hine's interpretation of a connective ethnography as restricted to virtual methods. Instead, it is my contention that connective ethnography necessitates the incorporation of offline methods. Apart from the online social network analysis providing for the interconnectivity of people, I add 'connective context' to the ethnography by way of textual discourse analysis and interviews. First, the discourse analysis of the travel of the ideas of community and ICT provides for the context of the ethnography in terms of intertextuality. This provides the larger context of interpretation in the light of which people's enactments of these ideas should be understood. Furthermore, the interviews inquire informants about the wider context of information resources of which the virtual communities constitute only a small part. In combination with what I referred to as the alternative groups people are connected with, arising from the OSNA, this can be referred to as an investigation of 'consumption junction'. According to Cowan (1987), 'consumption junction' refers to "the place and the time at which the consumer makes choices between competing technologies" (p. 263). The idea of consumption junction includes the alternative technical and social resources – social relations and technical systems – available to people in a given context.

The combination of online and offline methods in general enabled me to understand the relation between the displayed online and offline behavior. As Mann and Stewart (2000) say, "mixing CMC methods with FTF [face-to-face] methods may be particularly important if researchers wish to investigate differences and/or similarities between online

and offline interaction" (Mann and Stewart, 2000: 96). And, as Howard (200) says, "the better ethnographies of hypermedia organizations do take the extra methodological step to look at life offline" (p. 556).[23]

2.2 Concluding remarks

Taken together, my arguments are based on proven tactics for ethnographic research (Hammersley and Atkinson, 1983; Hess, 1992): spending a long time 'on site', both online and offline, using key informants, interviewing actors with different opinions and behaviors, and applying multiple data-collection methods.

The mixing of methods is considered indispensable in the investigation of how the idea of virtual community is translated and enacted, both online and offline. First, the sequential observation of the log file data makes it possible to include the different kinds of users, meaning apart from the active users, it includes lurkers as well as deliberate non-users in the research, i.e., the people that would otherwise remain invisible to the researcher of online life. Second, online social network analysis further distinguishes between 'what ought to be' and 'what actually' is as it is based on actual information sharing and communication relations of people in computer-meditated environments. Last, combining online and offline methods shows the extent to which online and offline practices relate to each other.

The specific benefits of connective ethnography, then, are that it adds context to the ethnography in terms of intertextuality and the interconnection of people *with and without* CMC. Integrating the various dimensions of translation and enactment together contribute to the understanding of the various appropriation patterns of virtual community in context.

23 Examples of studies using such a combination of online and offline methods are: Pettigrew and Durrance (2000) and Kendall (1999). Pettigrew and Durrance (2000) combine online survey with offline observation, interview, and focus group with internet users. Kendall (1999) uses online participant observation and document analysis combined with offline interviews and participation.

Chapter 3

The setting and the characters

3.0 Introduction

Prior to discussing the research findings, I will in this chapter provide a brief description of the context in which the findings will have to be understood; the characters and setting of the ethnography. In doing so, I will focus on the description of the research informants' training and education, jobs and careers and the state of the IT industry at the time of research.

To begin with, the ethnography was conducted in a large Dutch IT firm referred to as Dito (an acronym for Dutch IT organization).[1] Dito has its origins as a public body, that is, it stems partly from the Dutch state-owned computing centre. It was founded in 1950 as the State Centre for Mechanical Administration and concerned with salary administration by means of punch cards. With the emergence of the personal computer (PC) in 1969, the state-owned computing centre was one of the biggest computer centers of the country, performing services in the field of the automatic information processing for departments of (semi) public bodies.

Ever since the successive merger and acquisition of computing centers and software companies taken place from the 1990s, with an acceleration after Dito's complete privatization and its admittance on stock market quotations in 1999 which provided it with the required capital to do so, its market is no longer confined to the government. As a consequence of taking over the competition, Dito nowadays supplies ICT products and services, broadly defined as 'infrastructure management services' and 'application services', not only to clients in sectors such as social security and health care but also industry, banking and insurance. In 2001 Dito is one of the Netherlands' largest IT organizations, employing around 9400 people, dispersed over its 15 subsidiaries and about 25 offices all over the country and abroad (6 offices). Later in this chapter I will describe the state of the IT industry at the time of research and Dito's position in it.

In an attempt to acquire a better understanding of the informants' motivations for 'doing something with computers', the first three sections of this chapter depict the personal work- and 'technology biographies' (cf. Henwood *et al.*, 2001) of the informants. These biographies describe the informants' first encounters with the computer, how they ended up working in IT and what their subsequent careers were like.

1 For reasons of anonymity the name of the firm and the names of the informants are fictitious.

3.1 The dawning of administrative computing (1980s)

The informants of the research, working in one of the firm's 25 offices, refer to themselves as managers, consultants, project managers, data warehouse architects, sales account managers and software engineers. In the study they are broadly referred to as IT professionals. This is by no means to say that the IT professional represents a homogeneous group. In fact, the work-life biographies of the informants show the varying backgrounds of the IT professional as outcome of the labor market and economic circumstances of a particular time, marking a split between the 1980s and the 1990s.

This section portrays the people involved with computing in the early 1980s, referred to as early adopters. The biographical notes of the informants disclose three kinds of early adopters: the 'accidental IT professional', the 'obligatory IT professional' and the 'early enthusiast'. First, the *accidental IT professional* denotes the professional who ended up in computing rather unintentionally. An example of the accidental IT professional is presented by the work-life biography of Richard. At the age of 18, immediately after having finished higher general secondary education (in the Netherlands known as 'havo'), Richard started his first job at an American water-handling organization where he was concerned with 'chasing orders in factories'. Around the beginning of the1980s the water handling process was to be automated, hence, the first computers appeared in the office. Richard also got one of the devices on his desk. Even though, at that time, he did not have any computer skills, he was rather intrigued by the 'new' machine. Somewhere else in the building a central, or mainframe, computer was placed and it was Richard, ready to take up a new challenge, who put himself forward as its operator.[2] Being the operator predominantly entailed making backup files of the mainframe computer. Not the most interesting of jobs, but it taught him the ropes of computing and, besides, it allowed him into a room where no one else was allowed, which gave the job some status. Two years after this first encounter with the computer in 1982, Richard became application administrator[3] and was concerned with maintaining and updating the applications running on the central computer. This soon turned out to be a fulltime activity and to underline this, he became known as the MIS (Management Information Systems) representative. When he made the changeover to the Dutch Automobile Association, he

2 According to the job specifications in informatics as defined by the Dutch Association of Informatics (NGI), "an operator is someone who operates the computer apparatus and takes care of the batch-processing production" (Op de Coul, 2001: 357). "Batch processing is the processing of data in groups" (Van Steenis, 1997: 64). [translation is mine]

3 "An application is a program or group of programs designed for end users" (source: www.webopedia.com). Usually diversified in technical and functional application administrator. "A technical application administrator assesses whether the application remains to comply with the performance criteria (such as reliability, availability etc.). […] The application administrator draws up proposed changes to ameliorate its performance, installs new releases of applications and solves technical malfunctioning" (Op de Coul, 2001: 339). [translation is mine]

worked as a junior programmer[4] and through practical training worked himself up to technical designer.[5] With the privatization of the IT department of his company he came to be working as a manager of mainframe services at a department where they were concerned with the maintenance of applications as well as providing mainframe services to the customer. After having participated in Dito from 1996 onwards, the Automobile Association was confiscated entirely by Dito in 1999. This is where, today, Richard refers to himself as project manager.

Second, the *obligatory IT professional* is the professional who did not have a choice but to go into computing. Natasja's story illustrates this. Natasja finished pre-university education (in the Netherlands known as 'vwo') in 1977 and subsequently attended a Dutch Business School. After graduating in 1980, she took a Master's degree in International Economics in the United States. When she returned to the Netherlands in 1982 she applied for positions at banks, export financers and consultancy firms. Notwithstanding her level of education, this proved to be in vain for more than a year. In the early 1980s the labor market was such that as a junior she did not stand much of a chance in those sectors. When she saw an advertisement of an automating company which was in need of computing personnel, she decided to give computing a try, by way of last resort really.

When she first started working as junior account manager,[6] she had serious doubts about administrative computing but over time she developed more of an interest in the technology. Over a period of nine year she held jobs successively in system analysis, system and functional design, and information analysis[7] until she ended up acting as team project coordinator. As a typical example of a job-hopper she subsequently changed employer up to three times between 1993 and 1997, performing alternately consultant and project management activities in the field of data management.[8] Her most recent changeover was in 1997, to Dito, where she started out as a management consultant. Today she is back to project management and supervises a team of systems engineers designing applications for the dealing room of a large bank.

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4 A programmer is someone who writes computer programs. "The programmer designs and builds software programs on the basis of the technical design. He or she also does the testing and the maintenance of the programs and is concerned with optimizing the performance characteristics of the application" (Op de Coul, 2001: 323).

5 "A technical designer renders the functional design into a technical design. In doing so, in particular the feasibility of the technical design and its technical realization are tested. The technical designer draws up the program specifications and supervises the programmers or assists with the drawing up of the application structure" (Op de Coul, 2001: 321). [translation is mine]

6 "An account manager is concerned with advising the client and with meeting the agreed upon commitments with the client. This position is frequently found in consultancy firms and software companies but in the larger organization also as intermediary between the automating organization and the user organization. In this case, the occupant of the position is usually referred to as service or contract manager" (Op de Coul, 2001: 385). [translation is mine]

7 "An information analyst makes an inventory by means of organizational research. He or she analyses the need for information and information systems and translates these inquiries into an information architecture. For a specific system, he or she also develops the information system's architecture and in addition analyses the data structures and definitions" (Op de Coul, 2001: 313). [translation is mine]

8 Data management is concerned with "the accuracy, completeness, and consistency of databases and other collections of data [...]. It is often the data manager, in close consultation with the functional designer, who draws up the object- and data models" (Op de Coul, 2001: 341). [translation is mine]

Last, the *early enthusiast* is the IT professional who already showed an interest in computing at an early age. Unlike Natasja and Richard, Ernst, for instance, was taken with computing prior to working in the field. His secondary school ('havo') had purchased a ZX80, one of the first affordable personal home computers appearing around the beginning of the 1980s. Ernst and a small group of interested students, together with a teacher who did not know anything more about the machine than did the students, experimented with it after school hours. When he finished a degree in Analytical Chemistry, Ernst pursued a career in chemistry research. While waiting for the necessary contracts between research projects, he usually dedicated his time to automating the research lab. When he subsequently found himself working on computerization more than on his research, he decided in 1987 to make the changeover to computing altogether. Besides, he realized it was the perfect time for a career in computing. Currently, Ernst is working as a data-warehousing consultant.[9]

Richard, Natasja and Ernst offered themselves on the labor market in the 1980s, the time known as the early years of personal computing. Their narratives reflect a specific time in the Dutch history of computing in general and of the IT profession in particular.

The first aspect I would like to draw attention to is, as the work-life biographies of the 1980s illustrate, the different circumstances under which the first encounters with the computer occurred. Notwithstanding the increasing accessibility of the computer due to the ongoing process of miniaturization (Maes, 1992), the resultant successor of the mainframe computer, the personal computer (PC) was not yet as established in the office, school and household as it was a decade later. Given the still limited 'arrival' of the machine, the fact that Richard and Natasja were introduced to the machine (not earlier than) at the workplace was thus not uncommon at the time. Ernst rather represents the exception by experimenting with the computer at an early stage of its emergence, throughout his high school and university life.

From the narratives I conclude that pursuing a career in computing in the 1980s very often was either accidental, rather obligatory, that is to say, not completely of one's own free will or merely as a way out. The reason for this is that whilst the 1980s were marked by a recession, IT skills were highly needed. Richard, for instance, got to work with computers just because *someone* had to. For Natasja, turning to computing was a rather forced choice, even though it did eventually grow on her. That is to say, alike many people at that time she felt she did not have any other options but to 'do something with computers' (Van Dael, 2001). Ernst, who did express a distinct interest in computing

9 In short, data warehousing is concerned with the storage of data, usually in databases across an entire organization, with the purpose of consulting them when needed at a later moment in time. "Data warehouses contain a wide variety of data that present a coherent picture of business conditions at a single point in time. Development of a data warehouse includes development of systems to extract data from operating systems plus installation of a warehouse database system that provides managers flexible access to the data" (www.webopedia.com).

prior to making it his career, saw in IT a convenient way out of a current, less promising, position.

3.2 Lucrative business (1990s)

The work-life biographies of the informants of the research show an entirely different picture for the 1990s. The two typical IT biographies of that time are the 'opportunistic professional' and the 'fast boy'. First, the *opportunistic IT professional* is the professional who is persuaded into the profession by the promise of a high salary and attractive fringe benefits. Mats, for instance, did a degree in lower economic and administrative education ('leao') after which he started intermediate vocational education ('kmbo', shortened) but never completed it. He was 18 when he finished his formal education and started working. He occupied a rich variety of positions working as a farmer, chauffeur, warehouse assistant, bricklayer and carpenter. When he did some temporary work as an administrative clerk at a Dutch telecom company in 1991, he came across the computer for the first time. Through practical training he subsequently gained some knowledge of software packages such as Excel, Word and WordPerfect. Soon after, he became functional application administrator at the department of 'Work Place Services' of the telecom company,[10] which is a fancy term for PC user support. When he started having serious disagreements with his manager, he did not hesitate much when in 1998 he saw an advertisement in the newspapers; of a software company inviting him to the showroom of a car dealer for an assessment. He passed the psychological test and the very same day signed a contract with the company that was two years later taken over by Dito. He drove a brand new car home and, as was required in return, started working as soon as the following Monday. Mats started out his job at the software company as a programmer. He did a training in C++ programming[11] and fulfilled his first job, oddly enough, as Visual Basic programmer.[12] Over time, he got involved in data warehousing and at the time of research Mats is working as a data-warehouse consultant, though he himself employs the term Business Intelligence when designating his work practice.

Second, the *fast boy* is the IT professional who saw in IT an easy way to make career. Sander, for instance, studied Business Economics and when he graduated in 1995 he soon realized that due to his lack of working experience he did not stand much of a

10 "A functional application administrator assesses whether the functionality of an application remains to comply with the requirements of the users. [...] The functional application administrator supervises the realization of the alterations and implements in close consultation with the users the new version of the information system (Op de Coul, 2001: 337). [translation is mine]

11 "C++ was developed in 1987 and is an extension of the computer language C; a language developed for UNIX in 1972" (Van Steenis, 1997: 755). [translation is mine]

12 Visual Basic is the graphic Basic environment. Basic stands for "Beginner's All-purpose Symbolic Instruction Code. It is an easy to learn computer language, developed in the early stages of the 1960s […] and used in the first personal computers" (Van Steenis, 1997: 755). [translation is mine]

chance getting a job at one of the consultancy firms where he initially wanted to work. What he did know was that by working in IT he was able to make his demands in terms of salary and career opportunities. He chose for Dito where already many people of his student fraternity were employed. As soon as two weeks after his application, he signed a contract with the company and started working at the helpdesk. Four years later he is working as an e-business consultant.

Together, the stories depicted in the above reflect the prosperous years of the IT industry. Whereas computing accelerated ever since the 1980's in terms of electronic administration and word-processing, the 1990s saw a booming of the industry predominantly due to the growing importance of the Internet,[13] the increase in 'connectivity' (networks) and large-scale computing. The period of 1995 to 2001 in particular was known as the fat period of computing; of bloated stock exchanges and the declaration of a 'new economy'. It was characterized by a great faith in the market and utopian expectations of information and communication technology by and large. Thousands of new so-called dotcoms started up with an exorbitant amount of financing by investors rather uncritically financing their business plans.

To mark the difference between the 1980s and the 1990s, the number of people that earned a living in the computerization industry in 1995 was well over twice as many as in 1987 (CBS, 1997). In these proverbial fat years, everyone had to 'go into computing'. And as a consequence of the still tight labor market, computing organizations were competing for their IT workforce, luring young talent, such as Mats from the 'sign a contract with us and you can drive this car home' batch, by means of salaries well above the market norm and fringe benefits in the form of lease cars, favorable pension schemes, schooling and share-options.

Due to the considerable shortage of IT workforce on the labor market, people like Sander rather exploited their luxury position and saw in IT a chance to make big money fast. Pursuing a career in computing in the 1990s paid off, literally so to speak. Well aware of their market value, they understood that even as juniors they could set their demands.

Another symptom of the time is 'job-hopping'. The already established IT professionals of the 1990s, such as Natasja for instance, in turn exploited their favorable stand on the labor market by rapidly moving from one position to the next while boosting their salaries and terms of employment. The consequence of this was the emergence of disproportionately high salaries in IT.

13 The Internet owes its popularity to its 'killerap' e-mail and soon after also the World Wide Web and the usage of browsers.

3.3 Formally and informally qualified IT professionals and their careers

Apart from a divide according to economic and labor market conditions, the research informants' narratives display also the variation in educational background of IT professionals. Characteristically, the informants of the research have a wide range of educational backgrounds. Many of them have done higher education, that is, higher vocational education or university studies.[14] Amongst these are studies such as polytechnics Electrical Engineering, university Business Informatics, Management Information Systems, or (Technical) Business Administration. Notable is the high number of people who did not have an education explicitly aimed at a career in computing. Apparently, IT professionals with backgrounds in experimental physics, analytical chemistry, math, biology, psychology and anthropology are not unusual.

Typically, the young highly educated of the 1990s, having done all sorts of studies, not always completed though, saw IT as some kind of residual category. There was always the possibility to work in IT, so it seemed. If you did not have anything particular in mind after studying but wanted to earn some decent money you could easily end up in IT where for many years 'generalists' were highly sought after. That is, people that were not so much hired because of their computer skills but thought of as having a certain level of education needed in order to be trained as programmer, helpdesk operator or something else in computing.

Consequently, another typical feature of the IT profession is the number of people with informal, as opposed to formal, qualifications in computing such as acquired through practical or on-the-job training and retraining. In this section I will briefly discuss the different backgrounds of the formally and the informally trained IT professional. First of all, from its emergence onwards the computing profession is marked by a considerable tradition of 'learning by doing' and a large number of auto-didactics. Learning-by-doing meant that the already employed (novices) learned the necessary skills for doing the job *while* doing the job, usually with the help of the more experienced colleagues (Van Dael, 2002). The large number of auto-didactics was due to the growing accessibility of the computer by the end of the 1980s.[15] From now on computers could be bought in the big department stores and people were able to teach themselves some basic computing skills at home. Since the same software could now be used at home as in the office, the at home learned knowledge of software packages and programming could directly be applied at the office, and was often even ahead of what was needed at the office.

14 According to computer magazine *Computable* (13 July 2001), 35 percent of Dito's total population has a university degree.
15 This was due to its lowering cost (Cortada, 1996).

Secondly, from the early beginnings of administrative computing, training was provided internally. That is to say, there has always been a rich variety of supply of courses in computing to which employers could send their employees. Already in 1963, well before the appearance of regular education in (administrative) computing, a professional organization (SSAA) provided a degree in Automating and Mechanizing Administrative Information Processes (AMBI) (Van de Ende, 1994; Van Dael, 2002). From the 1980s, employers also started to send their employees to courses sponsored by manufacturers of software, so-called brand specific education. A professional who successfully finished a course in a particular software environment was granted a certificate from one of the big brands like Microsoft, Novell Oracle or Cisco.

Thirdly, ever since the 1980s various retraining programs were also offered on governmental initiative. One of these is PION, a foundation to promote integration in the labor market by way of re-education. On the pretext of 'Become an IT person!' and 'Retraining makes you wiser' they were concerned with retraining the higher educated as computing professionals.

That many of the 'older generation' of computer professionals received their training through their employer is understandable given the fact that there were not as many opportunities for formal training in computing at that time. Institutionalized training in informatics was in the beginning of computing in the Netherlands only available as part of some of the main courses taught. In intermediate vocational education ('mbo'), for instance, the first courses in automation commenced in 1975. Only recently did its institutes provide separate disciplines in computing (CBS, 1997).

In higher vocational education, the first studies in computing appear ever since the mid-1970s. Its first graduates thus offered themselves on the labor market around the end of the 1970s and the beginning of the 1980s. Subsequently, in the year 1995/'96 there are well over 8000 students of higher education level of which around 6000 in the technical direction and 2000 in the managerial-economic direction (CBS, 1997).

At universities, courses in automation were also in the beginning (1975) offered only as part of some of the main studies (Van de Ende, 1994). In the year 1981/'82 informatics was taught at Dutch universities for the first time as a separate discipline (a full university course). The first university graduates in informatics thus appeared around 1985. From 1993, managerial-economic approaches to informatics such as Management Information Systems, Managerial Math and Business Informatics emerged also. In the year 1995/'96 about 3100 students were enlisted of which 2800 in the technical direction and 704 in the managerial version (CBS, 1997).

Taken together, it can be said that possibilities for education in computing have changed over the years. As a consequence of the gradual institutionalization of education in computing, the educational system has been producing more formally

trained computer scientists. Furthermore, the more recent emergence of the managerial-economic approaches to informatics gave considerable rise to the management-oriented IT professional as opposed to the mathematical and technical IT professional.[16]

In accordance with the rise of the managerial IT professional in the 1980/90s (Van Dael, 2002),[17] the technical oriented professionals are in the research organization (Dito) outweighed by the managerial IT professionals.[18] As I mentioned in the beginning of this chapter, the informants of the research refer to themselves as managers, consultants, project managers, data warehouse architects, software engineers and sales account managers. Most of these positions are not considered to belong to 'hardcore informatics', i.e., representing the technical or mathematical streams in informatics.

I would furthermore like to draw attention to the fact that throughout the years, the percentage of women amongst the informatics students has almost consistently been around 10 percent (Van Oost, 1994). This, despite the governmental campaigns 'Choose exact' and 'A smart girl is prepared for her future' held in the 1990s and meant to encourage young women to opt for a career in one of the exact sciences.[19] Moreover, the IT profession is still being dominated by men the same as "[…] the professions that emerged with the advent of administrative computing in the first half of the 1960s, such as programmer, operator and system analyst, were mainly filled by men" (van Oost, 1994: 280).[20] Though statistics on the distribution according to position are unknown, the female to male ratio in Dito is 22 to 78. The number of women taking part in the formal interviews, 6 out of 59, seems to confirm this. It should be said, however, that the informants are from the higher positions in the firm where the participation of women is lower.

Despite the variation in educational background of IT professionals, their computing careers show consistent similarities. The work life biographies of the informants show that many of today's IT professionals started out as operators, system administrators, programmers, or helpdesk co-operators although many of them were rather overqualified for the job. At many software companies these were simply the common starters' positions, regardless of educational background and prospective career.

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16 According to Van Dael (2001), the managerial IT professional is specialized in the social complexity of information systems whereas for the mathematical IT professional data processing is considered central to the profession.

17 Whereas the managerial IT professional stems from the 1980/90s, the mathematical and technical IT professional stem from the 1950/60s (Van Dael, 2002).

18 According to computer magazine the *Computable* (13 July, 2001), not more than 25 percent of Dito's population has a background in informatics.

19 Under this heading, the ministries of Education and Sciences, Social Affairs and Employment, and Health and Cultural Affairs collectively published a brochure in 1990. The objective of this brochure was to inform young women about the importance of making a resolute choice of career for their economic independence.

20 Van Oost (1994) shows in her book about gender processes in the construction of the new computing profession from 1955 to1970, how "the world around the computer is, especially in the Netherlands, very much a male territory" (p. 280). [translation is mine] This, despite the fact that it did not start out as such since women were, also in the Netherlands, very much involved in the very early beginnings of the computer.

With regard to their subsequent careers, the biographies of Richard and Natasja for instance, reflect the somewhat classical career paths of the time and for a long time after.[21] Richard, throughout a period of approximately sixteen years, made it from operator, programmer and designer to project manager. Natasja, throughout a period of nine years, passed through the full spectrum of systems design and information analysis to project management and consulting. The classical career path represents an evolution from administrator (mainframe operator, application administrator, or system administrator) to designer (programmer, system programmer, technical designer, functional designer, application designer, system designer) and information or system analysist into project manager or consultant.

Although the career paths of the 1980s and the 1990s may very well show similar traits, Mats and Sander, as exemplary for the typical career in IT of the 1990s, went up the organizational ladder considerably faster. Not only were they able to demand higher junior salaries in IT than in any other sector, the proverbial fat years of computing also allowed for rather quick promotions to management positions.

Diversification of occupations in the IT industry occurs furthermore according to the level of the technology, i.e., the hardware, operating system or application level of the technology. The additional complication responsible for further diversification of IT jobs is that hardware may be approached from the machine or network (connectivity) perspective. Furthermore, the applications may be approached from the systems, and with the growing concern for usability, also from the users' perspective.

3.4 From boom to uncertainty

So far, I have described how the work life biographies of the research informants illustrate the various backgrounds of the IT professional. As the narratives also reflect the history of the IT industry, in this section I will briefly describe the state of the industry and the position of the organization of the research in it (at the time of research).

The beginning of the research, the second half of 2001, was marked by the dot-com collapse and saw the beginning of an economic setback with an economic growth of 1,5 percent. The IT service industry suffered the most in this economic setback as its clients cut down first and foremost on automating projects and started bargaining lower tariffs.[22] Furthermore, whereas high-grade activities such as consultancy and the development of software enjoyed priority in the booming days, the year 2001 saw a

21 Deviating from the classical career path in the heydays of computing were the so-called management trainees; the influx of people coming from higher education directly into the higher positions such as manager or project leader.

22 Source: *De Volkskrant*, 31 August 2001.

considerably diminished demand for these and a reversion to low-grade activities related to hardware and infrastructures.

As a consequence of the deteriorating economy, IT organizations are cutting back on their personnel and the number of vacancies for IT employees decreases and continues to fall over 2002.[23] Jobs in IT are no longer easily available, higher standards for the selection of new employees prevail and there is a danger of IT professionals losing their jobs altogether. Although organizations cut down first and foremost on the number of consultants, even the formerly 'most wanted', people with technical skills and salespeople, are no longer certain of their positions at the insolvent IT organizations. As Dutch newspaper headlines report at the time: 'Back to earth', 'Job-hoppers mark time', 'Even engineers have to look for jobs again' and 'Applicants are wearing ties again'.[24]

Despite the malaise in the IT sector, Dito remains relatively undamaged in comparison with other Dutch IT organizations. This is, first, because the computing business for both governmental institutions and outsourcing remain relatively strong markets. Second, Dito remains relatively undamaged owing to its long-term contracts, or recurring business, making up 65 to 70 percent of the firm's activities.[25] Nonetheless, Dito proves to be not entirely impervious to the crisis in IT.[26] The organization clearly struggled with the increase in tariffs, growing competition and overhead.[27] The result of this was a considerable under-utilization of its employees. In June 2002, the number of 'benchwarmers', as they are referred to, was around 600, which accounts for more than 6 percent of the firm's total population. Reactionary measures taken were an income freeze in 2002 and the unavoidable discharges (also referred to as 'reorganization'). From June 2001 until June 2002, 4 percent of the employees were remitted, which over a total of 9400 comes down to 376 employees.[28]

In sum, the crisis in IT brought about a situation of uncertainty for IT professionals in general and IT consultants and project managers in particular. Whereas IT professionals at the time of the fat years of computing were rather exploiting their favorable stand on the labor market, at the time of research they should fear that very same position.

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23 When partaking in the Dito's introduction program for new employees in May 2001, I noticed the relatively small number of people participating. At the same time, I was surprised to see a relatively large share of 'generalists', people without a background in computing, and management trainees.

24 Sources are respectively: *Computable*, 1 November 2002; *De Volkskrant*, 31 August 2001; *NRC Handelsblad*, 3 November 2001 and; *NRC Handelsblad*, 16 June 2002.

25 Source: *Het Parool*, 7 September 2001.

26 The last quarter of 2001 saw a decrease in net profit of 40 percent and in January 2002 Dito's stock fell with 10,92 percent (*NRC Handelsblad*, 14 March 2002).

27 As the general manager, and the only remaining member of the board, put it at a meeting in February 2002: "The prospective concerning IT spending for 2002 does not look all too bright but will look up in the future. The year 2002, therefore, should be looked upon as a transitional year."

28 More than once I contacted someone for an interview who was one of the unfortunate people they had to 'let go'. On the other hand, there were also many people who were able to participate in the research due to the fact that they were temporarily 'in-between-projects' (IP).

3.5 Concluding remarks

The work/technology biographies represent the variety in backgrounds of the informants and illustrate that there is no such a thing as one coherent IT profession. As outcome of the economic circumstances and labor market of a particular time, the speed of technological developments and the possibilities for education in computing, IT professionals, characteristically, hold varying backgrounds in terms of education and working experience.

The disparity starts, first of all, with the first acquaintance with the computer. While some IT professionals already experimented with the computer at the same time as the advent of the microcomputer, others encountered the computer for the first time at the workplace.

Second, entrance in the field of automation is either accidental, rather forced, purely out of interest or merely as a business opportunity. Since the 1980s knew a tight labor market, people that offered themselves on the labor market in the 1980s saw the IT business as their last resort, i.e., their only chance of finding a decent job. In contrast, in the 1990s, the heydays of computing, the IT industry was seen as a way to earn big money fast. People without any training or explicit affinity with IT were being lured into IT companies with the promise of big salaries, attractive fringe benefits and early promotion.

Third, there is the distinction between the IT professional who received formal and the IT professional who received informal training in computing. Initially characterized by a tradition of 'learning by doing', the institutionalization of education in computing increasingly gave rise to formally trained IT professionals also. With the diversification of different approaches to the study of informatics, various sorts of IT professionals emerge: the technical/ mathematical and the managerial/administrative IT professional.

Fourth, what should not be forgotten with respect to the (disparate) development of the IT profession and practice is the nature of the technology. With the ever-growing complexity of information and communication technologies from the 1990s onwards, various micro-level specializations develop and cause a growing differentiation in IT professions. In accordance with the high speed of technological developments, people working in IT have to be continuously retrained and updated. Therefore, the knowledge areas within IT are particularly diverse and specialized.[29]

In sum, the IT profession as we know it today is rather fragmented and diversified. Above all, according to the job specifications in informatics as defined by the Dutch Association of Informatics (NGI), the profession as such is not formalized yet. The larger computing organizations such as Dito amplify the fact that the wide range of educational

29 With the increasing technical specialization, a high number of consultants and managers appear in the field since the micro level defined jobs are difficult to gain a comprehensive view of.

backgrounds, the various organizational descents as well as the increasing complexity of the technology bring about innumerable interpretations of the IT profession.[30] As a result of the numerous mergers and acquisitions, professionals having their origins in different organizations where IT practice and practical training more often than not have been interpreted differently throughout the years, are now blended together. As a result, the IT professional of Dito represents both the 'old' and the 'new'; the informally and the formally trained; the 'obligatory' IT professional and the 'fast boy'. Also, as outcome of its specific history, the IT professional of Dito represents both the 'civil servant' as well as the young 'whiz kid', i.e., the former employee of the state-owned computing centre[31] and the former employee of the young computer startup companies taken over by Dito.

Considering the prevalent technological dogmas, economic situations and labor market conditions throughout the years of the Dutch history of computing, it seems feasible that computers, or information and communication technologies, play a different role in the lives of the research informants. The varying backgrounds, in terms of education and working experience, undeniably affect the way they relate to ICT in general and the technology of the research in particular.

30 The larger organizations know a greater diversification of practices to begin with.
31 Or, other public bodies concerned with computing such as the Governmental Centre for Electronic Information Processing that was taken over by Dito in 1995.

Chapter 4

From discourse to practice (1)

4.0 Introduction: the language of community and technology

A critical perspective on narratives of modernity entails investigation of how the related ideas evolve from discourse to practice; how they are received (and molded) by the organization's relevant social groups (Bijker *et al*., 1987) while inscribing their own interests. For that, I followed an undertaking that was aimed at improving the organization's learning capabilities through the concept of virtual community. By contrasting the organizational discourse around this concept, the intentions and appropriations of the firm's management and moderators, and the responses of the employees, I describe how the introduction of this modern idea causes a dynamic interplay of negotiations in which numerous divergences and tensions between the practice espoused and the actual practice play a decisive role.

Prior to engaging with these tensions and divergences, in this chapter I set out to do the following: first, to describe the prevailing expectations of community, computing and virtual community as advanced in the academic and managerial literature and, second, to demonstrate the ways in which these expectations are appropriated and modified by the managers and moderators in the research organization. I end the chapter by suggesting what this 'promise' of virtual community entails in the context of the organization and what 'messages' are inscribed in the artifact.

4.1 Transformative expectations of ICT

The organization introduces the artifact under the heading of virtual community. The language the artifact is introduced with in the organization is of crucial significance because the messages it conveys determines how it is presented to and received by its users. Since the idea of virtual community presupposes things about both ICT and community (Wilbur, 2000),[1] this chapter will take a closer look at the ideologies of community and computing as advanced in the academic and managerial (popular) literature. In doing so, in this section I will provide a short overview of the discourse of corporate computing as induced by technological developments in computing and in both academic and more popular writings on computing.

Let me start with a brief overview of the various 'computerization movements'. Computer applications of the 1950s and 1960s were so-called centralized electronic database processing applications (EDP), designed to replace human employees in routine work procedures (Dearden, 1965; Dahlbom, 1998) with a view to increasing

1 "Consider the notion of 'virtual community'. It reveals something about our presuppositions about both (unmodified, presumably 'real') community and (primarily computer) technology that this phrase even makes sense" (Wilbur, 2000: 45).

productivity. An example is the payroll processing of the State Centre for Mechanical Administration as described in chapter three. In the late 1960s so-called Management Information Systems (MIS) appeared. Rooted in mainframe computing, MIS devised to centralize information flows with the use of computers. It was "a computer based means for providing information to support operations, management and decision making functions in organizations" (Davis, 1974: 5). The appearance of MIS thus saw a "changing mission of EDP from simply crunching numbers and data to offering analysis and help in decision making" (Cortada, 1996: 2).

The early 1980s saw the entrance of decentralized computer systems, or microcomputers, at the workplace. The increased access of employees to these 'personal computers' marked the beginning of so-called end-user computing. The significant change here was that at this point employees could "manipulate organization information for their own needs" (Iacono and Kling, 2001: 119).

With the coming of the Internet in general and the World Wide Web in particular, personal computers came to be increasingly linked to a network or modem. The use of electronic mail (mid-1980s) and other forms of computer-mediated communication (CMC) resulted in a view of the computer as a communication medium and caused the shift in name from information technology (IT) to information and communication technology (ICT). The subsequent arrival of the various 'web-based' applications,[2] such as intranets (and document management systems) to support distributed work, put the focus on computer supported cooperative work (CSCW). Consequently, the computer is no longer a machine whose main purpose is to gain efficiency by automating existing, routine, tasks. Rather, it is believed to enable new ways of communication and cooperation. More presently, however, ICTs capacity to establish interpersonal relations and form relationship networks (Dahlbom, 1998), or communities, is mostly underlined.

After having given a brief overview of the various computerization movements, in what follows I will highlight the most important aspects of the academic and popular discourse on computing. Studies of computing power in organizations emerged ever since the entrance of personal computing in corporate offices. The two main streams in these studies were characterized as 'implementation' studies and 'labor process' studies (Coombs *et al.*, 1992). One significant theme in these early studies on the effects of the computer in the work place was the relationship between organization and IT structure (Lee and Leifer, 1992).

Whilst these initial studies on corporate computing were largely dominated by business and IT scholars they saw a gradual interference of social scientist on the topic of computing, albeit initially on a rather small scale. These studies, known as the field

2 Being web-based, means that the technology's interface is integrated in the web browser. Just as with the regular internet experience, users do not need software besides the standard web browser by means of which the technology and data are accessible at the server from any computer.

of 'social informatics', were concerned with the 'social aspects of computing' (Kling, 1980) and the use of 'computers in context' (Kling, 1980, 1987; Iacono and Kling, 1989). "One key idea of 'social informatics' is that the social context of information technology development and use plays a significant role in influencing the ways in which people use information and communication technologies, and thus affects the consequences of the technology for work, organizations, and other social relationships" (Kling, 2000: 225).[3] Presently, the social scientific literature on computing is well established.

With the growth of interdisciplinary approaches to the study of computing in the workplace came the view of ICT as an 'enabling device' (Orlikowski and Baroudi, 1991) as an alternative to the hitherto predominantly technologically driven views. An expression of this shift is the growing significance of 'usability' matters in systems design (Landauer, 1995) for instance. Usability aims at creating 'ease of use' (Gefen and Straub, 2000) through end-user participation in systems development (Weedman, 1998).[4]

Additionally, and alongside the previously mentioned shift from IT to ICT, informational and communicative aspects came to the fore in these studies, marking a shift from 'what the machine does' to 'what it communicates' (Winograd, 1997). The kind of studies emerging directed attention to the distribution of information (Sproull and Kiesler, 1991)[5] and held an increasing concern for matters of content and interpretation rather than the technology's physical properties and functions (Orlikowski and Gash, 1992; Walsham, 1993, 1995, 1998; Klein and Meyers, 1999).

However, despite influences of social informatics, the more popular contributions to research on ICT in organizations displayed a persisting focus on IT as an instance of technology while largely ignoring theoretical foci on information and communication. Regardless of the ideals of computing-in-context, usability, and the interpretive approach, the technological deterministic view on computing dominates these studies even today. The management literature on ICT in organizations is closely related to the discipline of 'knowledge management' (1990s) in which the agency of ICTs tends to be somewhat embellished (Davenport and Prusak, 1998) and the possibility of human agency is largely ignored.[6] "An ideology of technological determinism is (…) reflected in managers' frequent belief that both productivity gains and social transformation will be automatic results of computerization" (Edwards, 1996: 268).

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3 Kling and Sacchi (1982) refer to this concern for social processes surrounding the use of ICT, the "web of computing". The 'web of computing' refers to "the ways in which a new computer system will be inserted into an existing network of social relationships" (Edwards, 1996: 284).

4 Ease of use, or rather, the perceived ease of use (PEOU), is "the degree to which a person believes that using a particular system would be free of effort" (Davis quoted in Gefen and Straub, 2000: 2).

5 See for instance Sproull and Kiesler (1991) on how e-mail affects who has what information in organizations.

6 To illustrate this point, the latest fashion in the managerial literature is ICTs capacity to produce social capital (Becks *et al.*, 2004). "Social capital refers to connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them" (Putnam, 2000: 19).

My point here is that while in the beginning of corporate computing only existing situations were automated, as the field matures, in popular discourse on ICT in organizations technology is largely related to the idea of driving change (McLaughlin *et al.*, 1999). This is referred to as 'magic bullet thinking' by Markus and Benjamin (1997). Magic bullet thinking refers to the fact that computing is believed to bring about (new) processes of knowledge sharing and social interaction, allegedly transforming the way we deal with information, communicate, learn and even establish social relations. In what follows I will briefly summarize some of ICT's characteristics to which these transformative expectations are commonly attributed. It should be noted here that these affordances concern the *potential* uses of ICT.

First, ICTs are time and space independent, meaning that they potentially overcome spatial-temporal limits to communication (Malone *et al.*, 1987) and therefore make activities less dependent on their geographical location. Second, ICTs potentially enable increasing 'interconnectedness' (Smith, 1990) and are therefore said to "allow people to extend their organizational neighbourhood (Sproull and Kiesler, 1991: 151). Third, ICTs enable one-to-many broadcast and therefore provide the means for a more widespread dispersal of information. Fourth, as distinct from the television, a one-way medium, ICTs are two-way media, potentially enabling the receiver to reply to the messages received also.[7] Fifth, ICTs potentially increase transparency and therefore knowledge is no longer believed to be tied to particular elite groups in the organization.[8] Sixth, ICTs are said to intensify a 'decentralization' of authority (McLuhan and Powers, 1989; Zijderveld, 2000). The most telling example of such a 'centreless reality' (Frissen, 2001) is provided by the internet.

As a consequence of these characteristics, ICTs are posited as rather utopian devices as they may have a transformative impact on post-industrial work practices. One reason for this is that ICTs are presented as informal boundary spanning devices. They are said to enable increased connectivity across formal organization structures to multiple information resources, in the form of both people and systems, crossing different time-space distances. They are therefore believed to enable the formation of 'knowledge cultures' across the formal structures of co-operation. Moreover, since ICTs would promote bottom-up knowledge creation and the sharing of experiences, make interaction less dependent on geographical location and not only provide more but also new connections (Winograd, 1997), they are expected to generate 'new' (non-institutionalized) knowledge and to bring about innovative practices in organizations.[9]

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7 Interactivity is understood as users communicating in successive requests and responses.

8 Transparency is defined by Marchand *et al.* (2001) as "openness in reporting and presentation of information on errors, failures, and mistakes (p. 264/5).

9 "Innovation means new ideas, new knowledge. Innovative work is knowledge work in the sense of developing knowledge rather than routinely applying what you already know" (Dahlbom, 1998: 7).

Furthermore, the affordances of one-to-many broadcast, the widespread dispersal of information and transparency put forward the notion of the 'informed employee' (Drucker, 2001). The increase in transparency (Marchand, 2001) in particular raises expectations of a flattening hierarchy (Applebaum, 1989; Winter and Taylor, 1996) with fewer levels of management, also referred to as vertical disintegration (Lash and Urry, 1994) or delayering (Senett, 1998). Instead of enforcement of vertical power structures, ICTs increase the likelihood of horizontal affiliations (McLuhan and Powers, 1989). Together, sharing information and synthesizing experiences – decentrally – by means of ICT potentially provides ordinary employees with greater autonomy of action, referred to as 'empowerment' (Turkle, 1984; Clement, 1994).

4.2 From traditional community studies to community at work

"Communities are small, intimate assemblies, as pictured by Tönnies (1988 [1887]), and imagined groupings that never meet (Anderson 1991)" (Gudeman, 2001: 25).

After having presented a short overview of the discourse on computerization, in this section I will briefly discuss the origins of community thinking in social theory with the ultimate aim of illustrating the translation of the concept in contemporary discourse. To begin with, from the early beginnings of their disciplines anthropologists and sociologists have typically been concerned with (and still are) the topic of community. Specifically anthropology, originating as the discipline of 'archaic civilizations', can be characterized as traditionally interested in the investigation of 'authentic' and relatively isolated communities. This is reflected in the early preoccupation with closed agrarian and folk communities. In these studies, locality, territoriality, kinship and ethnicity, were asserted as the primary sources of belonging. Therefore, in the comprehension of community the characteristic of physical proximity was stressed: 'the sharing of a particular locale'.

More recently, community studies demonstrated a shift from 'cultural analysis' concerned with the explication of local meanings and structures to the staging of these microcosm studies of indigenous knowledge in the context of the larger political economy of which they are a part (Blok, 1974; Wolf, 1982).[10] Relating local communities to global economic systems and inequities, these studies claimed the need to emphasize the role of asymmetrical power relations (hegemony) and insisted on studying community as an open instead of a closed system.[11]

10 Political economists study "the effects of capitalist penetration upon those communities" (Ortner, 1984: 141).

11 Eric Wolf's (1982) book *Europe and the People without History* is a typical example of such a synchronized account of both the developing world system and local communities. The work is an attempt to write a history of the world in which not only the dominator but also the dominated is incorporated.

Another trend in contemporary community studies is the shift from primitive to industrial societies, as fieldworkers are increasingly interested in studying the, for them, more familiar instead of 'exotic' places while preserving the eye of a stranger (Jackson, 1987). Examples of this trend are Cohen's (1982) anthropology of rural Britain, the various urban ethnographies of social groupings such as drug users (Becker, 1963) and ethnographies of science and technology such as Forsythe (2001) on the work of AI researchers and Rabinow (1996) on the invention of PCR.

Alongside the shift from the exotic to the familiar, the first anthropological studies of communities in the workplace appeared (Dubinskas, 1988; Trice, 1993). These studies were not so much focusing on the existence of various ethnic groups but were increasingly concerned with specific occupational groups in organizations also. Examples include the ethnographic work of Orr (1996) on technical service workers and Barley and Kunda's (2004) work on itinerant technical contractors.

Important to note here is that, these 'new communities' are substantially different from the ones anthropologists used to be concerned with in the past in that people are less and less born into them (Lash and Urry, 1994). As a matter of fact, nowadays we get to choose to be a part of a community – think, for instance, of social and political movements – or make up our own groups and symbols. This is what Hobsbawm and Ranger (1983) refer to as 'invented tradition'. As is the case with communities in the workplace, in these modern communities "membership is based more on a willingness to assume an identity or to work for a general good" (Hess, 2003: 292).

In addition, not only can communities be invented (Bauman, 1991; Lash and Urry, 1994), some people also argue that community not necessarily entails a physical proximity. Instead of a physical place, community is here posited as an idea; a mental construction (Cohen, 1982, 1985; Strathern, 1981, 1982; Wright, 1992). Along the lines of this view, recent insight in anthropology shows how symbolic meaning and identity construction occurs through engagement and imagination decoupled from actual interaction (Anderson, 1991; Gudeman, 2001; Amit and Rapport, 2002). Anderson (1991), for instance, describes how people experience mutuality and solidarity as a consequence of the coming of print technology. Or better said, Anderson sees print languages as laying the foundation for national consciousness in that they create unified fields of exchange and communication. The resultant experience of mutuality and solidarity is referred to as 'imagined community'. It is imagined since its members will not all know each other personally. Anderson's conception of 'imagined communities' is described by Amit and Rapport (2002) as follows: "if people imagine themselves, even when they do not know each other, to share a distinctive collective identity, then they can mobilize themselves as a community, and to move on from there to presume that to imagine community is already to constitute a community" (Amit and Rapport, 2002: 24).

Taken together, the evolution in community thinking can be typified as a transition in focus from agrarian, folk, isolated and territorial to urban, in political economic context and not locally bound. However, the archaic concept of community remains popular in social theory, in spite of invented and imagined conceptions of community. That is to say, the community as a locally bound and collective entity is the concept of community researchers continue to call upon (and remains the ideal). As a result, the bulk of community studies is still performed in isolation instead of situating localized social groupings in their wider political, economic and cultural context. This confusing of locus with object of research is, according to Amit and Rapport (2002), due to the convenience of scalability, its set boundaries, presenting the researcher with a seemingly neatly cut research object. Another reason for its persistence is that the (archaic) idea of community radiates a strongly optimistic promise: "community, we feel, is always a good thing" (Bauman, 2001: 1). As Rapport and Overing (2000) point out, "community [is] a concept of always positive evaluation and evocation, whose usage expresses and elicits a socio-cultural grouping and milieu to which people would expect, advocate, or wish to belong." And people, in general, have an innate longing to belong to a group.

4.3 From communities in the workplace to producing 'a sense of community'

After having summarized the most important developments in community thinking in social scientific discourse, this section will look into the ways in which the concept of community is translated in organizational discourse.

As inspired by the work of anthropologists, community in organizational discourse is originally perceived as an alternative ideal-typical form of organization (Ouchi, 1980; Wilkins and Ouchi, 1983). "Alongside the market-ideal type form of organization which relies on the price mechanism, and the hierarchy form which relies on authority, there is a third form, the community form which relies on trust" (Adler, 2001: 315). While from an institutional perspective, communities are organizational forms fundamentally different from markets and hierarchies, these authors claim that the three mechanisms can be found in differing degrees in any organization.

Where Ouchi in 1980 argues that the community form of economic association is most efficient because communities exert their own control (Ouchi, 1980; Woolsey Biggart and Delbridge, 2004),[12] about 20 years later business scholars rediscover the community as best suited to take up the challenge of the knowledge economy. Allegedly, community is the organization principle most effective in producing and sharing knowledge and, hence, in generating and disseminating innovation (Adler, 2001; Grant, 2001).

12 This is, according to Ouchi (1980), because "they do not require explicit auditing and evaluation" (p. 137).

My point here is that whereas sociologists and anthropologists took upon themselves the task of studying communities *in* the workplace, in organizational studies the term community is employed to designate the organization *as* a community of shared meaning. The subtle difference between the two is that where the former approach may still be wary when *a priori* conceived ideas of collectivity are concerned, the latter, without a doubt, will be more inclined to take collectivity and shared meanings for granted.

By far the most popular treatment of the term in organization studies, and held responsible for the renewed attention for community in the workplace, is Lave and Wenger's (1991) introduction of the term 'communities of practice'. Communities of practice are "groups of people informally bound together by shared expertise and passion for a joint enterprise" (Wenger and Snyder, 2000: 139). So as to better understand its intrinsic expectations in organizations, in what follows I will describe to what community of practice owes its popularity and how community's essential characteristics change over time as it 'lands' in organizational discourse.

Lave and Wenger (1991) coined the idea of a community of practice as central to their social practice theory of learning in which communities of practice are defined as the foci of learning. Acknowledging that learning is informal and practice based (Bowker and Star, 1999), in their theory, Lave and Wenger (1991) define learning as "legitimate peripheral participation (LPP)".[13] LPP refers to learning understood as "an integral part of generative social practice in the lived in world" (p. 35). Characterized as such, they express that learning is a complex social process that inevitably reflects the social context in which people learn and in which they put it into practice. Furthermore, being engaged in practice causes some degree of sharedness in meaning and mutual identity construction.[14]

Three premises of communities of practice are important to mention here. First, from the onset viewed as informal knowledge cultures, communities of practice are a natural part of organizational life, i.e., observable phenomena. Second, typically such groups do not comply with organizational structures, that is, they are not necessarily bounded by fixed administrative boundaries such as the team, the business unit and the department (Seely Brown and Duguid, 1991; Wenger and Snyder, 2000). Instead, they rely on the functionalist mobilization of people on the basis of shared interests and problems (Lesser and Prusak, 1999). Third, they are organic (Hara and Kling, 2002) and self-organizing. That is to say, they emerge in the course of action, cannot exist as created by managerial mandate (Seely Brown and Duguid, 1991; Lesser and Prusak, 1999), and "their membership is self-selected" (Wenger and Snyder, 2000: 143).

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13 Referring to its three components: legitimation, peripherality and participation, LPP is comparable to the concept of acculturation or socialization in anthropology.

14 This highlights the importance of history in the idea of communities of practice. As Wenger (1998) states accordingly, "communities of practice can be characterized as shared histories of learning" (p. 103).

Seely Brown and Duguid (1991) can be held responsible for the subsequent transposition of Lave and Wenger's term in organizational contexts. A publication in the journal *Organization Science* initiated the popularization of the term community in the business realm (Hara and Kling, 2002).[15] In it the Palo Alto researchers describe communities of practice as non-canonical representations of work practice; the opposite of formal training and education, manuals and job descriptions. As inspired by the work of anthropologist Orr (1990), Seely Brown and Duguid point at the danger of relying on formal representations of practice such as formal training and education, manuals and job descriptions. Denoting espoused instead of the actual practices, these abstractions are detached from practice and "distort or obscure intricacies of that practice" (Seely Brown and Duguid, 1991: 40; Seely Brown, 1998). According to Seely Brown and Duguid, organizations need to rely on actual practices instead. For this, they insist on identifying communities of practices so as to better support them.

The idea of a community of practice is subsequently taken over/ translated by researchers and practitioners in a wide variety of disciplines. The appeal of the term in organizations, causing it to be a true management fashion (Kiesler, 1997),[16] can be said to lie first and foremost in the fact that communities of practice represent the informal organization. To be precise, the growing popularity to define communities of practice in the commercial arena (Lesser and Prusak, 1999) is mainly due to the increasing awareness of the significance of informal knowledge sharing and learning in organizations.[17] That is, the realization that in actual fact most learning occurs in practice, 'on the job', and only partially as a result from formal education. In management discourse communities of practice are thus believed to locate, or lead to, the most important source of knowledge creation and innovation: informal, or tacit, knowledge (Hildreth *et al.*, 2000). [18] As a result, the initial aim to 'detect' and 'support' communities of practice (Seely Brown and Duguid, 1991) soon appeared to the background in favor of a preoccupation with designing suchlike groups.

Whereas from the introduction of the term its value was explicitly said to lie in the spontaneous connecting of individuals in organizations, the management and organization literature gradually shows evidence of modifying the concept from an empirically observable phenomenon into a potentially 'manufacturable' phenomenon. Even its chief propagator, Wenger, by now (2000) a "consultant on knowledge management and

15 Very frequently the introduction of terms as derived from social theory first appear in the journal *Organization Science* after which they are taken over by the more popular management journals.

16 The extensive emergence of variations on the theme of communities of practice are telling for its popularity in management and organization studies: *communities of interest* (Seely Brown and Duguid, 2000; Uimonen, 2001); *communities of commitment* (Kofman and Senge, 1993); *communities of interaction* (Nonaka, 1994); *communities of knowing* (Boland and Tenkasi, 1995) and; *communities of learners* (Rogoff *et al.*, 1996).

17 Or, is it the case as Swan and Scarbrough (2002) maintain that community of practice mainly owes its popularity to representing "the human face of knowledge management" (p. 11)?

18 "Tacit knowledge is personal, context specific and therefore hard to formalize and communicate" (Nonaka and Takeuchi, 1995: 59).

communities of practice" and capitalizing heavily on the commercialization of the term, succumbed to the idea of managing communities of practice and in doing so seems to confuse enabling with designing. His success in launching the term made him renounce its principles as more and more organizations show an interest in creating (or, in his words, 'cultivating') communities of practice.[19]

The success of the term community of practice as opposed to a similar term like 'occupational community' as employed by anthropologists Van Maanen and Barley (1984),[20] Trice (1993) and Orr (1990), thus lies in the language of getting a grip on the informal organization and expectations of the non-canonical being manageable. As I tried to show, the popularization of community of practice entails the development of the concept originating as a construct deeply embedded in social theory to a commercialized and rationalized treatment in managerial and organizational discourse. It evolved from an identifiable, observable, phenomenon to something to be designed and created by managerial mandate.

Community of practice, during the course of its commercialization, developed as instrumental to instead of a natural part of organizational life. Apart from stirring informal knowledge sharing, communities of practice are perceived by researchers and practitioners of management and organization as devices to create mutuality between its members. Here sharedness in meaning is taken not so much as a prerequisite and outcome of communities of practice but rather as something that can be developed by way of artificially installing communities of practice. In other words, whereas at first passion, commitment, and identification with the group's expertise (Wenger and Snyder, 2000:142) are taken to hold communities of practice together, they are in the course of the travel of the concept believed to be 'manufacturable' by means of it. In that respect, the application of communities of practice develops in a similar manner as its predecessor 'organizational culture' (Smirich, 1983): "as a form of rhetoric, used to describe a situation that needed urgent change of a particular type" (Hull and Kaghan, 2000: 321; Van Maanen and Barley, 1984).

Taken together, investigation of the relevant literature shows that the term community in organizations initially refers to certain entities in the work organization or is perceived as an alternative type of organization next to hierarchy and market. However, as it is taken over by and translated in the more popular literature, it develops from an alternative form of *organization* into an alternative way of *organizing*.

19 To illustrate this point, in *Seven Principles for Cultivating Communities,* Wenger, McDermott and Snyder (2002) outline seven design principles for communities of practice.

20 Van Maanen and Barley (1984) define occupational community as "a group of people who consider themselves to be engaged in the same sort of work, whose identity is drawn from their work; who share with one another a set of values, norms, and perspectives that apply but extend beyond work related matters, and whose social relationships meld work and leisure" (p. 287).

Recognized initially as observable informal structures in the organization, communities are increasingly seen as agents or instruments of social change. Whereas the perception of the organization as community traditionally implied in organizational discourse acknowledging the more personal relations people maintain at work, modern community thinking in organizations is closely linked to ideas of organizational change, that is, a way of ordering according to the template of community. My point here is that while at first community is posited as an ideal vision of organizations, business scholars and practitioners are in quest of changing organizations accordingly whilst largely defying social science traditions. Organizing according to the template of community, then, puts forth the belief in the manufacturability of informal communication structures and the creation of sharedness in meaning.

4.4 From an 'indiscriminate being together' to 'doing business'

Whereas the previous sections dealt with the ideologies of corporate computing and community, in this section I will discuss the notion of virtual community in organizational discourse.

The recognition of virtual community in organizations could be seen as paved by the adherence to the language of communities of practice in organizational discourse. Although initially Wenger and associates do not link communities of practice with ICT, they acknowledge that it can play a vital role in supporting organizational learning and knowledge sharing.[21] In this case, 'electronic' communities of practice can be seen as a specific type of virtual community (Congar *et al.*, 1999; Hildreth *et al.*, 2000; Wasko and Faraj, 2000).

Prior to discussing the translation of virtual community in the business realm, I will briefly delve into the account of virtual community as typically dealt with in the so-called cyber-culture studies. In cyber-culture studies, often stressed qualities of virtual community are: fluidity (Willson, 2000), shaped by actors themselves (Willson, 2000), commonality (Fernback, 1999: Wilbur, 2000) of values (Smith, 1996) and interests (Rheingold, 1993; Robins, 2000; Fernback, 1999).

As defined by founding father Rheingold (1993), "virtual communities are social aggregations that emerge from the Net when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace" (p. 5). From this we conclude that, to paraphrase Wilbur

21 Seely Brown mentions (1998) as one of the first the possibility of technology supporting communities of practice. Eventually, also Wenger and Snyder (2000) come to acknowledge the possibility of communities of practice as supported by ICT as they say that "[s]ome communities of practice meet regularly – for lunch Thursday, say. Others are connected primarily by e-mail networks" (p. 139).

(2000), "the key ingredients (of virtual communities) are communication and feeling" (p. 46). Correspondingly, definitions of virtual community often resonate messages of human intimacy and commitment (Fernback, 1999).[22] What we thus see here is a clinging on to old connotations of community (Zijderveld, 2000) in terms of a "society of intimacy" (Cohen, 1985).

Central to the understanding of virtual community is the idea of 'virtuality'. According to the 9th edition of *The Concise Oxford Dictionary*, 'virtual', in the case of computing, refers to "not physically existing as such but made by software to appear to do so." In this definition the virtual world is merely a simulated world (Wooley, 1992). Another stand is represented by the so-called virtual realists who see in the virtual space created and mediated by ICTs the emergence of a separate reality (Gauntlet, 2000); a completely new world "open to exploration and, ultimately, settlement" (Woolley, 1992: 122). Adherents to this view assert that the virtual space will become a 'placeless space' in which hierarchical differences are negligible (egalitarian) and in which more democratic and indiscriminate relations exist. As it is disembodied – "independent of any particular physical embodiment" (Wooley, 1992: 69) – and presumably not interfered by existing power structures of the 'real world', the typical virtual community ideology is characterized by choice of associations, openness, anarchy and gift relations.

As for the choice of associations (Willson, 2000), "through this new transcendental medium [virtual community], it is claimed, we shall be able to construct new sorts of community, linked by commonality of interest and affinity rather than by accidents of location" (Robins, 2000: 88; Rheingold, 1993; Valauskas, 1996). This extends the notion of imagined community as based on print technology (see section 4.2) to how new media technologies such as the internet provide the imagination of different forms of identity. That is, forms of identity in which relationships are not necessarily based on physical proximity allowing for the development of new relations and new forms of identification (transcendental). For example, the mobilization of the various grass roots political groups such as the anti-globalist movement shows how the internet allows people and groups of people to organize themselves across national boundaries.

Furthermore, the idea of virtual community is permeated with the organizational philosophy of openness (and anarchy). This can be attributed to virtual space's celebrated ability for (direct) interactivity (Bell, 2000) and the high degree of autonomy ceded to its participants (Hagel and Armstrong, 1997) as a consequence of which even the environment in which the interaction takes place is "shaped by the actors themselves" (Willson, 2000: 649). Since "in cyberspace, everyone is an author" (Wooley, 1992: 165), voicing real people and real concerns through 'direct' reports brings about openness

22 "Not all virtual social gatherings are communities. Without the personal investment, intimacy, and commitment that characterizes our ideal sense of community, some on-line discussion groups and chat rooms are nothing more than a means of communication among people with common interests" (Fernback, 1999: 213).

to competitive information. Examples include patient cooperation and 'blogging' – respectively referring to alternative sources of health information and news other than mainstream medicine and journalism.[23]

Last, the idea of virtual community is infused with the ideal of free exchange of information and hence often characterized in the cyber-culture literature as a gift-economy (Kollock, 1996). Gift carries the connotation of expecting nothing in return, without obligation (cf. Gudeman, 2001).

The term virtual, online, or cyber community made its entrance in the commercial arena around 1995 (Werry, 1999). With this entrance, the discourse on virtual community, just as the development of the internet in general, gradually became dominated by a commercial orientation.[24] Rayport and Sviokla's article *Exploiting the Virtual Value Chain* (1995) marked the beginning of a new focus within the business realm and stressed the importance of the 'business model' of virtual community to electronic commerce. Since increased access to information will shift market power from the producer to the consumer, a business model of specific importance is the so-called business-to-consumer virtual community (Hagel and Armstrong, 1997). As Hagel and Armstrong maintain: "[a]s virtual communities tip the balance of power in commercial transactions toward the customer, they'll provide a powerful vehicle for vendors to deepen and broaden their relationships with customers" (Hagel and Armstrong, 1997; 187). In order to "deepen" and "broaden" relationships with customers, virtual communities were henceforth seen as marketing devices for creating customer loyalty and monitoring consumer behavior.

The following excerpt shows the rather inflated expectation of the commercial power of virtual community: "Of the many ideas that have entered the business world by way of the Internet, few have proved more potent than 'online community', (…) the ability to create and manage virtual communities will become a distinguishing feature of nearly every business" (Williams and Cothrel, 2000: 81). From this it is safe to say that, despite virtual community being increasingly inscribed with commercial imperatives, its utopian character as presented in cyber-culture studies persists (Robins, 2000).

What I tried to show in this first part of the chapter is that the ideals of both computing and community as initially advanced in the organizational discourse, and eventually culminating in the (popular) idea of virtual community, are best characterized as the grassroots, non-hierarchical, non-institutionalized and voluntary formation of groups enabled by modern information and communication technologies across existing structures. Subsequently, a materializing of modern thinking in organizations is the postulation of information and communication technologies as change or transformation

23 Contrary to mainstream journalism, the 'blogging' form of journalism does not have to go through the various levels of review and approval but can be published as it is written down and instantaneously uploaded and read by subscribers.

24 While in the 1970s scientists and engineers largely dominated virtual communities, from 1995 onwards they are dominated by commerce.

enhancing learning capabilities, and the organization as a community to produce new organizational forms creating shared values through the autonomous acting of employees. Both modern ideologies of computing and community are portrayed by business scholars as if they were to produce organizational dynamics other than hitherto known previous modes (meaning: progress). That is, less formally organized into a structure of roles and more flexibly mediated by informal connections (the creation of new communication structures) and enhanced solidarity (identification with something larger than the sum of individuals). It is for this reason that these new collaboration forms tend to raise expectations about improved responsiveness (Jarvenpaa and Leidner, 1998) and hence would significantly contribute to the organization's ability to adapt to its changing environment.[25]

It should be noted here that there is a considerable overlap in the messages computing and community convey in the organizational discourse. That is, much of the similarity in the ascribed characteristics of these, at first sight very different, modern constructs is inherent to aspiring to the ideal of a modernist organization. As it happens, characteristics such as flexibility, informality, grassroots, and permeable boundaries are belonging to the rhetoric of the post-bureaucratic organization (Heckscher and Donnellon in Hodgson, 2004; Grey and Garsten, 2001) and hence explain their appeal. Both the principal features of computing and community and post-bureaucracy "include the reduction of formal levels of hierarchy, an emphasis on flexibility rather than rule-following and the creation of a more permeable boundary between the inside and outside of organizations" (Grey and Garsten, 2001: 230).

4.5 The promise: management and moderators' appropriation

> *"Now we come again to a local time/space: an idea has been objectified, has traveled, and has arrived at a new place ready to be translated into action" (Czarniawska and Sevón, 1996: 39).*

After having explicated the prevailing expectations of ICT, community and virtual community in the literature, in the remainder of this chapters and the chapters to follow I will demonstrate the ways in which these expectations are appropriated and modified by the various relevant social groups in the research organization (Dito). The exploration of the various appropriation patterns of virtual community in the organization begins with the managers and moderators for they are the ones who are responsible for introducing the idea(l) and the technology within Dito and therefore partly influence

25 Some of the ever-changing circumstances of the, globalized, market are: the increased international competition and the shortening of product life cycles.

how the prospective users will receive it.[26] As I explained in chapter one, moderators and managers' arguments are in this chapter taken together because when it comes to the introduction of the artifact in the organization moderators can also be looked upon as managers (see the discussion on dynamic user groups). In general one could say that the motives managers may have for introducing virtual communities in the organization represent the general organizational goals, whereas the objectives of the moderators concern the individual groups making use of the virtual communities.

As can be concluded from the preceding sections of this chapter, the decision of Dito's management to create virtual communities is in line with the increasing popularity of the ideas of community and ICT in the organizational discourse. The responses of managers and moderators to these expectations of ICT and community denote the message virtual community conveys in the context of the organization, referred to as the 'promise'. How, then, do the managers and moderators assume the images of computing and community as presented in the literature? How do they concretize it? And what, if any, does the deviation between discourse and practice reveal?

In order to answer these questions and investigate how the managers and moderators as one of the 'relevant social groups' (Bijker *et al.*, 1987) assign (new) purposes to the ideal of virtual community,[27] this section will describe how the idea of virtual community originated in the organization, the basis on which the technology to support the communities was selected as well as its most important features and functions.

To begin with, there has been a history of use of information systems within Dito. In fact, the community initiative appeared alongside the effort to integrate the existing information and communication infrastructures of the various subsidiaries into one. Also when virtual communities are concerned Dito has a prior history. Before the introduction of the 'community technology' in 2001, some enthusiastic employees, most of which were concerned with ICT product innovation, started to experiment with virtual communities on their own initiative. Although on a small scale, they were used intensively. At the end of 2000, more people started showing an interest in the phenomenon and the number of communities grew rapidly. As from then, the idea of community was taken up by management. Because license costs of the current community technology were too high, as of early 2001 Dito offered all its employees the opportunity to create communities and base these on a new technology.

Generally speaking, this technology can be described as a web-based groupware technology. In chapter one, groupware technology is described as to enable groups

26 This is not to imply, however, that there is a linear causal relation between the introduction and reception of virtual community; that the way in which it is received by employees is a direct outcome of the way in which it is introduced by managers and moderators.

27 I deliberately speak here of 'purpose', 'objective' and 'reason' of deployment, referring to the different purposes virtual community may pursue from the perspective of management. Instead, when discussing employees' appropriations in chapters five and six, I will speak of 'intent of participation' (O'Brien, 1999) and 'value of use', referring to the personal experiences of participants with virtual community.

of people to share information, communicate, cooperate and interact with each other online. The choice of 'community technology' may be understood as a first interpretation of (virtual) community in the organization. As Tanja, one of the responsible knowledge managers says about the requirements of the technology: *"Inexperienced and rather unskilled people must be able to easily learn how to work with it and at the same time it should appeal to the whiz kids in that it has all the latest gadgets."* Internal documentation shows, however, that despite these intentions the choice of the community technology did not pronounce obvious concerns for usability nor for criteria of community mediation and instead was based largely on financial concerns.

Ideally, a study of technology appropriation should, aside from the investigation of inscriptions-in-use, also include the technical design process of the system (Oudshoorn, 2003; Akrich, 1992). The reason for this is that designers determine the technical features and functions with a specific view to what it could and should do. Hence, they inscribe expectations about its prospective usage and users.[28] However, since my research does not include the designers of the technology, these design inscriptions are inferred retrospectively from the product descriptions of the technology. They are subsequently treated as managerial inscriptions as they are the ones responsible for selecting the technology on the basis of these descriptions. Box 1 presents the product description of the technology, here referred to as InstantLocus:[29]

Box 1: Product description

"[Instant Locus] works on a thin client – web server concept which can be easily installed and customized to suit multiple requirements of diverse project and functional groups like sharing, tracking and reviewing documents, task assignments, library facilities, intra group communication like chat, mails and managing central repositories. [Instant Locus] is a self-service Web tool for team collaboration. Structured for immediate participation, teams use [Instant Locus] to: 1. coordinate: people, tasks, plans, and resources; 2. collaborate: share ideas and discussion, resolve issues, co-author documents, exchange files, manage due diligence; 3. communicate: actions and decisions, key findings and lessons, publish knowledge captured to a broader base of readership."

Noteworthy facet is first of all that the manufacturers of the technology describe the technology of the research as "a web-based tool facilitating the creation of online workspaces" and do not mention the possibility of mediating virtual communities. The

28 The technical designers are involved in the first phase of technology's development, determining the technical features and functions. They do this with a view to the people for whom the system is designed; the (end)user. The people responsible for its introduction in a particular use context represent the second discernible group in the 'making' of information and communication technology. They are the ones determining the requirements, choosing the information system and directing its actual deployment in the organization.

29 Since this study is neither a critique nor a promotion of the particular product of the study, I decided not to use the product's real name.

product description does assert, however, that the web-based character of the technology potentially makes it "a self-service Web tool" for it in theory enables users themselves to create and customize workspaces whenever/wherever they would need to. According to the product description, the workspaces are also easily accessed (from the internet). It would thus allow for the spontaneous development of online groups.

The kind of standard applications the product contains are, for one, a document management system enabling the collective cooperation on documents. Other applications are chat and email, respectively enabling synchronous, real-time, and asynchronous, delayed, one-to-one and one-to-many means of communication. I should note, however, that in the workspace the possibilities for real-time communication are rather limited due to the absence of online presence indication. To use the real-time chat, participants would have to enter the chat space simultaneously to 'meet' each other online. Realistically, this would only happen when agreed upon beforehand.

The structure of the workspace reads as follows: 'discussion', 'library', 'calendar', 'tasks', 'index', 'customize' and 'member'. 'Discussion' is a forum meant for the participants to communicate in a many-to-many form. 'Library' denotes the part of the workspace where the group's literature and written products are stored. 'Calendar' is the place where the information on the group's activities is posted. 'Tasks' enables to track the tasks that have been assigned to the team members. 'Index' is a listing of all pages that have been contributed, structured by time of posting rather than their place in the workspace. By means of 'customize' participants can set particular options for their workspace environment. As the designers of the product maintain, "by using a simplified programming environment participants are able to extend the technology to add more functions." Finally, 'member' provides a space for participants to display information about themselves such as e-mail address, contact details and educational and working background. This is also where the different levels of authorization of the participants are defined. The various levels of authorization are: manager, author and reader of the workspace. Participants with a manager role are the gatekeepers in that they are authorized to add participants to the online workspace and determine the levels of authorization.

According to some researchers of virtual community, the above-mentioned technical specifics of the product comply with the criteria of virtual community (Bakardjeva and Feenberg, 2002). Yet other researchers of virtual community might, due to the limited potential for real time interaction for instance, claim that the technology of the study is incapable of mediating community (Stone, 1992). I contend, however, that for the purpose of this study the question whether or not according to the literature the technology of the study fulfills the alleged criteria of virtual community is beside the point. The reason for this is that the so-called objective conditions for the phenomenon to occur do not

necessarily rule out the possibility that the 'thing' mediated by the technology cannot be experienced as such (Willson, 2000). As discussed earlier in this chapter, "[c]ommunities are to be distinguished, not by their falsity/genuineness, but by the style in which they are imagined" (Anderson, 1991: 6). Besides, it could very well be that the notion of community is simply transformed by the technology (Escobar, 1994).

4.6 The introduction of the artifact

Irrespective of the criteria of virtual community, important for the study is the fact that the techno-organizational artifact is introduced in the organization with the language of (modern) notions of community. It is for this reason that I will take a closer look at how this language is appropriated in the context of the research organization. To begin with, the following excerpt taken from an interview with Dito's director Corporate Development responsible for introducing the virtual community concept in the organization illustrates the corporate interpretation of the term:

> *"It [the virtual community] concerns the professional, the animated specialist who is looking for pals, within as well as outside the firm. Let's say I am a Java expert. As such I will often come across people with whom I am not collaborating, but who could very well be interested to talk to me about my line of work and tell me: 'gosh, our specialties are so akin, let's get together some time.' People who are mad about Uniface, for instance, want to share their knowledge with as many other such fanatics as possible. And I am not just talking about the knowledge that one makes available to the whole of the firm formally."*

As the excerpt illustrates, introducing the groupware technology under the heading of virtual community not only attributes utopian powers to ICT as an informal and boundary spanning device, it furthermore puts forth the optimistic and idealized portrayal of human practice as inherent to the ideal of community. As the interview excerpt shows, virtual communities are predominantly communicated as tools *for* their users. That is, in particular for people with shared interests, the zealous professionals, to share their knowledge with peers purely on voluntarily grounds, merely for the sake of indulging in their passion and for their own personal development. The promise of virtual community asserts a view of autonomous and driven IT professionals, committed to their profession and relating to each other selflessly, that is, eager to learn from and willing to share knowledge with fellow professionals. It therefore shows evidence of aspiring to the individual autonomy and creativity of the knowledge worker (see chapter

one). It furthermore asserts a view of the organization as an unconstrained and apolitical social gathering of people relating to each other on the basis of equality, for the common good of the group and anchored in a strong sense of belonging.

To underline the intention of collective learning and generating innovative practices, investigation of the relevant project documentation distributed to all (prospective) participants shows that the managerial objectives for the employment of the virtual communities are: 'distributed cooperation', 'bundling lived practice', 'product innovation', and 'improvement of the disciplines'. However, management and moderators did not solely appropriate the community idea as an idealized representation of human practice and in terms of its presumed affordances. Highly informative in this regard is an internal document that was used in a meeting to instruct the prospective moderators of the virtual communities. I should note here that this document was exclusively meant for the moderators of the virtual communities. Box 2 sums up the ten motives described in this internal document.

Box 2: Ten motives for organizational change

1) *Saving costs in information exchange and office facilities*
2) *Increasing efficiency and productivity*
3) *Increasing turnover as a result of the bundling of efforts*
4) *Advancing synergy between subsidiaries*
5) *Reusing knowledge by eliciting best practices*
6) *Sharing knowledge*
7) *Cultivating knowledge*
8) *Stimulating creativity*
9) *Maintaining internal and external relations*
10) *Developing new relations*

The ten motives behind the introduction of communities and the related technology illustrate how Dito's management has interpreted the virtual community idea predominantly as organizational change. Characteristically, the efficiency objectives appear most prominently on the list of motives.

The same mixture of motives appeared in the interviews with Dito's managers and moderators, out of which four interpretations of the community and groupware ideas can be distilled. In the first interpretation, both ideas are primarily viewed as a learning technology, that is, a technology for generating and sharing knowledge, and for networking. For instance, Sebastian, moderator of the junior employee community, remarked concerning his community objective: "*I call it members for members, meaning*

that members can actively use each others' knowledge by way of the community." Another example is moderator Leo, who claimed that the project managers' community *"is directed foremost towards getting to know each other to find out who has what kind of knowledge, what you could approach someone for and what drives this person so that you can even call him in the night regarding certain matters*." Such remarks clearly resemble the expectations of communities as described in first part of this chapter, with specific reference to the ideal of experiential learning.

In the second interpretation of communities and groupware, efficiency arguments dominate. As Tanja, one of the responsible knowledge managers, voiced: "*It [the objective] concerns most of all the safeguarding of knowledge in the organization. The knowledge that would otherwise simply remain in people's heads can now be invested in expert databases, reports or what have you*." In this view, communities contribute to the codification of the firm's tacit and explicit knowledge with the ultimate aim of preventing knowledge leaving the organization (Fuller, 2002). As general manager Reinbert added: "*The consequence of an employee leaving the company is that with him also the documents and the knowledge leave. (…) Virtual communities are about the re-use of information, what we refer to as digital durability*." Achieving synergy across organizational boundaries was another argument used.

The third interpretation of the community idea relates to coordination. Closely related to re-using information is the argument of Karel, moderator of the document management systems community: "*With respect to new products and developments in the field you see that they all try to reinvent the wheel*." Communities and groupware in this interpretation are meant 'to help coordinate documents, activities, and working methods' to minimize redundancy. Coordination to present the firm as a coherent entity with a collective identity to the outside world was also mentioned: "*Looking at the way you are presenting yourself, clients will say, that's curious, one consultant says this and the other that. This firm is a many-headed monster*."

In the fourth interpretation, the idea of 'community engineering' (English-Lueck, 2002) is put forth. Apart from using the virtual community in order to present the organization, or team, as a seemingly coherent whole to clients and other groups in the organization, managing consultant Ronald contends that it is important to the members of the group themselves as well: *"By storing the common products [in the virtual community] they will become accessible for everyone in the community and the identity of the group will become visible."* As some of my informants claim, this enhances their feelings of belonging to the particular group or the organization as a whole and creates 'some degree of commitment' amongst the members. As the moderator of the community for young employees of Dito, Sebastian, says characteristically: *"We want to try to use the community as an additional binding agent."* In this interpretation, the communities are

believed to create and enhance the commitment of employees to the organization in general and to the professional group in particular. Communities, in this interpretation, are also believed to be helpful in solving the problem of under-utilized consultants, the high number of benchwarmers as discussed in chapter three. In a community meeting, Berend, the managing director of Dito, called upon people's feelings of solidarity and encouraged them to collaborate internally before employing external personnel. The virtual communities would incite such an inward perspective, he said.

The fifth interpretation relates to surveillance. As Leontien, manager of a sales team, replied when asked about her community objective: "*To keep track of current projects and their progression.*" To this she added: *"This is especially needed since we are dealing with remote management, that is, managing professionals at a distance."* In this interpretation, the technology is also used as a form of organizational or community memory. Erik, a business team manager of a sales team, for instance, says that the virtual community is specifically meant *" to keep track of projects done in the past by team members".*

As described in this section, the learning related arguments are readily communicated to the firm's employees, whereas the arguments of efficiency and coordination and, in particular, that of management control often remain more or less hidden or implied. Clearly, individual managers and moderators can and do adhere to one or more of these arguments, resulting in a multitude of diverse patterns of appropriation that has shaped the explicit and implicit messages conveyed to the firm's employees.

Management control is also the most appropriate indication for the way the communities have been made 'accessible' to their prospective users. When employees want to start a community, the first step is to fill in a 'Request for community,' a digital form on the firm's intranet. The next step for the responsible managers is to arrange an intake conversation with the applicants to assess their intentions. Subsequently, the managers determine what kind of information system would best suit their needs. If this is the community tool, the applicants are given the community template. From this application procedure can be said that even though the technicality of the tool does allow for the spontaneous emergence of communities, management does not permit it.

Another example of the prominence of the control argument is the way the membership of the groups is determined. Dito's management restricted membership beforehand by imposing the following four kinds of categories of community: the umbrella network (a network of people with the same 'label'); the special interest group (a network of people organized around a certain topic); the cooperation community (a group of people actually sharing an everyday work practice by working on the same project) and; the client community (a group of people working at or for the same client, usually on different projects). The imposed, top-down, definitions of membership are

thus defined either in terms of a shared practice, interest, job description or client. In compliance with these definitions, groups were defined for the communities.

Some moderators, responsible for the mobilization of the members/groups, in turn, gave these categories their own interpretation. As Sebastian, moderator of the young employees' network of Dito, told me:

"The members have to meet very strict requirements. They have to be younger than 33 and employed for no longer than 4 years in the organization. These are often the people that do not have a network yet and are often clueless about how to build up a network. Another requirement is that they attend our bimonthly meetings."

The moderators of the consultants' community, for instance, contacted all people that were known as consultants by their managers at the various subsidiaries and invited these people to join the network. The following excerpt of a conversation with one of the moderators of the consultants' community, illustrates the way the moderators control the circumscription of the group:

V. "But in principle all people who call themselves consultant may join the community?"

M. "No, we make a selection. I wouldn't want to go so far as to calling it a ballot but when someone from a certain consulting club applies we always ask the manager of this club 'what are your feelings about this guy, do you think this is someone who can be properly called a consultant? Or, is this again one of many who happens to have consultant written on his or her business card?"

The restrained accessibility clearly connotes a decree against the previously mentioned choice of association (see section 4.4).[30] For communities to be the organization principle most effective in stewarding learning and innovation, they need a certain degree of informality and autonomy. This recommendation abound in the organizational discourse is nevertheless overruled.

4.7 Concluding remarks: post-bureaucratic measures of control.

The renewed interest in community (Zijderveld, 2000) in general can be explained as a direct response to the social-cultural changes of the post-industrial (information) society; a compensation scheme so to speak for the processes of individualization, secularization, globalization, commercialization, digitalization, etc. "No wonder," Bauman (1991) says, "that postmodernity, the age of contingency *für sich*, of self-conscious contingency, is

30 Wenger and Snyder (2000) also contend that "[t]o join a community a potential member must be recognized as an expert by his or her manager" (Wenger and Snyder, 2000:144). This clearly contradicts the idea of self-emerging membership.

also the age of community: of the lust for community, search for community, invention of community, imagining community" (p. 246). Despite the fact that, or should I say *because*, modernization and traditionalization are each other's antagonist, they often occur simultaneously (Kahn, 2001).[31]

Together, both the language and the ideas with which the artefact is presented in the organization radiate a strong and optimistic promise, in a practical and theoretical sense. Introducing the groupware technology in the organization under the heading of virtual community presents the technology to its prospective users with a positive connotation. As used by managers, the term community is reminiscent of intimacy of relations and people distinterestedly collaborating with one another in order to construct a collective good (Douglas, 1986). Managers thus appeal to the language of community involved with the concept of *Gemeinschaft* as set out in chapter one, denoting a positive connotation and the collective possession of something shared.

However, the idea of community is not solely appropriated in terms of the prevailing expectations in academic and popular discourse. Typical examples of additional meanings attached to virtual communities are that they are considered helpful in coordinating documents, activities, and working methods to minimize redundancy, that they can be used to present the firm as a coherent identity to the outside world, or that they can aid in keeping track of projects at clients' sites and in solving the problem of under-utilized consultants.

Thus, while at first, virtual community draws on the rhetoric of empowerment, autonomy and self-organization central to the post-bureaucratic organizational discourse, it is essentially interpreted as a bureaucratic system of control, based on principles of efficiency, coordination and surveillance (cf. Hodgson, 2004). Reflecting on the differentiation and modification of the organizational discourse taking place at Dito, it can be safely concluded that many managers and moderators are inclined to enforce the company's hierarchy in a reaction to the increasing competitive pressures and intend the socio-technical artifact, virtual community, to become part of that rationalization (Suchman and Bishop, 2000; Hull and Kaghan, 2000). Elements of normative and rational control are furthermore shown in the encouragement of feelings of solidarity among Dito's employees, the call for improved internal collaboration and the appeal made to loyalty and commitment to confront the troublesome times.[32] Although these control elements are already inherent to the organizational discourse, they are amplified by the additional meanings attached to the virtual community idea in context.

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31 Take the processes of "localization developing apace with globalization" (Sahlins, 1998: 410), for instance.

32 Where rational control has been more often proved to be an argument inherent to the idea of computing, normative control is commonly attributed to the language game of community. Control therefore in terms of both behavior (the creation of new, horizontal, communication structures) and the prescription of norms and essences of professional selves (enhanced solidarity). To think of the observation that even identity is interpreted as something that can and should be coordinated.

In sum, the linking of work process and the organizational artifact to idealized representations of human practice (Pfaffenberger, 1999) disguises management's intent to transform employees and their practices – both behavioral and normative; transforming not only the way they work, but the way they think also; creating not only new communication structures, but attempting to create shared meanings also.

In terms of transformative expectations, the objectives of management and moderators are best summarized as inciting 'new ways of professionalization' in which professionalization is understood to refer to the transferability of skill, the proliferation of objective standards of work (Wilensky, 1963) and the creation of more coherence and solidarity (Dryburgh, 1999). Or literally, 'to come across more professional'.

Chapter 5

From discourse to practice (2)

5.0 Introduction: participants' appropriation

After having illustrated the implicit and explicit messages about organizational change in the managerial understanding of virtual community, I will in this chapter report on the several different ways employees take on the 'ideologically imbued artifact' as a 'resource in action' (Suchman, 1987). To be more precise, I will look at the way employees take the artifact to their own uses as a response to the prevailing expectations of computing/ICT and community and the images created with the introduction of the change idea in the organization. First, how do these 'community participants' relate to the technology as a virtual community and what roles do they attribute to it? Second, in what way do participants' appropriations deviate from management's appropriations? And, finally, what does the deviation between the two reveal? To answer these questions, I will in this chapter delve into the language and the kinds of arguments employees use while appropriating the proposed change idea.

Whereas in the previous chapter I treated management and moderators together, I should note here that some of the moderators' responses are discussed in this chapter also, treating moderators and employees as one relevant social group. The reason for this is that I found that, apart from behaving as managers, moderators may very well mold the community as other, ordinary, participants do, with the only difference that employees might have personal purposes for partaking in the virtual communities and moderators tend to act on behalf of the group. Both appropriations are in this chapter equally treated as 'intents of participation' (O'Brien, 1999).

5.1 Container and action-oriented metaphors

In exploring the way my informants relate to the artifact as virtual community I find it first of all illustrative to draw attention to the kinds of metaphors applied when they talk about it. These metaphors will give a first insight in the diverse interpretations the participants of the virtual communities hold of the artifact.

The metaphors participants employ in designating virtual community are to be characterized as either container or action-oriented. While the former shows the actor, in this case the IT professional, to be interested in preservation, to conserve and protect things, the latter shows more an interest in action; "to do things to the world" (Pacey, 2001: 83). The container function refers to the flat interpretations of information and communication technology in that they are concerned with storing and organizing data and information. Conversely, the action-oriented metaphors indicate the more interactive interpretations of ICT as it is believed to allow a synchronic two-way flow of information

between users. Stretching from rather flat ideas of information and communication technology to something that is more or less interactive, I came across descriptions of virtual community as:

— 'a sort of card index box';
— 'an archive, the organizational memory';
— 'a shared directory';
— 'a serving-hatch of information about a certain topic';
— 'a (co-coordinating) platform for communication;
— 'a meeting point for kindred spirits.'

The first three metaphors on the list, the index box, archive, memory and directory are all containers in one way or another. The first mentioned, the *card-index box*, can be said to be the typical predecessor of the personal computer in administrative computing; containing cards, or indices, to store and sort specific records with. The second metaphor, the *archive*, refers to a place in which public records are kept for long-term storage of data and files. The same holds true for the *organizational memory*. The memory perpetuates knowledge and represents that which is to be remembered. The *directory*, thirdly, as the equivalent of the term used in computer science, is used for "the hierarchic structuring of files on a hard or floppy disk in a PC" (Steenis, 1998: 209).[1]

The last three metaphors on the list – serving hatch, platform and meeting point – demonstrate more an interest in action rather than preservation.[2] First, the metaphor of the *serving hatch,* defined as "an opening in a wall through which dishes are passed from kitchen to dining room" (Webster's Universal Dictionary, 1993: 245), represents the passing on of information by means of the technology. Second, the *platform*, defined as the "raised flooring (…) from which speaker addresses audience" (Webster's Universal Dictionary, 1993: 405), refers to the technology as a podium from which people may convey their ideas and opinions about prevailing matters.[3] Third, the metaphor of the *meeting point* designates the technology as a place in which rendezvous take place. In this case, the technology is actually assumed to enable the assembly or 'settlement' of people (Woolley, 1992).

From the 'metaphors of use' (see chapter one, section 2.2) I conclude that the ascribed purposes of participation range from archiving or storing data, passing on information and knowledge, and communicating, to the gathering of people. Hence, participants'

1 Translation is mine.
2 Although it needs to be said here that asynchronous and synchronous online communication may very well be used with the aim to preserve the 'interactional history' of the group, the archive of their interactions. This is because when information passes through ICT it is simultaneously 'captured'. This is what Zuboff (1988) refers to as ICT's 'informating capacity': "the devices that automate by translating information into action also register data about those automated activities, thus generating new streams of information" (p. 9).
3 The term used in computer science designates "hardware or software architectures" (Schultze and Orlikowski, 2001: 56).

interpretations strongly reflect the evolution in thinking about computation as described in the previous chapter, that is, the computer as a device for bookkeeping, only automating existing tasks, to the computer as to create alternative social worlds with. The action-oriented metaphors, therefore, seem to support the transformative expectations of virtual community. One could wonder in the case of the flat interpretations, where a virtual community is defined as an archive or an index box, what in terms of change or transformation it brings about.[4]

5.2 Arguments affecting participants' appropriation

Subsequently, the interview data put forward a diversity of arguments that employees use while making sense of the virtual community idea and the explicit and implicit messages conveyed by management and moderators. The extents to which they attach importance to these arguments determine the way they appropriate the change idea and hence how they will use the artifact.

The kinds of arguments affecting employees' appropriation can be split into considerations reflecting the ideal (as presented in the discourse) and management and moderators' purposes, and in those showing deviating interpretations.[5] In what follows, I focus on the latter considerations, causing people to present themselves in the virtual space other than intended by management and moderators or not at all.

As taken from the interviews, the way people present themselves differently (or not at all) in the virtual environment depends on arguments ranging from the sheer material attributes of the technology, the characteristics of the organization and its customary practice of learning and knowledge sharing, and the degree of identification with the groups participants are confronted with *through* the technology. Hence, appropriation is determined not only by the specifics of online interaction but also relates to the reality outside the technology.

As I explained in chapter one, the appropriations should therefore be looked upon as a combined response to the intertwined discursive, material and social elements embodied in the artifact (cf. Rabinow, 1992). That is, appropriations are actively constructed in reaction to the language with which such change ideas are introduced (the discursive element), their technical attributes (the material element), and the prevailing structures and mores of the institutional context in which they are applied (the social element).

4 Yet, Zuboff (1988) believes ICT to generate new streams of information due to its 'informating capacity'.

5 It needs to be said, however, that in most cases participants do not realize their behavior is regarded as 'non-conforming' behavior by management. Nor do they, in most cases, show a deliberate intention to display 'deviant' behavior. In his study of marihuana users, Becker (1963) conceptualizes deviant behavior as breaking rules, recognized as such by others, and not necessarily purposeful: "Deviance is not a quality that lies in behavior itself, but in the interaction between the person who commits and those who respond to it" (Becker, 1963: 14).

These elements are usually not easily seen as separate domains and are therefore, in this chapter, all broadly referred to as affordances.

Together, ICT and community afford something to the participants: the actions generated with it, referred to as prospective use, and the people participating, referred to as prospective users. The affordances of ICT and community provide the indications of how and why employees form deviant opinions on virtual community. For reasons of overview, the following categories of arguments are set forth: the affordances with respect to 'individual-computer relations' and those with a view to group interaction. By presenting my interview data in such a heuristic manner, I mean to make a distinction between actors taking a position before the artifact, and actors taking a position before the individuals and groups of individuals they are confronted with through the artifact. Because the specific features of information and communication technology generally, and of virtual community in particular, are designed in order to communicate, share information and to work with more than one person simultaneously, the arguments inevitably concern group-artifact relations as well as individual-artifact relations.

Focusing on employees' deviating interpretations, I will first analyze the individual-artifact related arguments. I then proceed by adding additional arguments relating to the specifics of the group-artifact relations. It should be noted that the considerations of the technology's 'ease of use', the various technical demands and complaints that influence people's perception of the technology, are left aside because the technicalities of the specific product used were generally not considered of overriding importance in the appropriation of the organizational artifact.[6]

5.3 Affordances of individual–computer relations

The first category of arguments uses illustrative interview remarks belonging to the individual vis-à-vis the artifact. In explaining employees' deviating behavior, the interview excerpts point at the overall inappropriateness of the medium. The arguments mentioned characterize the technology as: an impersonal mechanism, a decontextualized medium, and in terms of an increased connectivity to information resources. The affordances of ICT mentioned in the previous chapter are thus interpreted as constraints for participants of the virtual communities.

To begin with, the technology is interpreted as an impersonal mechanism. As such, not being able to see who the audience is in the virtual space does not make senior project manager Natasja prone to share real problems*: "I notice that people are not*

6 Technical complaints were for instance that the technology was 'too slow', 'too complicated' or 'not intuitive'.

really inclined to actually share their real problems in there. (...) For now I prefer to do that, and I think the others as well, at the Friday night drink for example (...) when you know who's in your surroundings and not that there are about 70 other people who can listen in."

A fear of the judgment of others is mentioned as a result of this combination of visibility of the author and the invisibility of the audience when expressing oneself in the virtual workspace. 'Lurkers' are thus not only a problem for the researcher of life online, as I discussed in chapter two, they are also a problem for the social actors involved. This may mean, in some cases, an involuntary exposure to a large and unknown audience that may well be representing the higher levels of the organization. As project manager Arthur points out:

> *"Well, if you have the feeling that you are not judged on the basis of it [messages posted] then you would be inclined to put it there. The moment you realize: 'hey, when I as a project manager post something like a plan of mine, others will look at it and that will evoke a certain value judgment of my colleagues,' you won't do it. Especially if you know that it contains people of higher ranking as well. And that might very well be a matter of shame."*

After all, the fact that the virtual space is not confined to a specific physical locale enhances the chance it contains people never met before in real life. It is this relative anonymity which makes data warehousing consultant Ernst even more wary to share his knowledge: *"When you know someone personally, or you have some kind of bond with people, you would be more inclined to help them than you would a perfect stranger. You really must have some spare time to give an unknown person something or at least feel that it might pay back in some form or another in the long run."*

Altogether, it can be said that since the virtual space is text-based and therefore devoid of social (non-verbal) cues some people indicate to favor face-to-face interaction over online interaction. As senior project manager Roel says: *"To be frank, I prefer talking to someone than reading a document. However much I like reading, there are always a lot of hidden messages. And because I in turn read it from my own frame of reference, I might read it erroneously."*

Secondly, in explaining their online behavior, the technology is apart from being characterized as an impersonal mechanism also interpreted as a decontextualized medium. Decontextualization is here understood as "the distanciation from place and its sociomoral pressures" (Comaroff and Comaroff, 2000: 303). The inappropriateness of the medium implies in this case that the possibility of large-scale recording of the firm's available information has a price in the necessary codification and information losing its richness. As project manager Richard comments in an interview:

"When you really have a project management problem, you would not post it there. Since it usually entails that you have to explain so many things. You would at least need to write four or five pages in order to make someone else understand the problem properly. For someone to be able to help you, he would have to know the context, the situation of the client and what have you."

For employees, the implications of this decontextualization are that the technology is suited for certain kinds of knowledges only, e.g. the more context-less and abstracted kinds of knowledges, and for example not apt for the sharing of complex problems. However, for codified information, such as technical knowledge and skills, the virtual communities are readily used. As project manager Nik commented: *"Say, Windows 2000 has a problem. You then put a message in the relevant newsgroup and within a day you will have four usable answers. (…) Well, project management problems cannot be summarized that easily."*

Correspondingly, project manager Dirk puts forward the virtual space's predominant technical content, an inevitable consequence of the obligatory codification, as a reason for his deviating behavior: *"Because, when you take a look in the community, you will see a lot of technical oriented stuff: templates, risk fact sheets and other rambling. It is very technically, tools-like, oriented."* As he continues to explain: "*When looking for something relatively simple in the tools' domain, you will be able to find it there. However, it's a different matter when you have a specific problem, say, you need to convince a 62 year old director, shortly to retire, about the necessity of implementing a management information system*."

Lastly, there is the argument of the increased connectivity of information resources due to which employees have an abundance of resources accessible to them. Therefore, they too often experience that finding their way in these kinds of systems, each with their own search logic and structure, is all too complicated and therefore too time-consuming. The consequence of this is that some employees decide to 'do it themselves' after all instead of relying on such a medium as the virtual community. The related nuisance of information overload is also mentioned. As project manager Marius argues: *"Look, the disadvantage of these kinds of media is that, when I am in search of something about Prince 2 for example, I can easily find about a thousand pieces. That makes it rather difficult to make a selection."*

Apart from indicating the overall inappropriateness of the medium, touching upon the difference between online and face-to-face interaction, more arguments relating to the individual – artifact relation overtly refer to the technology as an institutionalized device. This means that the affordances of the technology are in this case specifically interpreted as inhibiting factors given the individual experiences of my informants of

everyday organizational practice, that is, as part of the set patterns and ways of thinking in the organization.

First, the boundary spanning potential of the medium is perceived as an inhibiting factor given the 'threat' of internal competition: *"Whatever I publish within my department is usually not meant for others outside the department. That is specifically meant for my department and none of anyone else's concern. And what you make available to your business unit, you might just want to keep within the business unit."*

This comment shows how internal competition is experienced at the level of the department and the business unit. The hindrance of the specific 'politics' of the decentralized organization and the frustration of collaboration due to formal structures, makes it even detrimental to share knowledge between subsidiaries. It is for this reason that manager consultancy Pascal notes that: *"The surrounding rules should be adjusted also, otherwise it is impossible to benefit from the knowledge sharing that results from cooperation in the virtual environment. The decentralized organization makes every subsidiary responsible for its own profit and losses however."*

Senior project manager Leo comments in addition to this: *"If there are too long and too many contributions to the virtual community, the matter of declaration comes up. You see, people do not get paid for the time invested in the community."* Seen in this light, team manager Leontien's remark about participating is understandable: *"I only do this [participating in the virtual community] in so far as it supports me in getting my targets. After all, if push comes to shove, that's what I am rewarded for.*

The threat of internal competition or the emphasis put on profitability and accountability causes employees to be extra wary about how to present information and in some cases causes employees to refrain from it altogether. As project manager Marius states: *"Well, you have to think about what information you can post in there and what not. Client names and those kinds of things you have to remove for example. Internally [meaning: on business team level] this is not the case you know."*

The second argument is closely related to the previous argument and concerns the reproducibility of digital knowledge given the tendency to protect intellectual property. The easy reproducibility of digital knowledge has its price in the widespread and undirected dissemination of unique experiences on the job. Accordingly, project manager Arthur explains: *"People are reluctant to give away their stuff because they do not want other people to make away with the things they invented."*

This tendency towards protecting intellectual property causes some of the employees to hoard their knowledge so as to uphold their personal market value. As ICT architect Bas posits: *"It's because the commitment of people to their profession is hardly being rewarded within Dito. So, you keep the knowledge to yourself and by this means make other people dependent on you. Instead, when you do share your knowledge with others you might just make yourself redundant."*

Both arguments, the discouraging boundary spanning potential and the reproducibility of digital knowledge, relate to informants' experiences of everyday work practice in general: Dito's overall practice of discouraging free information exchange and of encouraging internal competition rather than collaboration. Due to the politics of the decentralized organization and from the viewpoint of personal market value, knowledge sharing is not rewarded. A consequence of this is that it is more lucrative to share knowledge with superiors and clients than with 'equals'. The following excerpt of a conversation with data-warehousing consultant Robert illustrates this:

> *"It's so frustrating when I in fact find that some self-righteous big cheese walks away with my work. I have a hard time in dealing with that. (...) I mean, with a big cheese I don't mean people of higher management, just someone who managed to put a fatter title on his business card or, simply charge a higher fee, which, the fact that he is more expensive, does not necessarily mean that he is more capable. (…). Look, with a line manager, I would find it perfectly normal [to share knowledge] since that is exactly what they hire me for. (...) Similarly, if the guy is your client it is precisely your job, so you shouldn't be difficult about that."*

Looking at how employees say they use the artifact and the kind of arguments used to motivate their behavior, described the partial acceptance of the ideal of virtual community and showed how exactly employees deviate from it. Moreover, the interview excerpts reveal how the affordances of the artifact obstruct learning and knowledge sharing in the virtual space.

The first category of arguments contradicts the ideal of the virtual workspace representing an informal, 'disembedded' notion of work (Forsythe, 2001).[7] Instead, because it is mediated by ICT, the virtual space is perceived as an impersonal, abstracted and decontextualized medium. First, not meeting face-to-face for employees might mean a social deprivation of human interaction at the expense of trust and cooperation. This, as opposed the efficiency of place and time independence of the medium which may entail prospective gains for managers in terms of reducing travel costs and overcoming time differences. Second, as seen in the previous chapter, enhanced visibility, referred to as the ideal of transparency, may mean an improved mechanism for management control. However, employees' arguments show that for them it may very well entail unappreciated surveillance (Star and Strauss, 1999).[8] Providing information online would thus entail contributing to their own surveillance (cf. Willson, 2000). Incidentally, this

7 The adjective 'disembedded' refers to the separation of "interaction from the particularities of locales" (Giddens, 1991: 20).

8 "Surveillance refers to the supervisory control of subject populations, whether this control takes the form of 'visible' supervision in Foucault's sense, or the use of information to coordinate social activities" (Giddens, 1991: 15).

argument shows that the employees are in fact aware of the mixture of motives behind the introduction of the community and ICT ideas.[9] Third, while the necessary abstraction of knowledge may mean the wide dissemination of the firm's available knowledge for managers, for employees this inevitably means a loss of meaning. As Zuboff (1988) states, "some forms of meaning are comprehensible only as a whole and can be destroyed when objectified" (p. 186). Fourth, the potential to increase connectivity, another highly appraised feature of modern information and communication technologies, has its down sides as well. As it appears, while increased connectivity may mean an efficiency gain in 'not reinventing the wheel' for managers, employees often find 'doing it themselves' a lot less time-consuming due to the nuisance of information retrieval and overload.

More arguments in this category show how some attributes of the technology are incompatible with Dito's policies and structures. Or rather, it discloses the ideal of practice clashing with the reality of practice. First, since information and communication technology potentially enables the overcoming of formal structures, it brings to surface an incompatibility with the politics of the decentralized organization due to which people are not rewarded for sharing knowledge. The focus of managers on predominantly short-term and financial targets and bonuses thus has a discouraging effect on cooperation in the virtual space. Hence, whereas management interprets the boundary spanning potential of the medium as a measure against under-utilization, employees' experiences of internal competition discourages them to share their knowledge across the formal structures of departments, business units and subsidiaries. Besides, while for employees the boundary spanning potential may mean an increased accessibility of information resources, for managers this may mean a fear of diminishing loyalty to the 'own' unit. Secondly, as opposed to management's purpose of reapplying knowledge, "capturing what is in people's heads", employees keep their knowledge to themselves out of a fear of individual redundancy.

Managers and employees' tactics in this argument reflect two opposing views on managing knowledge. For the former, the value of knowledge increases the more it is disseminated (the ideal of the knowledge society) – albeit within the boundaries of the firm. For the latter, its value decreases the more people own it (Harrison, 1995).

5.4 Affordances of group interaction

The affordances of group interaction provide additional arguments explaining deviances in the interpretations and behaviors of Dito's employees. This second category represent the arguments instigated by the individual vis-à-vis other individuals or groups of

9 That is to say, in this case I am inclined to believe that my informants are aware of management's hidden agenda and therefore intentionally display nonconforming or deviant behavior.

individuals confronted with through the artifact and above all refer to the classifications of belonging the community idea proposes.[10] These judgments concern the lack of commonality of the defined group, the variation in information needs and individual characteristics of the IT professional.

To begin with, my informants mention the lack of commonality of the defined group as a reason for their deviating behavior. In the case of the consultants' community, for instance, the members' job description defined as the common denominator of the group does not prove to meet the characteristics of a group according to its members. One of them, Pascal, suggests this to be due to the large and scattered area of interests of consultants: *"When you talk about consulting you are referring to a very large area of interest. So, it is difficult to see a common use or necessity in it [the virtual community]."* This diversity of the consultants' field of expertise is by senior consultant Gert typified by a schism of IT on the one hand and business management on the other. *"We advise on the subject of IT management, which can vary from business advice to IT organizations, to advice concerning technical infrastructures,* he says. It is for this reason that, according to data warehousing consultant Robert, consultants have no particular knowledge and skills to share with each other to begin with:

> *"I think this is partly because the questions [that consultants may have] are not sufficiently concrete. When you are talking about data warehousing issues, then you can ask: 'I am looking for someone with knowledge of a certain matter or I am looking for someone with knowledge of this or that software package.' But what do you ask a consultant? 'I am looking for someone who is knowledgeable on the subject of advising?'"*

Consequently, the consultants argue that there is no such thing as a joint purpose to be defined for a consultants' community. The group of project managers provides another good example of such a lack of commonality. In this case, project manager Dirk asserts, it is due to a divergence according to ways of working within the group that they cannot be considered to be one coherent group: *"When looking at our group you can say that for the larger part it consists of people engaged with 'paint-it-by-number' projects, the rather straightforward projects so to speak. And then there are people who prefer not to think in terms of frameworks or what have you (…). They are totally different kinds of people."*

For the sake of completeness, I should say here that for some participants the prescribed group is in fact perceived as a coherent group. As consultant Stefan comments about the Telecom community he is an active member in: *"It is a group of people concerned with the exact same things as I am at the moment."* In this case, however, it concerns a group

10 Belonging refers to the identification with something larger than the sum of individual relationships.

based on a defined commonality in terms of actual shared practice instead of categorical membership, as is the case with the consultants and project managers where boundaries of the groups are defined on the basis of generic individuals.

To continue, a second reason for deviant online behavior is attributed to certain individual characteristics of the IT professional. To take again the case of the consultants: *"Consultants are somewhat 'Einzelgangers', especially in the way of working"*, managing consultant Ronald mentions. On the basis of this individualistic nature he asserts that "*we, as a professional group, have nothing to share, we cannot learn from each other."* Not everyone agrees with this however. As senior consultant Koen says: *"Consultants do need other people to perform their work. Even the consultants from the different subsidiaries active in the various market sectors can learn from each other."*

Also, project managers' individualistic nature is mentioned as a reason for their deviant behavior in the virtual space of the communities. *"Project managers are pigheaded,"* senior project manager Leo tells me. To this he adds: *"I think that it is rather typical for project management on the whole; most project managers are know-it-alls and generally take responsibility in making decisions themselves."*

Senior project manager Natasja contends, furthermore, that it takes a special kind of person to present oneself in the virtual environments. That is, according to her, people who are inclined to profile themselves in the various kinds of public outlets to begin with, and she is not one of them: *"Well, there are some theses advanced on it [the virtual workspace] but I myself hardly ever feel inclined to postulate a thesis in there or what have you. (…) Some people simply enjoy it but I think they are the kinds of people who would send in letters to newspapers and magazines, readers' comments, or something of the sort. That's not my cup of tea."*

As she continues, it would concerns people with more time available: *"In my opinion it is on the verge of nibbling at the edge; the things people do when they have more time at hand aside their crucial activities*. To a certain degree, junior project manager Michiel, in explaining his behavior in the virtual space, seems to confirm this. As he explains, *"When the IT industry fell off I got more time to take a look at all sorts of things, gather information, find out which methodologies were used where, those kinds of things."*

Another inhibiting individual characteristic mentioned is the degree to which an employee feels sufficiently confident to assert him- or herself in the virtual space, that is to say, in the virtual presence of the other members of the professional group. As ICT architect Bas suggests: *"it may be that they do not dare say much. Or, maybe they think 'what I have to say people elsewhere already know enough about.'"* Based on this hunch he furthermore proposes that *"the degree of participation in the virtual space could be related to the working experience of the IT professional, in the field or in the organization.* The following quote from Nik, a respective 'newbie' in the organization

who at the time of the interview had been working at Dito for not more than four months, seems to confirm this: *"I did not leave anything behind in there since I did not have the feeling I could make a valuable contribution yet."* This assertion would imply the elder to take on more of the activity in the virtual space. [11] Then again, consultant Sander did not see much prove of that yet:

> *"Take the project management community for example. This is a group with some very mature project managers. You would not expect them to merely look at what others are doing, right? You would expect them to know what is good for them and what is good for the group. (…) That in particular struck me as odd; that they exhibit the exact same behavior by first looking at what the rest is doing."*

Quite the reverse of the abovementioned thesis seems to hold true also: not only do people for reasons of inferiority exhibit deviating behavior, a feeling of natural authority in the face of the other members of the group also causes people not to participate. In line with the argument of natural authority is the rather low opinion of the knowledge posted. That is to say, the low activity in the virtual space is due to the poor value of the knowledge displayed in the virtual workspaces. *"The truth is, people say they are knowledgeable about a certain topic [a software package or a technology] after they sat next to someone doing it twice,"* Robert complains about his fellow members of the group of software engineers.

Lastly, a mismatch with the knowledge posted in the virtual space is attributed to a variation in information needs. *"It all really depends on the phase you are in at the moment you join the community,"* e-business consultant Sander says. *"And, as I am temporarily not active in the field, I look into it less,* he adds. Similarly, consultant Stefan's deviant behavior in the community known as Technology Management is due to the fact that the information posted in the community is simply not applicable to the project he is currently involved with: *When I am busy at the client with service level management, well, technology management is at that point less up for discussion.*

Taken together, the second category of arguments shows the arguments related to group-artifact relations. As employees' arguments show, the defined groups for the virtual communities are artificial in their circumscription and do not agree with the boundaries of the actual groups people are relating to. Firstly, as opposed to the management assumption of inhabiting like-minded people, employees' responses show a lack of group commonality and coherence. The consequent lack of attachment to the prescribed group discourages them to present themselves in the virtual space. Secondly, there are the individual characteristics of employees not agreeing with the ideal such

11 In a similar vein, novices are expected to be more active in the online space when it comes to information retrieval.

as individualistic and not committed unless rewarded for. Reasoned from a different perspective, one could also say that the relative static nature of the system in the face of the dynamism of learning behaviors causes obstacles. Examples given are of information needs exceeding the boundaries of the defined community, the membership status of novice and expert, being an independent and self-regulating professional, and the feeling of natural authority. Dito's virtual communities hence reflect the way designed environments relate to fluid practice. Other than inscribed in the system, in practice professional roles are more dynamic and people have to adapt to the ever-changing information needs.

5.5 The virtual arena

The attributes of technology, organization and actor cause reluctance for some people to assert themselves in the virtual space, or only in a certain, limited manner. This behavior is referred to as 'the workaround' (Whyte, 1991; Hayes, 2000). In varying degrees, the employees intentionally or unintentionally skirt the new way of working, obstructing the formal attempt intended to generate innovative practices.

First, the more complex or real the issue at hand, the more "rich" communication is needed, the more employees turn to other media, both digital and face-to-face, to satisfy their information and learning needs. Second, when set against the individual phases of development, the entrance and exit in professional groups and the corresponding information needs, the imposed structures do not comply with the learning behavior of people. Therefore, when the learning behavior is dynamic while the system is more static, employees turn to other channels to gain or share knowledge.[12]

Instances of the workaround causing people to present themselves in a limited manner in the virtual space, are furthermore reflected in the various impediments mentioned by employees and in the general activity registered by the system, that is, the kinds of people and the kinds of knowledges represented (or absent) in the virtual space. In exploring how employees take the virtual workspace as their own, this section questions the 'how much', 'who' and 'what' of the online activity.

First, with respect to the general activity registered by the system it has to be said that although some virtual communities are relatively successful, one and half years after the launch of the project only a minority of the potential contributors actively participated in the virtual communities. I witnessed the community change project from the start and continued exploratory study until August 2002. By that time 170 virtual communities had come into being in which, in terms of registered usernames, 2742

12 This can also be regarded as a consequence of the increased connectivity of information resources, that is to say, the abundance of alternative resources to the virtual community.

employees participated. One and a half years after their introduction, therefore, the virtual communities represented about 30 percent of the firm's total population.

Apart from a generally disappointing activity in the virtual communities it is furthermore evident, though hardly surprising, that 'being informed' outnumbers 'informing' considerably. Over the entire application; 34 percent of the activity is attributed to posting information and messages; 62 percent to reading and 4 percent to systems administration. Using other people's knowledges seems to have the upper hand over enriching other people with one's own. As ICT architect Bas notices: *"Data are consumed, so people are retrieving information but in terms of actively contributing it is all rather disappointing."*[13]

Second, the various impediments mentioned not so much function as an indication for the kinds of people it contains, but they all the more hint at what categories are missing, that is, what voices are underrepresented in the virtual space.[14] As already seen in the previous chapter, management's appropriation disobeys the ideal of accessibility for all (*boundary as access matter*) so one can assume that the virtual community does not simply represent a cross section of the company. As junior consultant Sebastian observes: *You come across a certain type of people only. I mean, you would not find any secretaries in there for example*. Secretaries appear in the virtual space only if they are supporting their bosses in the virtual community, e.g. in keeping their agendas. According to Sebastian, however, this is probably not so much a matter of ranking but more a matter of being internally or externally focused:

> *"That's only logical. If you are internally focused you do not really need such a network. It's either consultants or commercial people I come across in there [the young employees' community]. Or, people currently working at the client and who would otherwise lose contact with Dito. This is a way for them to keep in touch with Dito."*

Albeit the lower levels in the organization (or, the internally focused) are excluded, the virtual workspace does represent a wide range of the higher rankings of the organization. "*I would say there is a considerable difference in level,"* project manager Richard tells me.[15] The following description of the members of the client community for an insurance company illustrates this:

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13 Not participating actively in terms of posting is mentioned here as workaround or nonconforming behavior because the organization itself saw the disappointing activity in the virtual space as a shortcoming of the project. As I argued in chapter two, it is my contention however that 'outsiders' can be considered just as valuable to the community as 'insiders' for they may very well be active in other groups and hence function as so-called boundary spanners.

14 This is what Star (2002) refers to "the layers of silence built into the infrastructures that surrounds jobs" (p. 120).

15 This is also confirmed by the content analysis of the virtual workspace of the project managers.

"They are mainly salespeople concerned with [this particular insurance company] from the various Dito subsidiaries. And, in addition, I think around eight to ten people who are somehow connected with it. For example, a resource manager who supervises people working at that client, occasionally a member of the board or a senior manager of one of the subsidiaries who has contacts (…) at this particular client and for this reason likes to be informed."

Since working in the virtual space presupposes certain skills one could furthermore wonder whether this increases the propensity to exclude the unskilled and include the technologically skilled user (*boundary as skill matter*). Especially, since there was no special training given in the use of the technology and technically oriented people are in general more exposed to these kinds of virtual workspaces. Or, do predominantly people with a pronounced affection for such technologies inhabit the virtual workspace? IT consultant Duko, for instance, explains his participation in the virtual workspace as follows: *"I just like it. Working with internet technology is just a lot of fun. And in this way [by participating in the communities] I gain more knowledge about it, by working with it, understanding the technique behind it (…), exploring its possibilities."*

On the whole, it is safe to say that the share of the reflected organization in the virtual community is a distorted representation in that it is 'colored' by time and access matters, working experience, rank, skill and 'objects of affection' of its participants. Consequently, one could speculate that the virtual space tends to be dominated by the elite, the more skilled and technology-enthusiast users.

Third, the impediments employees hold to present themselves in the virtual space offer a preliminary insight into the knowledges *not* represented in the virtual space. As I tried to show, in the case of a feeling of internal competition employees hoard knowledge for themselves or within the boundaries of departments, business units or subsidiaries. Also, due to the necessary codification they keep the discussion of complex and context specific, issues out of the virtual communities. And, if employees present themselves at all in the virtual space, they are no less than wary of the kinds of knowledges to provide. As a result, the kinds of knowledges posted in the virtual space are "*not really the surprising Holy Grail kind of things"*, to use a phrase of one of the project managers. These responses seem to point to the fact that it is not so much the 'new' or 'tacit' but often the formalized (institutionalized) knowledges instead that the communities revolve around. As one of my informants comments about the content of the virtual space: *"Usually it concerns rather standard things already extensively developed somewhere else."* Examples of such 'standard things' are plans, checklists and templates. Content analysis of the log files attests that formal representations of practice, all sorts of project plans and templates, methods, standards, best practices and learned lessons, represent

15 percent of the total of its postings and 31 percent of the work related content (see appendix, table 1 and 2).

In sum, in order to further understand how employees take the virtual communities as their own, this section described how the deviating behavior of participants is materialized in terms of knowledges and people (not) represented in the virtual space. This demonstrated how the online workspace is ruled by restrained information exchange, prevailing hierarchical differences, biases on the basis of access and skill and the exchange of formal representations of practice.

5.6 Concluding remarks

Metaphors, arguments and virtual representations of online activity were used in this chapter to illustrate employees' reception of the idea and ideology of the change project. Collectively, they present a different reception of the virtual community idea than intended by management and moderators and implied in the idealized representation of both technology and human practice in the organizational discourse.

First, employees' appropriations contradict the typical philosophy of online spaces as discussed in chapter four, i.e., on-line practice being non-hierarchical and knowledge sharing to occur online indiscriminately and independent of local configurations. Their responses show how notions of hierarchy matter online as well and how the online space reflects the structures and mores of the institutional context in which the virtual communities are employed. At the same time, employees' online and face-to-face practices are clearly not the same as different mechanisms seem to prevail online. The relative anonymity of online interaction and the absence of social cues, for instance, lead people to behave differently online than they would in face-to-face practice.

Second, employees' appropriations contradict the spirit of community. They do so in the prevalence of goal-orientation over representing the ideal of the unconstrained social gathering and in the feeling of competition rather than solidarity and trust. Above all, they contradict the idea of practice anchored in a strong sense of belonging and shared identity construction.

Apart from refuting the image of modern information and communication technology and human practice as is depicted by contemporary organizational discourse and as inherent to the managerial promise, employees' appropriations furthermore contradict the idealized representation of the professional self. They contradict the view of the employee as eager to learn from and teach others as insinuated by the ideals of the knowledge worker and the 'informed employee'. Moreover, the confrontation of the individual with other individuals and groups of individuals through the artifact induces

issues of IT professionals' own social and cultural ordering as will be elaborated upon in the following chapter.

The deviation should not merely be seen as the result of the dynamic interplay as such, of imposing ideology and reactionary reception, it should be attributed furthermore to the specifics of the negotiation of meaning of the knowledge worker in the specific context created by the organization. That is to say, in the face of their place in the organization, the actors they are confronted with and the wider professional practice they are considered to be a part of. Consequently, deviation between the appropriation of management and moderators and the appropriation of employees indicates the various different interests people hold in the organization. These interests are explicated in chapter seven.

Finally, not only do employees' appropriations contradict the idealized representations of technology, human practice and professional self, the affordances of ICT and community also inhibit processes of knowledge sharing and learning. The affordances responsible for ICT and community's utopian characters are by employees thus specifically interpreted as constraints given their individual experiences of everyday organizational practice. While a technology may afford certain usages to one group, it might very well be a constraint for another. It enables as much as it constrains activity and therefore it is also what it does *not* afford.

Chapter 6

Circumscribing the firm and the professional self

6.0 Introduction

As I described in the previous chapter, the concretization of the idea of virtual community in the research organization resulted in all kinds of divergences and tensions between practice espoused and actual practice. In this chapter, the factors and conditions that may account for these divergences and tensions will be explored by explicating the deeper structures of employees' workaround behavior. With the aim of exposing employees' multi-layered response, I will take some of the arguments mentioned in the previous chapter as points of departure.

As found in the previous chapter, when confronted with the community idea my informants are prompted to determine what the commonality of the group denotes. After all, the term community implies that members should have something in common. However, as informants' responses described in this category of arguments show, appropriation of the community idea reflects not so much a commonality ('what we share') but a *lack* of commonality ('what we do not share') of the people within the prescribed groups. As becomes clear, the groups as defined for the sake of the communities are not rendered as coherent wholes by their projected users, resulting in a lack of attachment to these groups. Moreover, instead of portraying the communities as harmonious wholes, informants point out what this incoherence is based upon. Consequently, talking about virtual communities deconstructs the boundaries of the imposed groups.

The judgments of incoherence concern the variation in information needs and expertise and are respectively referring to employees' individual learning processes and 'knowledge claims' (McLaughlin and Webster, 1998; Budd, 1999). The confrontation with the socio-technical artifact therefore instigates judgments about professional identity, i.e. "the sense that [professionals] have of themselves as members of a category by virtue of their work" (Forsythe, 2001: 77).[1] Since the confrontation with the idea of community not only shows 'what is not' (non-attachment and lack of coherence) but also 'what is' instead of the socially incoherent groups as defined by management and moderators, the processes of identification subsequently reconstruct group boundaries in terms of the actual 'domains of belonging'.[2]

By adding additional arguments relating to the 'affordances of group interaction,' I will in the first part of this chapter deconstruct the boundaries of the imposed groups and the categorical membership. Drawing from the interview data, I will here question further what the incoherence is based upon. Next, by showing the actual processes of identification, I will reconstruct group boundaries in terms of the alternative ideas of

1 "If someone is comfortable with the things and language used by a group of others, we say that he or she is a member of that group" (Bowker and Star, 1999: 185).

2 The idea of domains of belonging is taken from Durkheim: "It is a concept having to do not so much with our intellectual organization of the world as with social dynamics and the aggregation and disaggregation of groups" (Fernandez, 1986: xii).

membership people might have. Here I will use the data from the online social network analysis as supplementary to the ethnographic material of the research. Together, both the deconstruction and the reconstruction of boundaries exposes the deeper layer of explanations given for employees' workaround behavior.

6.1 Group fragmentation according to learning foci

As discussed in the previous chapter, when asked to explain their relative degree of participation in the virtual communities, many informants see a mismatch with the knowledge posted and attribute this mismatch to a high variation in information needs and rapidly shifting 'learning foci'. From these, it could be said that memberships are too diversified to be referred to as coherent groups. In general, three learning foci can be distinguished. The first is represented by the project a professional is temporarily engaged in. For instance, to my question if he regularly participates in the consultant's communities senior consultant Gert replies: *"These days hardly ever. I do so in the Telecom community since I am currently actively involved in a telecom project."*

The second learning focus is the client the professional has to satisfy. Accordingly, Richard attributes his relative absence in the project management community to his current client orientation: *"It all depends on what the client wants to have at a given moment. Does he need a project manager? No, not at the moment, but he does need a consultant. Oh well, in that case, call me a consultant."*

The third learning focus is the kind of technology the professional is involved with. Therefore, as an important factor in explaining his participation level in the virtual community for software engineers, SAP consultant Thomas, mentions the specific product he is currently involved with: "*If they [the software engineers] would also deal with other BI [business intelligence] products I would be more involved in the community. But I am really SAP BW [Business Warehouse] oriented, you see."*

The high variation in information needs and rapidly shifting learning foci are due to the fact that learning behavior is dependent upon the way people enact their roles and tasks as part of their everyday working lives (Leckie *et al.*, 1996). It furthermore implies that the learning behavior of my informants is determined by what they hold key to their jobs. With the purpose of finding out what precisely these foci entail for my informants' attitudes toward knowledge acquisition and learning, I will here briefly dwell on the distinctiveness of each of them.

First of all, for professionals whose learning behavior is largely determined by the project they are engaged in at a certain moment in time, roles and tasks are defined *in interaction with* the project. For people attributing such a high centrality to the

project in their "native construction of work" (Gregory, 1983), and hence their senses of professional identity, working with Dito is perceived as a series of projects (Barley and Kunda, 2001; English-Lueck, 2002). As senior project manager Sjon reflects upon the project-oriented professional: *"The project determines a whole lot more of their agenda than being a member of a certain team or community for that matter."*

A consequence of this role-taking vis-à-vis the project is that learning behavior is driven by the coincidence of the *kind* of project one is assigned to. Moving from one project to the next, continuously attaining the necessary skills and competences to satisfy the immediate needs of the, often short-term, assignments, makes learning a rather random accumulation of knowledge and skills, not foreseeing the long-term applicability or value of those skills. As consultant Boris describes the distinctiveness of project-based learning: *"And when the job is done and you are assigned to a different subject matter, previous topic has disappeared out of sight entirely and thus interests me less."* This distinct philosophy of project-based work is characterized by SAP consultant Thomas as follows: *"After the agreed upon time we leave the organization and the product behind."*

Furthermore, in project-based work the professionals' knowledge level is legitimated and professional identity is confirmed every time a job is completed (Harper, 1987; Orr, 1996).[3] In the words of junior data warehouse consultant Mats: *"After having done a project under the heading of business intelligence, I got to profile myself as a business intelligence expert."* And because, according to project manager Edgar *"a project is successful if it is done within the agreed upon budget and time"* (Sydow *et al.*, 2004), learning behavior is very much determined by a sense of time-task orientation (meaning: pragmatic).

Second, when a professional's learning behavior is determined by what the client needs (Du Gay, 1992; Fincham, 1999; McCammon and Griffin, 2000; Hislop, 2002),[4] practice is defined by the client-professional relationship. This centrality of the client is understandable especially for consultants, given their dependence on the client so as to acquire jobs and hence to sustain practice (meaning: their livelihood). As project consultant Boris recounts: *"The client expects that you as an external know about the 'ins and outs'. (...) When you are developing systems for specialized applications, as I am currently doing for the water market, than you will have to make sure you keep yourself up-to-date of this market. I mean, you are dealing with clients talking about their business as if anyone understands them."*

3 As Harper (1987) in his study on the construction of the professional identity of a car mechanic concluded "Willie is in his own eyes a mechanic. That identity is reconfirmed every time a job is completed" (Harper, 1987: 171). Or, to borrow Orr's phrase (1996): "the first and foremost goal of practice […] is getting the job done, and it is only by accomplishing that primary goal that practice contributes to the [professionals'] identity and preserves their relations of employment" (p. 6).

4 References mentioned here are specifically related to the role of the client in defining the client-consultant relationship.

However, the opposite may also be the case, and may even be more frequently occurring: the professional defining what the client needs. In this case, specialties are deliberately defined so as to distinguish oneself in the face of the client and with the exact purpose of increasing the likelihood of the client being the layman – who is hence lead to believe that he needs the service of the professional (Hughes, 1971; Hannerz, 1992). For project manager Nik, for example, learning is *"a matter of estimating the client and knowing just that little bit more yourself."* Consultancy in particular, is seen as "a system of strategies designed to build images of its own expertise in order to legitimize this to clients" (Fincham, 1999: 349).[5]

The IT professional anticipates, on the one hand, the needs of the client and, on the other hand, assesses the client's knowledge gap on the basis of which the 'added value'[6] of the professional is determined. In both cases, the client (directly or indirectly) determines what is a sufficient enough knowledge level for the professional and hence legitimates the professional's sense of expertise. As project manager Stefan confides as he tells me about this process of legitimization:

> *"Well, one time I had a certain level of quality in mind like, it had to be most sophisticated and best there could be before I would hand it over to the client. But then I realized, the client is simply not asking for that. (...) If it works, they are satisfied. So the question is then should I include all kinds of checks and things the client does not ask for?"*

However, as pointed out by data warehouse consultant Robert:

> *"The companies that hire you basically do not have a clue. And as long as you make sure that you are as uncontrollable as possible they simply cannot judge whether you are competent or not. This means that the higher the level of the job, the less likely it is that you'll get exposed as ignorant. (...) And the sad thing is of course that when the client is satisfied, the organization will employ those people who meet the requirements."*

Third, for the professionals for whom the centrality of the technology (IT) defines their learning behavior, as seen in Thomas' interview excerpt depicted in the above, practice is defined even on the level of software brands. Because professional knowledge in IT is generally seen as highly transient and susceptible to changes in the lifecycle of systems and the emergence of new technologies (Castells, 1996), it often leads to the need to hyper specialize oneself.

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5 See also Meriläinen *et al.* (2004).

6 As managing consultant Ronald elaborates on the much used (native) term 'added value': "Information analysts, project managers, project leaders, they are hired by clients because they simply need an extra pair of hands. The consultant, on the other hand, is hired for some added value: knowledge that the client organization does not possess, or only to a lesser degree."

As a consequence of this kind of extreme specialization and the resultant diversification of occupations in the IT industry, Thomas, with his one and a half years of working experience with a particular data-warehousing product (BW) may consider himself an expert: *"BW is a relatively new product so there are only few experienced consultants. Having worked with it for some year and a half now, I can call myself pretty experienced in the field."* The downside of this relatively fast attainment of the expert status is, as suggested by software engineer Judith, the increasing likelihood of 'falling back' into the status of novice for this kind of specialized expertise becomes just as quickly outmoded as well: *"It all changes so rapidly you see. I believe that in three, four years time I can no longer seriously offer myself on the market as an Oracle developer. Nowadays, I am still able to support people in their jobs but soon there will be new versions that I will know nothing about."*

For the professional holding technology key to the definition of practice, the sense of professional identity is partly the result of occupying hyper-specialized niches. The learning behavior of these 'niche players' is characterized by continual learning in order to keep up with technological change and to avoid skills becoming obsolete (Barley and Kunda, 2004).

Given the three learning foci it can be said that in Dito people define themselves vis-à-vis a 'generalized other' (Mead, 1934) – be it the project, the client, or the technology. Consequently, many informants have a short-term, highly focused and instant-gratification view on learning and describe their learning behavior as too dynamic and specific for communities to be coherent and effective. People who are continuously shifting their learning foci in the direction the project or the client demands as well as people involved in a similar technology or technique[7] but concerned with a different brand of product, are simply not of any use to each other when it comes to learning and knowledge sharing.

As to the deeper layer of arguments exposed, in defining their learning foci in interaction with the human and non-human other the informants present an insight in the various different ways in which their knowledge is constructed (and legitimized) and with it also their senses of professional identity.[8] Knowledge is constructed in relation to the knowledge (gaps) of clients, the particularities of projects, and the lifecycle of information and communication technologies. Ideas of people's professionalism, then, are constituted through legitimization by 'doing a job', within the scope of the technical parameters of a project, by recognition of clients– who are not always fully capable of judging (Rueschemeyer, 1983) – and by occupying overspecialized niches of technological

7 Technique is here understood as 'learned skills' (Ingold in Levinson and Ember, 1996).

8 This finding, i.e., when people are confronted with the organizational artifact, issues of (professional) identity arise, is in line with Noble and Lupton's (1998) study on how university people relate issues of the self to their use of the computer.

expertise, which comes along with the "convenient creation of laymen" (Hannerz, 1992). The following three credos typify these quite distinct attitudes towards knowledge acquisition and learning respectively: (1) 'If I did it once, I can do it again' (2) 'If it works for them, it is good enough for me' (3) 'I always have to be slightly ahead of others'.

6.2 Group fragmentation according to diverging levels of professionalism

Besides the fact that perceived mismatches with the knowledge posted in the virtual space exposes the various learning foci, it also leads employees to define their 'knowledge claims' (McLaughlin and Webster, 1998), that is, they judge whether their knowledge is of a higher or lower quality than the common knowledge of the group. And, as previous chapter indicated, since expertise and skills are characterized as being of higher or lower level, knowledge claims are said to be too diversified for specific communities to be coherent and effective. This section will take a closer look at the variation in knowledge claims obstructing knowledge sharing and learning in the virtual space.

To begin with, some informants, such as junior data warehouse consultant Mats, attribute their non-posting behavior to feelings of inferiority:

M. "It is a kind of modesty. I do not find myself sufficiently knowledgeable to tell others about my expertise."

V. "So, it never happened that you commented in the community and showed people how you solved some matter?"

M. "No, never."

V. "Did you pose any questions?"

M. "Not yet either. That was to some extent due to the fact that in there [the virtual space] questions were asked and terms were used in the answers to them of which I thought 'what are they talking about?'. I didn't understand anything. Now that I know the terms, I also get the answers and the questions better, I can interpret them and would also be able to answer some of them as well."

In contrast, others might very well explain their inactive reading behavior with feelings of superiority: *"I do not think much of the average IT person; incompetence rules all right."* According to project manager Filip this judgment relates to the difference between the trainee IT professional and the 'old school' computer specialist: *"As I said, there are a lot of trainees here. And they grew [into the organization] on the merit of having done some minor projects only, some ITIL for example. And all of a sudden they think they are quite something in that area. (...) When you then want to get to the 'ins*

and the outs' of the subject matter they say that that they did this and that but that's as far as it goes, they cannot tell you anything more!" In the same interview Filip tells me: *"I, myself, am someone with more experience. Without being arrogant about it, I simply have been around for a bit longer and participated in somewhat more projects."* Similarly, software engineer Ernst expresses his superiority in opposition of the level of the imposed group: *"I am continuously slightly ahead of the others and therefore just need professional contacts at a higher level. (...) The moment I have problems, I cannot turn to them, you see."* However, perceived mismatches with the knowledge posted in the virtual space are sometimes simply attributed to the way members profile themselves. Mats, for instance, notes a regional difference in the way employees portray their levels of expertise:

> *"There is in fact a difference in how we (as Northerners) profile ourselves and how they (Westerners) profile themselves. (...) Take the resumes of the people from the West [of the Netherlands] for example. They invariably have everything at a high level. But when push comes to shove, I am the one telling them how it works and not the other way around. It's a matter of profiling. We in the North are more to our selves. And in the West, well inevitably probably, since there are lot more people for starters, when you want to profile yourself, you will have to shout: 'Look at all the great things I did'. We [in the North] are more collected, yet easily intimidated. That is the big difference between Westerners and Northerners from where we stand."*

Next, the division between professionals with and without thorough knowledge of information and communication technology is considered an important factor in explaining participation levels in the virtual communities. This is referred to as a schism of 'specialists' and 'generalists' or, techies' and 'socio's':

> *"People here are in general very technically oriented and act very specifically. I mean, with all due respect for what they are doing, and they are performing their jobs perfectly well, they are all professionals in their own area, however small that area may be. As for that you could say that I am, together with one or two other colleagues, a bit of an exception in that I am really more a generalist, a person with a helicopter view overlooking things and subsequently pointing out the important relations among the relevant factors. The average Dito employee, however, is at his best when specialist [technical] knowledge is required."*[9]

9 Senior consultant, Koen.

Notably, many of my informants explicitly underline the fact that they do not consider themselves to be 'techies'[10] as opposed the other members of the group. Project manager Arthur, for instance, is not a techie as in his job he is only indirectly involved with technology: *"I am not a techie as they are sometimes disrespectfully referred to as (…). I am more a business oriented person (...) And in my role of senior consultant, as I am these days, I approach organization processes from a business angle and subsequently translate these processes into ICT solutions."*

Also data warehouse consultant Mats makes a point of not being a techie: *"I do not in any way think of myself as a 'techie'. I mean, I do talk to those guys and understand them. I am also perfectly capable of making similar things as they do. The difference is that true techies enjoy doing it as well; for them it is simply a challenge to get a technical program running. Well, for me that is less the case."*

A technically oriented IT professional according to project manager Dirk, *"treats the world in terms of applying models to it."* As for knowledge and skills, the contrast between specialist and generalist is furthermore characterized by the difference between 'having matter-of-fact knowledge', 'possessing content specific knowledge' and 'being socially competent'. As I understand my informants correctly, 'having matter-of-fact knowledge' refers to knowledge of a certain branch or market such as the insurance or electricity industry. 'Possessing 'knowledge concerning content' refers in most cases to knowledge of technology (a tool, a computer language, a software package), sometimes to knowledge of the market but never to knowledge of business. The opposite of having 'knowledge concerning content' or being technically oriented appears to be 'I am socially competent' (having social skills). Hence, as claimed by senior project manager Roel, *"techies are, in general less endowed with communicative and some more with technical skills."* And since senior project manager Sjon maintains that the organization is predominantly inhabited by technical people, *"in terms of social skills people are generally underdeveloped in this organization."*

The point here is that the difference between the management-oriented and the technology-oriented IT professional clearly connotes a difference between higher and lower status IT professionals. This has to do with the fact that the higher one has gone up the organizational ladder the more one is removed from 'content matters' (Collins, 1979; Parker *et al.*, 2001).[11] The lower status of the technically oriented professional is underlined by references made to 'techies'. Connected with the perceived difference between 'generalists' and 'specialists' or between 'techies' and 'socio's' are the judgments made about good selves and bad selves. "'Bad selves' are the kind of person the community cannot tolerate and 'good selves' are the type of person the community must have" (Pfaffenberger, 1999: 153/4). Such judgments determine whether or not co-

10 Also sometimes referred to as geek: "someone who [is] largely uncomfortable in human worlds but appeared to thrive with pleasure in technical worlds (Downey, 1998: 148)".

11 "Ultimately, the more authority the Expert has, the less competence he has" (De Certeau, 1984: 9).

workers are perceived as righteous members of the group and affect people's opinions on the group's cohesiveness.[12]

The judgments of good and bad selves are not only based on the validity of other people's knowledge claims but also concern their induction into professional roles. That is to say, they express what people think should be the norm, and in this case, what an IT professional should know in terms of the skills and competences required. Disagreement on 'righteous' or 'unlawful' induction into professional roles affecting people's opinion of group cohesiveness concerns, for one, whether technical knowledge is considered indispensable for IT professionals or not. As senior consultant Koen feels: "*One needs a substantial degree of technical baggage, because when technical terms are discussed and you have to admit that you cannot follow the argument, the client might think 'what do we gain with this person'?"* Project manager Nik, subsequently argues that with technical knowledge one has more connection to the work floor:

> *"Well, I think that for your bosses, it does not matter much whether or not you have content-related knowledge. With them it comes down to other matters. When your team is concerned, I would say you tend to have more support if you know what is talked about. I mean, there are also quite some project managers more upwards than downwards oriented. And sometimes it is beneficial for your career to be upwards oriented and to quickly move on to another project."*

In a similar vein, software engineer Judith maintains that one has to have a kind of workable knowledge level. What is workable, then, depends on one's job: *"At a given moment is it sufficient when you are able to more or less judge if people are working well or not. That's what I need, to be able to at least have some feeling that things are going well."* Others, such as project manager Filip, however, attach fundamentally different meanings to IT professionals: *"It is disastrous when someone with executive power interferes with matters of content. You need to be able to delegate. […] So, not having IT knowledge as a consultant does not necessarily have to hinder you."*

The lack of correspondence between the various norms, when the induction into professional roles is concerned, is characterized by senior project manager Natasja as a distinction between the 'old' and the 'new' generation computer specialists. Natasja is referring here to the fact that in the beginning of computing, people were required to acquire technical skills, usually programming. Ever since the heydays of computing, however, less emphasis is placed on technical skills and more importance is attached to social (sales) skills:[13]

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12 According to Douglas (1986), "this is […] how we build the institutions, squeezing each other's ideas into a common shape so that we can prove rightness by sheer number of independent assent" (p. 91).

13 As project manager Richard explains this: "These days people, having studied economics, start positions as managers and project leaders, without any knowledge of information and communication technology. I, on the other hand, had to start at the bottom and gradually climbed my way up."

"Well, after 20 years of working experience, I believe that one is entitled to get a bit more general. People here however think that two years of technical stuff is about more than enough. I mean, not everyone has to be technically oriented of course but I do think it is necessary to have some background in technology. Social skills are not all that important, especially in unfavorable economic situations like we are experiencing today. So these people will finally be exposed, hopefully."

Other informants do consider social skills indispensable for the IT professional. As maintained by SAP consultant Thomas, technically oriented professionals should be more 'all-round': *"It is always handy to have some background knowledge of the sales' side of things as well. Knowing the right terms may win the client over and give him the impression he is dealing with a competent person."*

Righteous or not, the fact remains that Dito's IT professionals are considered either too specialized, referring to the claims to exclusive technical competence of the computer adepts like the 'early adopters', or too 'general', referring to the superficiality of the adherence to the service ideal of the 'fast boys' (see chapter 3). Both provide a weak base for knowledge sharing.

Summarized, instead of confirming communities as harmonious entities, the research data show the following dichotomies or schisms fragmenting the groups and preventing them from functioning as cohesive entities: (1) the elder or established versus the novice or less experienced IT professional; (2) people from the West and people from the North of the Netherlands; (3) the generalists versus the specialists; (4) the techies versus the socio's and; (5) the 'old' versus the 'new' generation computer specialists. The validity of employees' knowledge claims and disagreement on professional norms contribute to the lack of attachment to the occupational categories and mark the boundaries of the profession (Trice, 1993) in terms of who does not belong.

As to the deeper layer of explanations, in reflecting on the degree of participation, both concerning information providing and retrieval, articulated is 'how I am different from the defined group'. Talking about the degree of participation and engagement in terms of posting behavior makes people reflect on their own knowledge claims ('what do I have to contribute'). In addition, talking about the degree of participation and engagement in terms of reading behavior in the virtual space goes hand in hand with a judgment about knowledge claims of the professional other ('what other members of the group have to contribute'). The arguments pointing out the value of the knowledge displayed in the virtual spaces are thus accompanied by judgments of the knowledge claims of both self and other.

These instigations of judgments of self and other, best characterized as "telling one another what right thinking is and passing blame on wrong thinking" (Douglas, 1986:

91), can be referred to as boundary work. According to Nippert-Eng (1996), boundary work is defined as "the practices that concretize and give meaning to mental frameworks by placing, maintaining, and challenging cultural categories" (p. 563). The artifact, or the classifications the artifact embodies, functions here as a boundary object (Bowker and Star, 2000), referring to "things that exist at the junctures where varied social worlds meet in an arena of mutual concern" (…) "Here the basic social process is that the object is 'translated' to address the multiple needs or demands placed upon it by the different social worlds that 'meet' around the boundary object" (Clarke, 1991: 134), challenging a set group of classifications and ultimately defining new ones (Bowker and Star, 2000).

The artifact as boundary objects shows how people define themselves and their knowledge claims against the other members of the group and other groups *through* the technology. Since "knowledge is constructed against opposition from different systems of knowledge and from those who 'know' different" (Gellner in Cheater, 1995: 122; Barth, 1969), the confrontation with the virtual community leads people to define their skills and expertise as opposed to knowledge claims of fellow members of their group of belonging. Or, to speak with Knorr Cetina and Bruegger (2002), "the self arises from role taking, from taking the perspective of the other first interpersonally"(p. 171). The following examples of these 'politics of identity' were presented in the study: An elder is an elder in relation to the novice and vice versa; a socially skilled person defines him- or herself as such in opposition to the technically skilled, etc. Professionalism is then to be understood not as in the traditional professions of, say, doctors and lawyers (Dingwall and Lewis, 1983), but as a certain level of expertise reflexively (Giddens, 1991) and (inter)subjectively held indispensable for considering oneself a (full) member of a certain professional category.

6.3 Domains of belonging

The previous sections demonstrated the lack of attachment to the offline groups behind the virtual community and deconstructed the boundaries of these groups in terms of learning foci and knowledge claims. First, schisms in the imposed groups emerged based on learning behavior guided by the project, the client and the technology. Second, knowledge claims distinguishing lower and higher level thinking (or, wrong thinking and right thinking) resulted in the various us-them dichotomies. These informal dichotomies are subsequently interpreted as indicating the existence of the real domains of belonging other than the ones as assumed and defined for the sake of the virtual communities.

The actual domains of belonging or ideas of membership my informants have can be found by investigating how they make use of other information 'resources in action'

(Suchman, 1987), also referred to as the 'consumption junction' (see chapter 2). The following sections, by taking into account this wider context of information resources employed, will thus further explain my informants' workaround behavior.

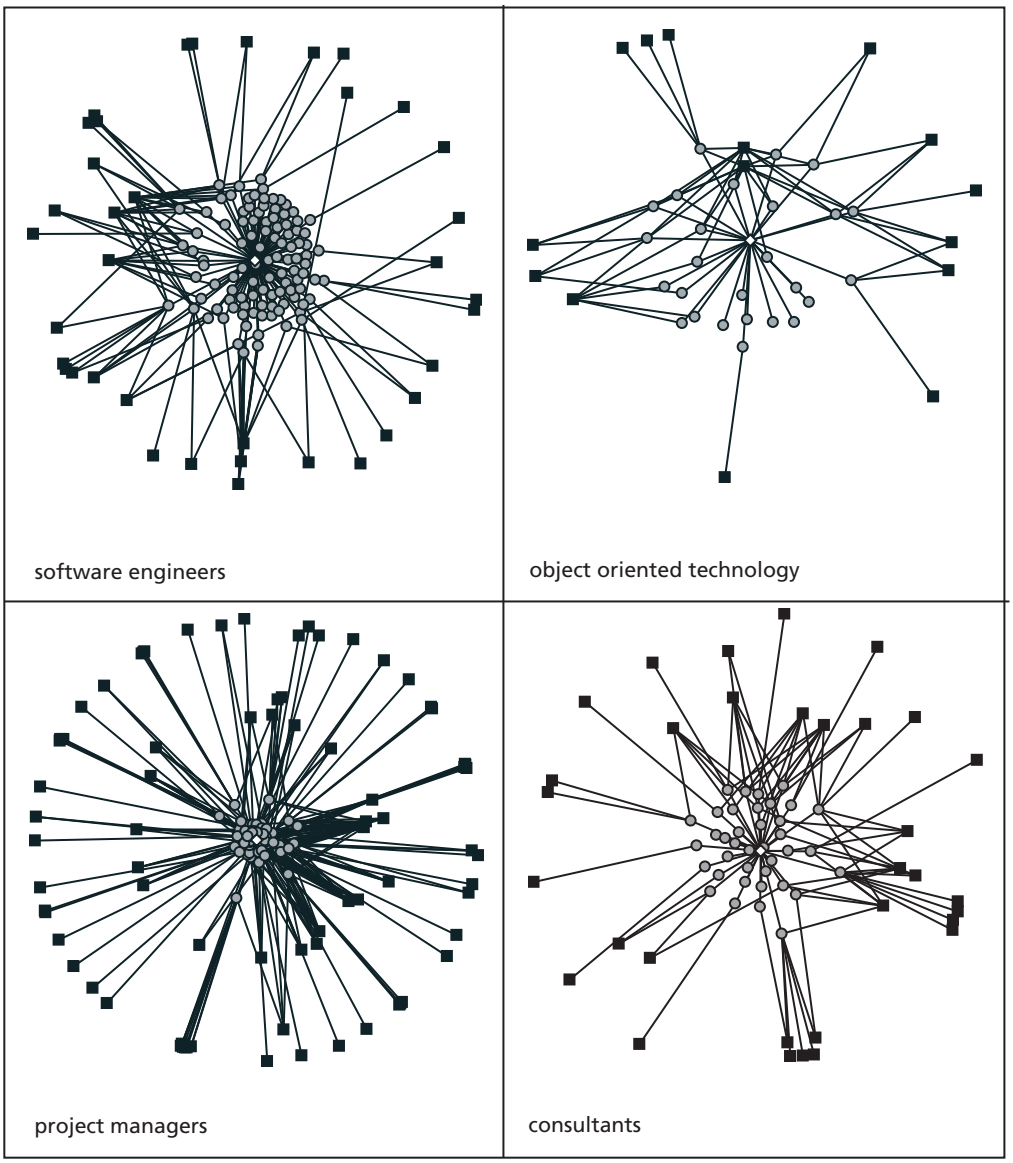
Multiplicity of memberships

As mentioned in chapter five, due to the impediments informants choose to draw upon other resources than the virtual community, one of the expressions of the workaround. In the pursuit of ease in learning processes, people opt for the channels of least resistance so to speak. Information resources concern in this case other virtual communities, other digital and non-digital media, and most importantly 'personal social networks'. This section will start off with the other virtual communities people are participating in.

As the social network analysis performed on the log file data displays, people simultaneously participate in different virtual groups to enact the various roles assumed as part of organizational life (Wilson and Peterson, 2002). The average number of memberships per participant, referred to as connectivity, is 1,8. Some people hold up to 7 or 8 memberships. Representing exemplary outcomes of the online social network analysis, figure 1 contains four selected formal communities, two technology-oriented and two business-oriented: software engineers, object oriented technology, project managers and consultants. The participants are represented by the dots and the various other virtual groups they are connected with by squares. The closer participants are positioned to the center of the selected group, the more active the members are in that community. Conversely, the more participants approach the squares, the more active they are in the other groups they are connected with. Furthermore, the closer the squares are to the graph's center, the more participants in the group jointly share memberships in other 'referral cliques' (Barley and Kunda, 2004). These graphs thus measure the extent of connectivity in terms of strength of ties *and* multiple memberships and yet again make clear the internal cohesion or fragmentation of the communities.[14]

14 Fragmentation is thus measured as three different types: group membership, communication distance and information resource concentration (Van Alstyne and Brynjolfsson, 1997).

Figure 1: Social network graphs



The graphs demonstrate that the object oriented technology group (top right) features a relatively low internal cohesion, high connectivity and a noticeable high extent of shared memberships in other groups indicating distinguishable referral groups. In contrast, the software engineers (top left) combine a relatively high internal

cohesion with moderate connectivity and few overlapping memberships in other groups. The consultants (bottom right) score relatively low on internal cohesion, high on connectivity, and low on overlapping membership. Last, the project managers (bottom left) have a relatively cohesive group, are well connected to other groups and the 'inner circle of squares' that is relatively close to the graph's center suggests a high extent of overlapping memberships. As confirmed by the interviews and the online content analysis, the relatively high internal cohesion of the project managers can be explained by their mutual practice in sharing codified and abstracted information such as project plans and standard templates, while their relatively high connectivity originates from the need to be knowledgeable about the large diversity in types of clients and sectors to be served. Project managers typically share project management information, codified knowledge, with other project managers, and seek other groups for information on joint clients and sectors. On the other hand, for instance consultants have less concrete information to share internally (Fincham, 1999) and less overlapping memberships in other groups, thus operate more individually. "Disembedding is […] fundamental to the organizational structure of consulting" (Amit and Rapport, 2002: 29).

Table 1: Formal versus N3-groups

		Formal communities	N3-networks
	Size	170	124
Degree of connectivity (in %)	Mean	10,2	98,4
	Std dev	11,5	6,4
	Max	83,4	99,8

Table 1 illustrates the lack of cohesion in the 170 formal communities. By taking 'shared memberships in other groups' as the measure for the degree of connectivity – the so-called N3-networks –, it shows that there are 124 networks of employees that are almost ten times as connected as the formal groups. This is a clear sign of the existence of alternative networks of people operating across the formal boundaries. Comparing the mean and maximum scores additionally leads to the observation that some of the imposed groups are well connected. With a mean score of 10,2 percent, a maximum score of 83,4 percent and a standard deviation of 11,5 percent, however, that does not apply for many groups.

Online social network analysis therefore first of all underlines the observations made in the previous section: many of the imposed communities do not function as the projected harmonious wholes. The quantitative data portray the degree to which groups are internally fragmented and reflect the lack of group cohesion. Hence, the

arbitrariness of the dictated boundaries is demonstrated once more. Second, in terms of connectivity, multiple memberships and shared memberships in other groups (and the impressions given of the *kinds* of information members seek in other groups), it can be concluded that the employees intensively cross the artificial boundaries of the imposed groups and broadly disperse their attention over different groups while shaping their information sharing and learning processes.

Alternative resources

Next, in search of the actual networks people belong to, alternative information resources drawn upon need to be included. People generally use a multiplicity of formal and informal information resources to be able to do their jobs. When asked about the use of information resources other than the virtual communities, informants logically refer to journals and books, courses, seminars, and both internal and external information systems such as the various corporate intranets, internet-based newsletters, mailing lists, on-line support groups and web sites. In the face of alternatives, competing resources might simply prove to be more applicable. This is the case for software engineer Ernst:

> *"Look, the moment I need something I keep track of what is happening in there [the virtual community]. And at the same time, I am on the Internet. There are some search engines I use that I can rapidly get a lot of information with. I am also a member of several external, worldwide, communities, like Oracle, Yahoo, CRM, and a few others."*

The virtual communities inevitably have to compete for attention with all these information resources, because no organization can single-handedly decide on what counts as knowledge in the relevant domains of expertise and because people naturally seek the channels of least resistance.

Interesting with this respect is that talking about the alternative information resources the virtual communities compete with points at employees' overall reliance on personal social networks in shaping knowledge sharing and learning processes. I deliberately speak of *networks* instead of *communities* to underline that they concern the empirically observed rather than the idealized groupings. The network is here posited as an emic structure and refers to "the network of actual relationships" (Bott, 1957: 99). Personal social networks, then, emerge in the professional sphere yet are inherently social, reflecting that people in organizations are not only drawn together professionally, but also socially.[15] Notwithstanding their social character, personal social networks may very well be deliberate (Nardi *et al.*, 2002). They are furthermore ego-based in that "they

15 Amit and Rapport (2002) define personal social networks as "links formed by particular actors through affinities of family, friendship or occupation" (p. 5).

arise through particular individual's efforts, experiences and history" (Amit and Rapport, 2002: 22) and "extend across different categories and situations" (ibid: p. 23). They refer to a form of relationship that is not necessarily institutionalized (or communal) and often is structurally ephemeral as opposed to the more enduring social groups such as organizations (Wilson and Peterson, 2002). "Such networks operate in their own right and on distinctive terms" (Amit and Rapport, 2002: 22).

Box 1: Personal Social Networks

1. Internal personal social networks within Dito

Immediate colleagues:

"*You have your colleagues at hand, of course, which you consult a lot.*"

Colleagues from within the subsidiary:

"I am referring to the network as it existed a couple of years ago: mainly former colleagues who have been with the subsidiary already for a longer time. So, the relationship with the former 'pioneers' is very much alive, I mean, when it comes to the ones that are still here."

2. Internal personal social networks across subsidiaries

People met at the introduction course:

"I maintain relationships with people I met at the socialization program for new employees of Dito. With some of them I developed quite a bond. (...) We go for dinner once in a while and we call each other from time to time to ask how things are going, those kinds of things."

Peers:

V. *"You told me earlier on that people in particular are important for keeping your knowledge up to date. Could you tell me who those people are?"*

R. *"They are fellow project managers."*

Former colleagues:

"I have strong bonds with former colleagues; the people I used to work with are my chief network."

3. External personal social networks exceeding the formal boundaries of the organization

Former colleagues 'who, by now, are working at all sorts of other companies':

"Well, in the twelve years that I have been with Dito I simply got to know many people. Also people that already left and by now are with other employers are still a part of my network."

Professional practice:

"I am a member of Project Management Netherlands. That's for me one of the most important information resources. It spans the entire field of project management. There are also project managers from the construction industry for example."

People met at the client:
"I often keep in touch with people that have been with Dito and now are working somewhere else. Also, people that I got to know through clients. Well, you should be careful in not divulging too much of course (…) I mean, they can also run off with your job. But as long as we keep it technical there is not much at stake."

Or the client him- or herself:
"The client (…), that's where I get my input from and I think that that's my most important resource to keep my knowledge up to date."

The competition:
"I am currently even involved with the competition in knowledge sharing."

Box 1 illustrates the interview excerpts concerning the various personal social networks informants draw upon for knowledge construction. The personal social networks are both within as well as extending beyond the boundaries of the organization and often consist of former employees (colleagues) of the focal organization, people met at the client, at courses or seminars. References made to other people and structures outside of Dito such as professional associations, clients and competitors are frequently noticed. As I already indicated in the previous chapter, sharing knowledge internally is not being rewarded due to the decentralized politics of the organization. Quite the contrary, it encourages people to look for it elsewhere. A nice illustration of this point is the fact that not only the client is perceived as an invaluable source of information by my informants, collaboration with the competition when knowledge sharing is concerned is not unusual either. After all, this is where the profit is made and new projects are attracted and brought in, the basis on which the professional is rewarded.

Prior to uncovering the arrangement of these networks and the principles by which they are organized, it needs to be said that the formation of personal social networks varies according to the membership status of the professional as well as on the kind of information needed. First, in the words of general manager Reinbert, the elder tends to have a more extensive relation network: "*Well, I have worked for many different subsidiaries so that made my relation network rather extensive. I have always been in senior positions (...) and in that capacity maintained a lot of contacts with people at other subsidiaries."* Besides, the elder is more likely to be able to dispense with formal representations of practice such as the virtual communities. As senior consultant Gert puts it: *"I [as a senior consultant, being employed in the firm from 1988 onwards] am less and less in need of such information systems for I am in need of information that is not present in the organization."* As a consequence, the more experienced and knowledgeable employees are in general more externally focused, participating in the more non-institutionalized networks of people outside the organization. They disapprove of the inward perspective of the virtual communities and rather identify themselves with their worldwide occupational community as their fundamental referral group.

Second, the network formation logically depends on the kinds of information pursued. As software engineer Judith points out: *"When technical issues are concerned, I turn to people from Dito, while on a functional level people from the client are important to me."*

6.4 Objects of loyalty

As indicated before, the sense of belonging to the prescribed groups the virtual community is meant for is rather low. Alternative motives for skirting suchlike systems then have to do with the fact that personal relationships take precedence over the imposed categorical relationships. Institutionalized occupational classifications are thus not necessarily the ones that people draw from when knowledge sharing and learning is concerned. Instead, they draw on people's commitment and identification. Investigation of these aspects permits "empirical determination of who – which collective entities or social worlds – are the arena" (Clarke, 1991: 128). In Dito, employees express a variety of such 'objects of loyalty'.[16] Notably, many of my informants refer to themselves as their major object of commitment. Other people explicitly mention the business team or unit: "Where there is the most intensive [offline] relationship, that's where the highest loyalty is. In my case that would be the business unit, consisting of a group of 16 consultants." Or, the client was frequently mentioned: *"I experience a strong commitment with the client. That might be a need to identify myself with something tangible after all. Dito, on the other hand, that's a bridge too far."* As a matter of fact, only few people feel themselves committed to the focal organization (Dito). In the words of project manager Edgar: *"Dito is the firm I happen to work for. This could well be a different organization. Then again, I can be said to be quite loyal, after all, I have been working here for the last 16 years!"*

As a reason for the lack of identification, informants refer to the fact that most often people were originally working with a small IT firm prior to being taken over by their current employer. As senior consultant Gert mentions, hitherto communication was more informal and personal: *"When we were still small, we had a real sense of commitment to the organization. I was entirely at the disposal of the organization so to speak. Those days it was not uncommon to work during the night or the weekend. Now that we are an organization of 9000 people that has changed considerably."* The lack of identification can thus partly be considered a specific product of the organization's history.

Another reason mentioned for the relative detachment from the organization is the economic setback of the time. As data warehouse consultant Robert notes: *"As far as*

16 Referring to "a commitment and loyalty presumably shared by the 'we'" (Kunda, 1992: 68).

loyalty is concerned, I am not a very pretty example. As the whole business is currently rather shaky [referring to the sequence of cutbacks and dismissals], I no longer have a real bond with certain [Dito] clubs."

Last, according to manager consultancy Pascal, the organization does not provide employees with a feeling of attachment because it does not represent a recognizable brand: *"When you are a consultant with KPMG or Arthur Andersen, and McKinsey probably too, then you will get your drive not only from the work itself but more so from a brand of which everyone in the world knows what it stands for (…) Well, that is not the case with Dito."*

Organizing principles of commitment to both human and non-human networks

In the remaining part of this chapter I will look into the bases on which employees' ideas of membership are defined. As to the main reason to create and maintain personal social relationships, people focus on 'supplementary competences' or 'affinity and personal liking'.

As expressed by SAP consultant Thomas, for instance, supplementary competences refer to the potential benefits of personal social relationships: *"[Colleagues] all have their own area of expertise they excel in. One is good in dispatches, the other in technical programming. Well, you try to gather all that information and eventually it also becomes your own and that enables you to act more independently."*

As a way of supplementing one's knowledge or expertise, people draw on personal networks organized around the notion of competence. Through these networks, employees draw on other people's knowledge and expertise to be internalized and presented as their own. To paraphrase Hannerz (1992), "there is an expert for almost every occasion and every problem. If you know where he is and how to use him – and if you can make him serve you – his expertise may be almost as available as what is in your own mind" (p.53).

Other informants, however, emphasize affinity in their commitment to knowledge networks. As project manager Dirk explains: *"If I have to get around the table with the biggest jerks only because that could be meaningful for my network, I won't do it."* Instead, he even mentions his personal circle of friends as an important information resource:

D. "Yes, my friends."
V. "Project managers friends?"
D. "Not always. They are line managers, project managers. But many of the problems they come across are similar to mine."

As the interview data indicate, 'affinity networks' seem to be as significant as 'competence networks.' Abstracting from the personal remarks mentioned, commitment, aside from mere membership, is a matter of calculated *and* affective identification. Organizing personal networks around the notion of supplementary competences is exemplary for calculated identification. This kind of identification is based upon the broader economic principle of reciprocity or exchange, that is "a voluntary agreement involving the offer of any sort of present, continuing, or future utility in exchange for utilities of any sort offered in return" (Weber in Woolsey Biggart and Delbridge, 2004: 31). People help others, but expect that, somewhere, somehow, the favor will be returned. The organizing principle of affinity, on the other hand, implies that personal networks are formed and sustained by people liking each other. As opposed to calculated identification involving obligations towards each other, affective identification addresses commitment as people's true engagements and interests (Knorr Cetina and Bruegger, 2002).

People shift their identification balance between calculation and affection depending on personal and situational conditions and on their 'interactional history' (Nardi *et al.*, 2002). Both competence and affinity networks build on feelings of trust and recognition grown upon a shared history of interactions and experiences. Geographical proximity, for instance people working within the same business unit or department increasing the likelihood of running into each other on a daily basis, enhances the probability of establishing relationships with people.[17] When based on experience of interaction, the client is only a very logical object of loyalty, especially for consultants and project managers as for them detachment from the core organization is characteristic (Czarniawska and Mazza, 2001).

I should note here that in this particular context, when the degree of solidarity and bonding that exists between the employees within the organization is concerned, calculative identification unquestionably takes the upper hand over affective identification. First of all, informants exhibit an overall low 'feeling with commonality'. Characteristic in this respect is the vision of the organization as infrastructure. That is to say, my informants hold a view of the organization as a mere infrastructure in which knowledge runs via a multiplicity of information resources in the form of technical systems and people to be exerted upon for their own benefit. As software engineer Ernst comments on his commitment to the organization: *"With an organization of 9000 employees there are always sufficient equals to be found, even for specialist groups. With 900 that is less likely and with 90 I would be the only person with data-warehousing skills."*

17 On the business unit level ties are for instance more organized according to personal relationships rather than competence.

Membership of the organization is thus predominantly looked upon as a form of exchange in the economic sense of the word. This is expressed by the following remark made by data warehouse consultant Robert as he explains his connection to the organization: "*I pay for services. That about sums up my relationship with Dito. The organization is a sort of service provider for me.*" As he furthermore explains:

R. "I do not enjoy working here anymore. I have mixed emotions when it comes to the big club the organization is these days."
V. "And why do you stay? Is your salary that good?"
R. [laughs] "At a given moment in time you simply need a big organization behind you in order to gather the work. Or, an organization with a big name of course. However much I would prefer to work for a small organization, from the social perspective that is, I would not be bringing in the same kinds of projects as I do here."

This excerpt refers to a point Hughes (1971) makes. That is, the fact that the person working in a large firm may rely on the good name of the company so as to acquire the projects he or she would want to do. The self-employed, unless of fame, usually has less freedom in choosing the kind of work he or she will do.

With regard to the commitment of my informants to the organization, recognition or reward in the form of financial returns is also mentioned. Senior project manager Roel, for instance, brings up his paycheck as an important binding factor:[18] *"I am hired to do a professional job and as far as that is concerned, the moment I step foot in here [the client], I am no longer Dito. The moment Dito hires me to do a job, I am Dito yet again. (...) That's what they pay me for."* However, recognition should not only be seen in terms of financial returns but, as manager consultancy Pascal argues, it also concerns the appreciation received by others: *"It all depends where you get personal attention and recognition."*

Second, apart from a low 'feeling with commonality', informants display a low 'feeling for materiality', referring to the technologies they are confronted with in their work. My point here is that true commitment not only concerns the social realm, the personal social networks, it could also be determined by the attachment to non-human domains of belonging. Quite logically however, my informants did mention neither the technology nor their occupation as their main objects of loyalty when asked *whom* they feel loyal to. This does not necessarily mean that non-human objects do not play a significant role in their senses of professional identity.

Although the informants reside in an IT firm and their everyday work practices revolve around information and communication technologies, only very few informants

18 The company's stock is also mentioned as an important binding factor in the organization.

display a special interest in or caring for the technology. In general, the view of the IT professional as computer enthusiast is not represented in these stories. In fact, most of my informants express a certain degree of detachment or non-identification with ICT. As senior project manager Roel reveals: *"To tell you the truth, the ICT side of things does not interest me one bit. (...) I might just as well be working in a construction firm."*

Characteristic of the lack of 'pleasure in technology' (Law, 2001; Kleif and Faulkner, 2003) is the metaphor of the tool. In referring to any kind of information and communication technology, and the virtual communities alike, my informants speak of the tool. The following excerpt from an interview with data warehouse consultant Robert illustrates the connotation of the tool: *"I see it, or information technology in general, as a carpenter sees his hammer, that is, a tool you can do and make wonderful things with. And what I have always liked best is not so much the computer, what is built with it, that's the interesting part. And you don't see a carpenter waving proudly with his hammer either; like 'look at this, see what a nice hammer I have got?'"*

With regard to the degree of identification with information and communication technology, talking about the tool expresses a certain detachment from the technology, a slight disinterest even. As the interview excerpt reads, the thing itself, the technology, is uninteresting to the user (Hirschheim and Newman, 1991; Risan, 1997). This in contrast to computer enthusiasts such as Linux programmers for instance, who may perceive working on the computer as indulging in a hobby or simply as a challenge.

Third, the identification or alienation with the occupation or craft (Wallman, 1979) plays a significant role in my informants' attitude toward knowledge sharing and learning and is referred to as 'feeling in actuality'. Whereas a lack of affinity prevailed with regard to the organization and the technology, when the attitude toward their occupation is concerned utterances of a passion for the field were also noticed. The following comment of software engineer Judith is an example of this: *"Informatics is a fantastic field to be working in."* An example of disliking work is mentioned in the following conversation with project manager Filip:

F. *"Well look, I couldn't care less about project management. Worse even, it sometimes really gets me down. It does not satisfy me in any way. (...) If you would give me a bag of money I would pack my things and leave."*

V. *"What would you do instead?"*

F. *"If it weren't for my wife and kids, I would start a sailing school, for sure."*

On the whole, the confrontation with the imposed structures, the virtual communities, shows that people do in fact organize themselves in networks and engage in knowledge

sharing practices and learning. These processes of knowledge construction are related to ideas of membership not solely based on the idea of reciprocity. The confrontation with the imposed structures thus reconstructs the networks people actually engage in and are committed to, within as well as extending the formal structures of the organization. What makes the difference in the kinds of memberships is identification and true commitment (engagement). And, as I paradoxically found, the more 'passionate' or driven people, that is organized on the basis of affinity rather than competence or categorical membership (Amit and Rapport, 2002; Nardi *et al.*, 2002), use information and communication technology in order to cross the formal boundaries of the group and the organization as a consequence of which shifting of loyalty occurs.

6.5 Concluding remarks

In summary, the first two sections of the chapter indicate an overall lack of cohesion in and a consequent lack of attachment to the virtual communities prescribed in Dito. As the research illustrates, this is due to the fact that the defined groups are artificial in that their circumscription does not refer to the actual groups employees are identifying with in their everyday work life. What it shows is that the demarcation of the groups in terms of job description and alleged common practice does not necessarily refer to the idea of membership professionals have themselves.

When confronted with the socially incoherent groups as defined by management and moderators the group characteristics become apparent and their boundaries are deconstructed. After this deconstruction of the imposed groups, subsequent sections reconstructed the boundaries of the networks people actually engage in and identify with. Together, they show that most informants have a different view of practice and professional identity than is presented in the ideal of community as expressed in the organizational discourse and in management's enactment of this ideal.

Since the various meanings people attach to the technology are constructed in relation to their work and others with whom they engage in (working) relationships, how people say they use the technology articulates how knowledge is constructed and what counts as knowledge for a certain professional in the context of this particular organization. The deeper layer of arguments as discussed in this chapter thus illustrates that technology appropriation of employees is based upon the relational and situational nature of their professional identity. That is, the way people construct their senses of a professional self and their expertise vis-à-vis the human and non-human other. As seen, in general, people define their knowledge construction in terms of claims and gaps in relation to colleagues and bosses, clients, projects and technologies.

What talking about the personal degree of participation furthermore showed is the complex web of networks professionals take part in and draw on for the mobilization of knowledge constructing relations. First, the interview data provided insights into the various networks of belonging, personal and professional, material and immaterial, the professionals exert in their everyday work practice and the respective degree of belongingness to these networks. Second, I found that people organize themselves in networks of people and technical systems and engage in informal information sharing and learning practices on the basis of membership, reciprocity and professional identification. Processes of professional identification, then, are reflecting the various 'individual tactics' of the employees, meaning, considerations of cost-benefit analysis, risk-reduction and affinity. Altogether, elaborating on the alternative ideas of membership exposed the 'complexities and enigmas of social mobilization' (Amit and Rapport, 2002), or the 'machineries of knowledge construction' (Knorr Cetina, 1999).

Chapter 7

Four patterns of appropriation

7.0 Introduction: engineering community and collective learning

The objective of the study was to contribute to a critical discussion of the diffusion of prescriptive narratives of modernity in organizations, the responses evoked by these narratives and the consequent impact they have on the everyday sphere of human behavior in organizations. So far, for understanding the dynamic interplay, the cumulative layers of meaning employees attached to the virtual community idea were unraveled. The first layer involves actors taking a stand vis-à-vis the technology and the organizational practice in which it is applied. The second layer illustrates that the appropriations of the employees are based upon the relational and situational nature of their professional identity.

In order to understand how narratives of modernity embed in practice, in this chapter I will discuss the consequences of both the intentional and unintentional interests inscribed in the socio-technical artifact by managers and moderators and employees, covering the full range of the dynamic interplay, the negotiation process between the managers and moderators of the virtual communities and the employees as the projected users of these artifacts. In doing so, sections 7.1 and 7.2 depart from the promises and practices of ICT and community by managers. Here I will, first, demonstrate the manipulation of the modern expectations of ICT and community by managers, second, how employees' responses show that these messages inscribed in the artifact do not comply with their experiences of everyday practice and, third, the kind of adverse consequences this erroneous technology and community thinking might have. In section 7.3 I will subsequently show how this kind of thinking may occasionally evoke unintended 'favorable' consequences also, i.e., when the enhancing of solidarity is concerned. In section 7.4 the individual tactics of employees are materialized in the form of four generalized appropriation patterns, referred to as the alternative modernities. Last, conclusions are given on how images of community and ICT are propagated and appropriated at the various levels of interference: understanding not only why they are contested but also why they 'stick' (Bauman, 1991; Simpson, 2001).

7.1 Erroneous technology thinking

Summarizing the promises and practices of ICT and community by managers, the ethnography shows how ICT and community are at first sight received by management in accordance with the hype in the literature but thereupon translated according to their situation and hence molded into the managerial message which fitted their own circumstances and preferences. Amplifying some characteristics and muting others,

this inscription by management and moderators can, in a way, also be looked upon as a form of workaround.[1] This is partly deliberate for the sake of engineering and is partly attributed to the current tendency to idealize notions of ICT and community in both popular and academic discourse. Management thus aspires to the ideals of the knowledge economy on the one hand but feels the need to control on the other hand.

Prior to discussing the consequences of taking over common idealizations of ICT and community I will briefly explain the various interests managers hold in the deliberate intent to control; creating new communication structures and enhancing solidarity.[2] First, making virtual communities part of the restructuring process in which Dito was engaged, the enforcement of more discipline in daily operations, the promotion of internal competition and of increasing flexibility is understandable in a rapidly deteriorating economy and a need for downsizing. Second, the urge to control and the need for surveillance or monitoring in particular, is furthermore explained by the fact that Dito's employees are knowledge workers whose jobs are difficult to evaluate due to a high performance ambiguity (cf. Alvesson, 2001; English-Lueck, 2002). Third, 'engineering community', creating the sense of a commune, a coherent whole one wishes to belong to, is appropriated by management as a compensation scheme to the damaging effects of the endless reorganizations and the succession of takeovers, which clearly took its toll on the existing relation networks.[3]

As my research findings testify, management's intent to control does not go unnoticed by employees and causes alternative appropriations of the socio-technical artifact. From the change agents' point of view, such alternative appropriations may come as unforeseen and unintended consequences (Vaughan, 1999). Apart from the intent to control, the taking over of common idealizations of community and ICT in discourse, providing the ontological grounding for the view on organizational learning, also causes reverse outcomes. The following two sections illustrate this erroneous thinking by juxtaposing the institutional logic of ICT and community with the logic of their appropriation by

1 Unfortunately, however, my interview data do not cover this group too extensively so as to fully expose the pressures and inducements imposed on managers and moderators in the organization, that is to say, to assess to what extent this can be justly looked upon as a workaround given their individual tactics. Admittedly, their practice is sometimes too easily referred to as control while management and moderators, in turn, are hindered by impositions and structures. The fact remains, however, that their practice is interpreted as such (control) by the receivers of their messages: the employees.

2 Some caution is called for here since those exercising control are not always aware of it (Nader in Levinson and Ember, 1996). Similarly, the so-called naïve misconceptions as based on prevailing idealizations of ICT and community may not be as innocent as they seem. The question which then arises is, are managers consciously misrepresenting reality so as to enforce change or are they no more than naïve or ignorant? Is it a matter of being well aware of the consequences, slavishly imitating the literature on the topic, or merely one of the attempts to propagate the image of a hip company with? Is it "the lust for what is new" (Postman, 1992: 11) or, given the cutbacks in people's individual learning processes, are these 'learning technologies' simply seen as relatively cheap investments in organizational learning and innovation?

3 See Fernandez (1986) on the metaphor as a 'compensatory representation'. The deliberate emphasis on community seems a response to the bureaucratic impersonalization that endless reorganization and takeover have thrust upon the firm. To demonstrate the prominence of this motive, alongside the community project started was an attempt at what my informants referred to as 'mono branding': "the creation of one organizational culture".

employees (Graves, 1995). It should be noted here that although strictly speaking its community and ICT component should not be viewed as separate domains of ordering but be attributed to the whole entanglement of language, materiality and institutional context the artifact represents, this section begins with the meanings attributed to the technology component of the configuration after which the next section discusses its community component.

One of the gravest misconceptions in idealized ICT thinking is the persistent tendency for technological determinism. Accordingly, the intentions managers have with the introduction of the artifact reflect a bias that information will "circulate freely just because technology to support circulation is available" (Feldman and March, 1981: 54). Informants' responses in chapter five clearly show that this is not the case.

The ideal of ICT furthermore puts forth a view of organizational learning in which learning is mistakenly perceived as: (1) a disembodied instead of a personalized activity; (2) the exchange of explicit rather than tacit knowledge and; (3) an activity of standardization. This rather naïve view on learning with ICT is also contested by my informants' responses. First of all, responses show that, as a medium for communication, ICT appears to fall short in its 'cue carrying capacity' (Burke and Chidambaram, 1999),[4] that is, the "extent to which the medium has the capacity to convey multiple verbal and nonverbal cues, allows for immediate feedback, uses natural language, and has personal focus" (Daft and Lengel, 1986: 560). The leaner the social information, the less one feels the presence of the person with whom one is communicating (Burke and Chidambaram, 1999), the less likely meaningful relationships of cooperation can be build. Since media for computer-mediated communication eliminate social cues in communication suggested is that 'communication richness' does not occur in such media, hence, the consequent preference for face-to-face communication.

This brings me to the second disregard when the idealization of information and communication technologies is concerned: learning as the sharing of explicit knowledge. With this I refer to the point Boisot (1998) makes when he talks about the 'paradox of value'. Because management and moderators' intentions show that the organization wants to keep knowledge within the organization, knowledge has to be codified and therefore made abstract. For employees, the consequence of this is that the context-specificity is lost and "once tacit knowledge is codified [...] it no longer offers a competitive advantage" (p. 26). Management disregards here also that when knowledge is made abstract it is more liable for imitation and therefore, given the increased mobility of the workforce, more likely to leave the organization. The organization is thus trapped in a double bind: knowledge is either too abstract or gone.

4 This is also referred to as 'media or communication richness' (Daft and Lengel, 1986). When a medium integrates text, audio and visualization it may convey richer social information than when only text is used (Burgoon *et al.*, 2000). Accordingly, the various media can be ranked from richest to leanest: (1) face-to-face; (2) telephone; (3) personal documents; (4) impersonal written documents and; (5) numeric documents (Daft and Lengel, 1986).

The third misconception in the ideal of ICT provides a view of organizational learning as an activity of standardization. In Dito, the artifact is presented so as to acquire coherence in the organization's information and to promote standardization of methods and practices across the organization. However, informants' responses show a tension between the concentration of information and the politics of the decentralized organization (Sennet, 1998). To be more precise, the concentration of information or the attempt to organize learning more centrally clashes with the prevailing power structures of the decentralized organization. While the technology is intended to overcome the prevailing bureaucracy (Mata *et al.*, 1995), it is exactly the administrative and political structures it gets stuck on. Imposing boundary-spanning ICTs in a heavily bureaucratized organization clearly does not generate the desired effects. And, ironically enough, if employees do in fact overcome the formal structures of team and subsidiary, management fears a diminishing loyalty to the 'own' group due to the decentering potential of the technology, creating multiple centers of authority alternative to the existing power structures of the decentralized organization.[5]

Taken together, informants' responses show how the ideal of modern information and communication technology clashes with the actuality of everyday work practice due to the absence of social cues in the virtual space, the obligatory codification of knowledge, and the decentralized politics of the organization. Informants' responses thereupon show how knowledge sharing and learning does not automatically happen only because the technology for it is made available and how ICTs are serving a naïve view on knowledge sharing and learning. Above all, it shows how the technology was introduced without an awareness of the specifics of the context in which it was introduced.

Of crucial importance here is that both the common ideals of ICT and the added meanings attached to it by Dito's management might evoke the adverse effects of discouraging learning behavior and hoarding knowledge. As chapter five demonstrates, on the one hand management seems to appeal to the ideal of sharing lived practice while on the other hand ICT is posited as a tool geared towards the distillation of the so-called tacit knowledge of people. The utterance "safeguarding the knowledge that would otherwise simply remain in people's heads" is telling in this respect. The 'safeguarded' knowledge, i.e., recorded in abstract systems, is subsequently meant for employees to simply 'recycle' so as to later present it as one's own in the face of co-workers and clients. This view on learning with ICTs holds biases with regard to both knowledge production and utilization: as if knowledge is not the outcome of experience, creativity and devotion and performing a job is a matter of the sheer recycling of (codified) knowledge. Moreover, it presents a view of the employee as a passive *resource of knowledge*, a raw material, rather than an autonomous actor making sense of his

5 From management's point of view, ICTs are potentially subversive of managerial authority due to their potential for horizontal affiliation and bundling of expertise and forces.

or her surroundings. Employees, and the knowledge worker in particular, are looked upon as mere radars in the 'knowledge factory', "creating knowledge and absorbing knowledge" (Evers, 2000: 14). It is my contention that such a view of ICT as an instrument for knowledge extraction does not stimulate individual thinking and learning but creates an anti-learning attitude instead, especially since in Dito this development takes place alongside a scanty willingness to make resources available for individual learning and education.

Furthermore, on the one hand, management seems to appeal to the ICT ideal of knowledge being freely available and for everyone accessible while on the other hand knowledge is only valued unless it contributes to economic production. Knowledge treated as a sole economic product (Gudeman, 2001), ignoring the fact that knowledge also produces social relations (Barth, 1990), contradicts the idea of learning and discourages knowledge sharing. This is often referred to as the paradox of the knowledge economy: knowledge becoming a commodity that is traded and paid for develops a market of knowledge at the expense of the ideal of 'information for all'. For instance, the principle of commercial targets in Dito runs counter to the principle of cooperation.

7.2 Erroneous community thinking

Whereas the previous section revolved around the misconceptions and adverse effects of the ideals of modern information and communication technologies, in this section I will describe the meanings intended by managers and the meanings received by employees with reference to the metaphor of community. Or rather, the institutional logic of community as opposed to the logic of its appropriation.

As is the case with the metaphor of ICT, community is at first sight received by management in accordance with the ideals in the literature but thereupon manipulated and inscribed with their own interests. Also here, management's adherence to the ideals of community and the added meanings attached to community are based on both deliberate manipulation as well as rather common erroneous thinking in both academic and popular writings.

Some caution is called for since it is not always clear whether it concerns deliberate control or merely naïve misconceptions of community. To illustrate this point, while Dito's management adheres to the community ideal on the one hand they feel on the other hand that they have to restrict its potential power to overcome the formal power structures in the organization. Although this can be interpreted as a deliberate intent to control it can also be ascribed to the unforeseen clash of community with the two rivalry ideal types of organization Dito still relies on heavily; hierarchy and market

(Ouchi, 1980; Adler, 2001). Expressions of this are the tension between coordination and control and the vesting of confidence in individual employees. Imposing the idea of community founded on trust in a centralized organization founded on authority reflects the difficulty of introducing post-bureaucratic control measures into an organization established in a bureaucratic ethos.

Whether or not prompted by the intent to control, the fact remains that the managerial practice of community is exemplary of erroneous community thinking as based on the common idealizations of community in popular and academic discourse. This idealization, in short, refers to community as an artificial construct as opposed to defined by its inherent social activity. The way community is interpreted and appropriated by management is understandable considering the high amount of publications that popularized and commercialized it but should not be held fully accountable for it. The merit of the term communities of practice, for instance, was its attention to actual practice, an encouragement for business to organize according to the non-canonical as opposed to the canonical. Nonetheless, a continuous taking over of its superficial characteristics such as shared common values and identity construction, along the way losing their richness and complexity, resulted in the idea of community devoid of social nuances. What remains is an abstraction divorced from actual practice – an idealization.

One of the gravest omissions in the idealization of community is the prescription of essences of membership. These essences are defined on the basis of generic individuals and reflect a focus on "unity and togetherness" (Kunda, 1992: 68), the belief in a 'collective identity'. As the research shows, my informants clearly do not recognize themselves in these imposed ideas of categorical membership. This disagreement is expressed by utterances of difference over sameness, differentiated over undifferentiated memberships, exclusivity over inclusivity, changeability over consistency, multiple over single memberships, historicism over ahistoricism and universalism over situatedness. In what follows, I will briefly illustrate the omissions of common community thinking as appropriated by Dito's managers and how they are refuted by employees' responses.

First, a consequence of the focus on unity and togetherness is the "denial of difference" (Young in Robins, 2000: 89). Instead, as my research findings show, domains of belonging imply "both similarity *and* difference" (Cohen, 1985:12) as employees draw not only to people with similar but with complementary competences also.

Second, the apprehension of community and identity in general terms refers to community as a uniform and stable phenomenon (Elias, 1982); a fixed entity with steady boundaries (Wolf, 1982). As my informants' responses illustrate, however, roles and categories are fluid. Learning behavior is dynamic and evolves over time. Accordingly, "information needs cross institutionalised roles" (Haythhorthwaite, 1996: 330) and categories of belonging are ephemeral.

Third, community is often perceived as an ahistoric phenomena. Accordingly, managerial intent shows evidence of ignoring the 'organizational community' as an historic entity. Yet, in their appropriation of community, employees' responses clearly demonstrate the importance of people sharing a substantial part of the organization's interactional history. Think of, for instance, the difference in learning behavior between people originating from the state-owned computing center and the young start-ups taken over by the organization. Also, on a more individual level, the formation of personal social networks shows the importance of shared histories as some informants clearly prioritize networks based on a shared experience of interaction.

Fourth, the ideal of community is based on the idea of single membership. Hence, managers overlook the fact that in order to perform their jobs people partake in various human and non-human networks. As they learn some take precedence over others and they continuously change memberships. As Keesing (1975) notes, "any single entity can belong to many different cultural categories" (p. 10), the ones that are drawn from are the ones that matter.

This brings me to the fifth omission of the ideal of community: the focus on the isolated individual rather than the individual in relation to and in interaction with others. The notion of community as based on prescribed essences of membership does not leave any attention for the way people relate to each other in performing their roles; how they are continuously in dialogue with others and their environment (Willson, 2000). As my study shows, learning behavior is dependent on the interaction with the various generalized others and categories of belonging are inherently relational: they concern a relative sameness with people in opposition to whom they differ (Cohen, 1985).

Taken together, informants' responses show how the ideal of community clashes with the actuality of their everyday work practices. To be precise, contrary to the ideal of community, professional identity revolves in constant negotiation among different parts of the self, different human and non-human others we are confronted with and the different settings and networks to which we temporarily belong. This clearly requires a more fluid conception of community allowing members to belong and not to belong, i.e., dynamic, multiple and relational.

While in the organization community is produced as an ideal rather than as a category anchored in empirical reality, employing such an unrealistic yet value-loaded term may cause a further distancing of employee and organization. The one-dimensional interpretation and apparently unproblematic applying of the term community stripped off of its empirical richness (reductionist) might be said to have adverse effects in terms of enhancing commitment and solidarity and generating innovative practices.

First, since prescribed essences carry meanings of collectivity and sameness, they might result in an us-them thinking in which 'us' belong and 'them' are excluded. Such

an "inferiorization of excluded others" (Rapport and Overing, 2000: 14) is precisely what can be witnessed in my study. Moreover, prescribed essences may attract those who want to belong but at the same time turn off those who are not appealed by it but as a matter of fact could be very conducive to learning from heterogeneity. As such, community thinking decreases the stimulation for new knowledge creation (Willson, 2000) and innovative practices (Powell *et al.*, 1996; Cohen and Levinthal, 1990).

Second, due to the prescribed essences of membership and the restricted broader participation, communities in Dito convey closedness (reticence) rather than openness. As a result, I found that "one person's infrastructure may be another's barrier" (Bowker and Star, 1999: 34). In addition, "although communities may be formed that reinforce social relationships among like-minded individuals, those groups will have a decreasing need or opportunity to interact with other members of the larger society" (Fernback and Thompson, 1995: 10). Community thinking may thus cause the opposite effect of decreasing social cohesion (Fernback and Thompson, 1995) in that connections across the formal boundaries of the organization contribute to fragmentation instead of information resource concentration organization wide (Van Alstyne and Brynjolfsson, 1996). This phenomenon is what I refer to as 'island formation'; the existence of various little islands inaccessible to others.[6]

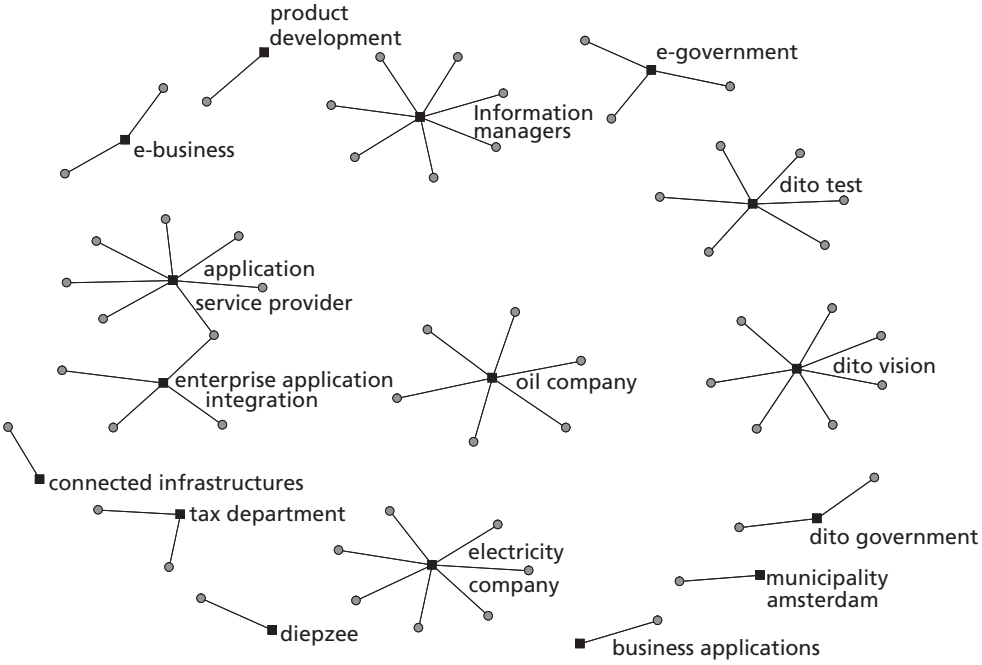
For the purpose of illustrating this phenomenon, I randomly selected one knowledge topic appearing in the log file – 'SAP' – and investigated to what extent people sharing an interest in this topic are actually engaged in knowledge transfer relationships. The result of this is depicted in the following social network graph:

As the (online) social network graph attests, while the topic of 'SAP' is discussed in various formal groups, there are no links of communication among these groups.[7] These groups act out as 'knowledge islands' that prove to be inaccessible to each other. In some cases, therefore, the community idea contributes to the formation of separate groups concerned with the same issue though not involved in knowledge sharing relationships with each other.

6 This is by Van Alstyne and Brynjolfsson (1997) referred to as balkanization but after the Balkan war this does not seem to be a politically correct term to use. It is sometimes also referred to as overlap or redundancy (Graves, 1995; Nonaka and Takeuchi, 1995).

7 With the notable exception of the connection between EAI and ASP.

Figure 1: 'Island formation'



7.3 Symbolic role of the artifact

So far, my research findings tend towards concluding that imposing idealized ICT and community thinking can only have adverse effects when the creation of new communication structures, enhancing solidarity and improved learning and knowledge sharing practices are concerned. Ironically enough, however, informants' appropriations of both the artifact as community and the artifact as technology show evidence of some form of management's projected 'community engineering' (English-Lueck, 2002). This should be ascribed to the symbolic expression of the artifact.[8]

First, while in a rather roundabout way and certainly not as intended as such by management and moderators, in some instances the idea of community acts out as a 'binding agent'[9] and increases social cohesion. As chapter six showed, although dominated by judgments of 'what we do *not* have in common' and 'who does *not* belong', the confrontation with the idea of community, on rare occasions, brought together people

8 A symbolic expression is "something that stands for or suggests something else by reason of relationship, association, convention, or accidental resemblance" (Fischer *et al*, 1996).
9 Binding refers here to a 'being-in-relation', a 'mutuality' (Knorr-Cetina and Bruegger, 2002).

from the imposed categories with the aim of defining their common features also.[10] This is what Cohen (1985) calls the 'human construction of invisible boundaries.' In these cases, forms of social engagement may be derived at without an actual prior base of social interaction (Appadurai, 1996; Anderson, 1983). The project managers who assembled on several occasions to discuss the common language of the group presented an example of this to me:

Q1: "What's your definition of program management?"
R1: "I would describe it as coordinated management."
Q1: "And, how do you define the difference between program and multi-project management?
R1: "As insignificant."
R2: "I disagree, there is in fact a difference between the two. Program management serves an explicit goal and it involves people from higher management also."
R1: "Though, when methods are concerned there is no difference."
R3: "I think we should decide on our own definition"
Q2: "What is the difference between a project and a coordinated activity?"
R2: "A project pursues concrete results and a coordinated activity is after applying improvements but without having clear purposes in mind."
R4: "A program, in theory, is infinite and develops its measure points (crucial moments) in the course of events."
(etc.)

Such instances of 'imagining' or 'inventing' community (see chapter four) in terms of group mobilization on the basis of an imagined or purposefully created commonality were also found in the virtual spaces. For instance, talk of what name would cover the group's commonality best dominated a considerable part of the software engineers' discussion site:

Topic: Name-giving community, Onno, 02/07/2002 - 09:30 AM
For some time now we have been discussing the name of the community. The original proposition of Information Delivery does not agree with our commercially oriented people. The proposition is therefore to change it into Business Intelligence and Data Warehousing. The name Information Delivery was initially thought of to cover the whole area: things like operational reporting, data quality & cleansing, data mining, crm and integration. The

10 This proves that in some cases people can in principle mobilize themselves on the basis of ascribed connection. However, to go from categorical to personal relationship requires "contact, some measure of reciprocity, opportunity and effort, a constant need to recreate the mutuality of relationships" (Amit and Rapport, 2002: 24).

risk of operating under the name of Business Intelligence & Data Warehousing is that the more operational businesses pass us over. Your opinion is most welcome (...)
Thanks in advance, Onno

Re: Name-giving community, Juan, 02/11/2002 - 08:35 AM
Onno,
I would prefer to use the name 'Business Intelligence' for this term matches the objective of the community closest and besides is often used by clients and the market.
Greetings, Juan

Re: Name-giving community, Edina, 02/08/2002 - 09:32 AM
I think it all depends on the objective of the group. In case it is only meant for ourselves, Information Delivery would be the better name, covering also operational matters. In case we would like to profile ourselves with it to external parties (clients, colleagues etc) I would recommend using the more commonly employed term of Business Intelligence & Data Warehousing.

Re: Name-giving community, Jort, 02/07/2002 - 06:04 PM
I think the name Business Intelligence & Data Warehousing is perfect. The fact that it leaves out operational matters such as data cleansing, integration etc. is of no importance. I do not understand to begin with why opted was for the term Information Delivery. Also in the literature I do not come across this term. As for me, I associate the term with all kinds of (weird) things I am sure we do not want to cover. Think of the transaction forms I get sent home from the bank for instance. That is also information delivery and I find it hard to believe that's what we are into.

(...)

The second instance of binding, i.e., the artifact contributing to group solidarity, is a direct consequence of the "sharing of a common technological system" (Lemonnier, 1992: 100). To be exact, being confronted with one and the same technical system (Pfaffenberger, 1999), and in this case a technical artifact that due its boundary spanning potential represents the organization as a whole, provides for some of my informants the means to identify with the organization. As managing consultant Ronald says for instance: *"On our site employees' birthdays and upcoming festivities are published. That inevitably gives you the feeling to belong."* And, for people working largely at client locations, the technology provides a means to literally stay in touch with the organization

one is employed at. The sharing of an organizational artifact signifies belonging to the same group or organization and thus ties people together.[11]

The 'message' – the idealized human practice – resonates a deliberate positive and optimistic portrayal of human practice so as to encourage people to change not only their ways of working but also their ways of thinking: "producing certain kind of humans" Suchman (2000). In general, however, these "hollow calls for community" (Amit and Rapport, 2002)[12] and technology might backfire, as a result of both uncritical attitudes or sheer ignorance, and have reverse consequences. As I tried to show, in some cases the artifact does not overcome group boundaries but creates them. As such, it limits and obstructs rather than promotes practices of knowledge sharing and learning in the organization. In other cases, however, the uncritical attitudes might have 'favorable' effects when the process of enhancing solidarity is concerned. As I showed, here it concerns the symbolic role of the artifact (Hakken, 1999). Boldly stated, one could thus say that in terms of rational control the artifact is not successful but in terms of normative control it is.[13]

To believe, however, that the employees are the passive receivers of managerial discourse and are necessarily molded by the structures imposed on them is a grave misunderstanding (De Certeau, 1984). They do not simply assimilate to the images inscribed in the artifact as, just as managers and moderators, employees also manipulate the ideals of ICT and community to suit their own needs. They make the techno-organizational artifact their own in such a way that their personal senses of ordering are preserved. In the next section I will take a look at the emergence of the alternative modernities, referred to as the four patterns of appropriation, as a consequence of these individual tactics of employees.

7.4 Four patterns of appropriation

My research shows the diversity of arguments that informants use while making sense of the virtual community idea and the explicit and implicit messages conveyed by Dito's managers and moderators. The extent to which employees attach importance to these

11 To underline this finding, 'sociability', referring to information concerning offline meetings and social gatherings, is the most prominent category of knowledge posted in the virtual workspace and accounts for 38 percent of the online activity. The category 'institutional', information concerning the politics of the organization and the shared symbol system (the wage freeze of the time, fringe benefits, company stock, annual reports etc) accounts for 14 percent of the online activity. For further information, I refer to tables 1 and 2 of the appendices.

12 Since organizational reality is not as apolitical and uncomplicated as the idealization of technology and community purports and these ideas are introduced according to their popularity in the management literature whilst disregarding largely the contextual factors, they can justly be referred to as 'hollow calls.'

13 Normative control refers to "the idea that managers could more effectively regulate workers by attending not only to their behavior but to their thoughts and emotions" (Barley and Kunda, 1992: 364).

aforementioned cumulative layers of arguments determines the way they appropriate this change idea and hence how they will use it.

In explaining the various workaround behaviors (Whyte, 1991) of employees, I first hold that such behavior is inspired by the infusion of community and ICT ideas with efficiency and control objectives (Adler, 2001; Huizing and Bouman, 2002). The organizational artifact holds prescriptive representations of work activities or aims to imprint a unified pattern of thought and behavior (Akrich and Latour, 1992; Suchman, 1995). I contend that the extent to which the virtual communities are unmasked as managerial instruments of organizational change by the people who are supposed to work with them determines how, if at all, they appropriate it. Second, arguments for employees' 'deviating behavior' are related to the affordances of the technology and the 'artificialization of organizational practice'.[14] Third, I found that the way people appropriate the virtual communities differently than intended (or not at all) depends on their actual processes of knowledge and professional identity construction not complying with the institutional logic of community and ICT thinking.

Out of these personal responses, which can be any combination of the arguments mentioned, four generalized patterns of appropriation emerge: confirmation, socialization, reputation and negation. These patterns collectively present a different reception of the virtual community idea than intended by Dito's management and moderators and implied in the idealized representations of both technology and human practice in the organizational discourse.

Confirmation is the appropriation pattern that resembles the ideal of virtual community most closely. In these cases of 'acted inscription' (cf. Akrich and Latour, 1992), virtual workspaces are used to share information and to individually or collectively learn. I say 'most closely' instead of 'completely' because the textual analysis of the virtual workspaces illustrates that there is a correlation between the degree of codification of the information shared and the appropriation patterns. This means that for codified information such as technical expertise – knowledge pertaining to hardware and software and programming languages and techniques – the virtual communities are readily used.[15]

The software engineers' community seems to represent the approximation of the ideal and thus holds as an example of 'confirmation'. As its moderator says: *"It revolves very much around calls like 'does anyone know someone with experience with this or that environment?' We also try to put some standards on it, templates, best practices and what have you but most of it concerns these kinds of questions and answers."* The next

14 The artificialization of organizational reality refers to the fact that the idea of community is simulated with the organizational artifact: "it offers a pseudo-reality to people" (Linstead in Kostera, 1997: 171). The one-dimensional interpretation and apparently unproblematic applying of the term community, propagates the belief in the 'artificialization' of reality (both behavioral and normative) and gives the illusion of controllability.

15 About 14 percent of the total of postings online is technical expertise (see appendix, table 2).

excerpt from the discussion forum of the software engineers' community illustrates the kinds of questions and answers going back and forth:

> *Universal SQL [Structured Query] language, Norbert, 03/28/2002 - 11:35 AM*
> *In Dito [subsidiary Z] we are beginning to transfer our Oracle data warehouse to MS SQL-Server. The transfer itself is not a problem, however, we expect the translation of the couple of hundreds SQL-scripts to be a rather time-consuming job. I would prefer using one of the programming languages for stored procedures that are compatible with both Oracle as well as SQL-Server but in my opinion such a thing does not exist. Does anyone have experience with the use of 'procedural SQL' for the various databases or with converting Oracle PL*Sql to MS SQL?*
>
> *Re: Universal SQL language, Andy, 03/28/2002 - 02:28 PM*
> *The similarity/ match between PL-SQL and MS SQL is the SQL standard SQL 92. This nevertheless offers a very limited functionality of stored procedures (or none at all). The biggest difference between PL-SQL and MS SQL is in the use of the meta-data. In that respect, PL-SQL is slightly more powerful than is MS-SQL. I did hear about a Translator being delivered with ORACLE which can translate code into another code language. The question remains whether this is possible for PL-SQL. If this Translator is able to read in code as well, this could very well be a step in the direction of code independence (= SQL platform independence)! Let me know in case you find out more about this! :)*

This (online) excerpt illustrates that the software engineers do in fact use the virtual workspace as a place for experiential learning and the exchange of lived practice, nevertheless predominantly concerning technical knowledge and procedures.[16]

Socialization, in terms of learning to become a member of a professional group, is another appropriation pattern. It refers to the move of the outsider, a novice or newcomer to the group or the organization, becoming an insider (Trice, 1993). Novices and newcomers typically use virtual communities as a 'mirror of knowledge' to assess their level of competence. Junior data warehouse consultant Mats, for example, explained his participation as follows: *" I go there just to see what they know that I don't know yet."*

Subsequently, novices and newcomers use the virtual communities so as to find out what knowledge needs to be learned to become an accepted and full member of the

16 In the case of confirmation, the object of learning (cf. Lundvall, 1998) is characterized as 'know how'. The purpose of learning concerns so-called 'subject matter learning' and the kind of knowledge concerned is characterized as the expert type. Expert type knowledge is described as being focused on the exchange of information pertaining to a specific field of interest (Coleman, 1998). Technical expertise refers to hardware and software programs, programming languages and techniques.

professional group (Applebaum, 1984). The following excerpt of an interview held with software engineer Ernst illustrates this informal induction process into a professional group: *"When I first joined the virtual community I came across terms in the questions and answers posted that I did not understand. I thought to myself 'what are they talking about?' I did not understand anything. But now that I understand the terms used, I understand their questions better and I would be able to answer them as well."*

Not only does the virtual community enable the new members of the group 'to learn the ropes' in terms of incorporating the relevant terms and concepts, it also enables them to upgrade their technical skills, i.e., 'to learn about certain software packages' or 'to master a new technique' at the level necessary in order to perform an occupational role.

For others, such as senior project manager Roel, the virtual community is merely used as a first acquaintance with a domain of expertise he plans on entering: *"When you are about to start working in a new field, one that you are not yet acquainted with, you will search the community. (...) It is a step up to somewhere else; it is here where you get your direction indicators so to speak, after which you will continue your search."*[17]

Apart from socializing as adapting to the norms of the group, the virtual community is also used as a means for socialization in terms of partaking in the various social offline activities of the group, referred to as sociability. As project manager Arthur says for instance: *"I look at least once a month in the community to see what's going to be discussed at the upcoming meeting, and for the 'where' and 'who' of these meetings."* To illustrate the prevalence of the appropriation in terms of offline sociability, the content analysis of the log file shows that 'agenda', 'meeting' and 'minutes meeting' are the words most frequently appearing (see appendix, table 1 and 2).

Reputation, is the pattern whereby the virtual community is employed as a tool for self-marketing. Through this channel, employees and groups of employees profile their professional identity. They present their 'face' (Goffman, 1959) by showing the other members of the group and other groups in the firm who they are, what they have done and what their expertise is.[18] As an example of many interviewees responding in a similar vein, managing consultant Ronald remarked: *"I use the consultants' community purely to profile myself; this is who I am, this is what I do and this is my resume."* Thus, apart from 'to see what they know that I don't know yet' (socialization), many of my informants motivated their participation in the communities as: *"to show them what I have"* or "*to create a distinct profile for myself."*

The online workspace is in this instance thus appropriated as a site where IT professionals can make themselves visible to other people and groups of people

17 In the case of socialization, the object of learning is 'know what', referred to as cultural (or linguistic) competence (Bourdieu, 1984). With the purpose of entering professions, "what they are after is so called 'cultural knowledge', referring to "what it is like to be a [IT] professional" (Hara & Kling, 2002: 13).

18 Reputation shows how the person behaved in the past that can influence future interactions (Mieszkowski, 2000).

in the organization. The textual analysis of the virtual workspaces indicates that the information provided in these instances usually concerns job descriptions, rank (senior, junior),[19] contact address, expertise and working experience,[20] technical skills,[21] formal training and certifications,[22] current projects one is engaged in, projects done in the past,[23] professional interests,[24] membership of professional practices and user groups,[25] and sporadically hobbies also.[26] It is thus not the knowledge itself that is being shared, but information about the person holding that knowledge.[27] Notably, I found that the personal "information given" varies with the virtual communities in which the employee partakes. Clearly, how we present ourselves depends on the people we present ourselves to (Goffman, 1959).

Increasing visibility through participation in on-line spaces serves various purposes. First, it can help safeguard one's position in the organization, convince others of a right to a field of expertise or that they should be granted a monopoly to perform their work. Reputation means 'having a face' (Goffman, 1959). By developing an expert reputation, participants hope to gain status, power, and market value within the professional group, the firm and with clients.[28]

A second and related purpose served by reputation is projecting future developments in terms of generating work in current or new fields of expertise. Examples of this are utterances in the virtual workspace such as: *"Call me when you spot a lead*," *"I want to do jobs in the field of (...)"*, *"What I would like to do is (...)"* and *"I am currently available for (...) projects."* As data warehouse architect Jan commented: "*Since I would really like to do Business Intelligence jobs, I should profile myself as such."*

Last, *negation* refers to the intentional or unintentional behavior of informants barely contributing to the formalized and imposed communities, or not at all.[29] I found that this

19 "I am Director Strategy and Technology and chairman of the architecture platform."
20 "I have seven years of experience working as a project leader/ project manager with IBM and 12 years of IT experience."
21 "I am a Business Intelligence Consultant. I am knowledgeable about BI tools and data warehousing, data modeling, and programming. Specific knowledge of SQL Server 2000 SQL Server DTS Business Objects SQL Server OLAP Analysis Services."
22 "I am internationally certified (project manager professional – PMP)."
23 "I am a SAP consultant and have been working with Dito for some time now, for the larger part on mainframe computing but more recently on other platforms."
24 "I am a software engineer with an interest in analyses/ design/ construction of internet/ intranet and middleware applications."
25 "I am an active member of Project Management Netherlands and a member of the Prince2 User Group."
26 "My hobbies are hiking, mountaineering, motorcycling, theatergoing, and vacation."
27 In the case of reputation, know-who prevails over know-what (the expert type of knowledge, cf. Coleman, 1998) and know-how (the cultural type, cf. Bourdieu, 1979).
28 See for more work on the 'presentation of self online': Rutter (unknown), Miller and Mather (1998) and Miller (1995). See Jacobson (1999) about the extent to which offline experiences match online expectations and Ellison *et al.* (2006) for online impression formation in the online dating scene.
29 Practices of negation are the ones in which engagement with the technology is avoided (cf. Bakardjieva, 2005). It needs to be said here that this group concerns the people who are registered as participants but after a while, sometimes as soon as after the first visit, refrain from participation. Even though, one and a half years after the introduction of the virtual communities, registered participants represent about 30 percent of Dito's total population, the remaining 70 percent (of non-users) is not included in this group of 'dropouts'.

pattern typically concerns the most experienced, knowledgeable, and skilled employees in the different domains of expertise. For them, the communities represent 'what is already known' instead of 'what is being discovered'. Characteristically, the established and more experienced member can dispense with such formal representations of practice (Ingold, 2000). As senior project manager Victor commented on his participation in the project management community: *"The better I know what is good and where my strength lies, the less I use it [the virtual community]."*

Taken together, the appropriation patterns as described in the above show evidence of both adherence and resistance to the ideal of virtual community. The reasons why employees partially go along with managerial mandate and the kind of (workaround) manifestation is opted for can be ascribed to informants' individual tactics in the face of prevailing pressures and inducements imposed on employees who are bound by formal structures, rules and regulations on the one hand, and on the other hand work around such formal representations of practice in order to maintain and develop their senses of professional identity. Moreover, the climate of uncertainty and anxiety over the status of the organization and employees in it after 2001 provided a permanent thread of controversy, not only for management (aspiring to let go but needing to control), but also for employees (aspiring to work independently but needing to conform to the formal structures and regulations of the organization). In that case, the drawbacks of participating in the virtual workspace are outweighed by the sheer (economic) interest of participation. First, the fact that the technology is used as a tool so as to *become* (socialization) and to *remain* a member (reputation) of a certain professional group or the organization may be explained in the light of the current economic setback in which IT professionals are not as secure about their positions as they used to be in the heydays of computing (see chapter three). Particularly in times of economic decline and job layoffs, reputation and visibility gain in significance. Second, having to be able to accelerate and adapt quickly to new projects and clients (in order to sustain their livelihood), just as the internet, such information resources serve the earlier signaled pragmatic attitude. For the instant formation of judgments such fleeting information resources are readily used.

7.5 Concluding remarks: the sensitivities of the dynamic interplay

Apart from illustrating that common community and technology thinking does not comply with reality, my study also shows how the 'world of management' and the 'world of employees' do not correspond as they reflect the various and often conflicting interests inscribed in the artifact. In general, this conflict of interests is best characterized

as reflecting the contradiction between personal and organizational goals (Kunda, 1992), the fact that regarding learning processes employees and management have different responsibilities. Finding innovative organizational forms and processes supporting and coordinating employees' knowledge and learning is the task of management-oriented individuals (Schein, 1996; Seely Brown and Duguid, 2001; Huizing and Bouman, 2002). For them, innovation is a requisite to survival in an increasingly competitive environment (Suchman and Bishop, 2000). Employees, on the other hand, are local practice oriented individuals and are responsible for generating and sharing specialized occupational knowledge and for applying this knowledge creatively within organizational practices. For them, however, innovation often means a threatening of the own position.[30] Individual rather than organizational goals are pursued, directed toward stabilizing or improving their career chances.

An example of this is provided by the idea of 'knowledge ownership'. While from an organizational perspective, knowledge should not be restricted to certain individuals in the organization but be distributed free and limitless, for employees "withholding and granting information is a powerful means of controlling relationships" (Harper, 1987: 176). As seen, for employees reputation is something one acquires by hoarding knowledges and "not from giving them downwards by teaching" (Barth, 1990: 649). However, in order to be acknowledged as an expert one should give *some* knowledge away. That is to say, hoarding knowledge might very well preserve one's market value, "it does not produce relations" (ibid.). Consequently, people do give some information away but keep the most important information to themselves.

30 For employees, "change involves sloughing off obsolete skills and acquiring new ones as a prerequisite for continued employment" (Suchman and Bishop, 2000: 327).

Chapter 8

Conclusion

8.0 Introduction

Social Imaginaries of Technology and Work is a connective ethnographic account of the work practices of IT professionals during a time of drastic contraction in the computing industry. By studying the use of virtual communities in a computing organization, it confronts the modernist narratives of the information society and knowledge work with the so-called little narratives of practice. The study, which uses data collected from interviews, participant observation in both the organization and the virtual communities and social network analysis of the server logs, not only differentiates between the promise and practice of the narratives of modernity, it also sheds light on emerging concepts of professionalism and processes of profesionalization as a consequence of their dynamic interplay. These emergent practices typify the actuality of knowledge work in the specifics of knowledge and professional identity construction and the formation of networks of belonging.

As these new social imaginaries institutionalize in context, the narratives of modernity will eventually become adjusted. However, we might be caught up by the arrival of new organizing narratives as the idea of professional identity as something that should and can be engineered is about to 'land in locality'.[1] No doubt, the increased attention to immaterial values in organizations will yet again give shape to more sophisticated forms of control in organizations.

Nonetheless, the general aim of my research was to show how modern forms of work practice are negotiated by and negotiate modern narratives. Special attention in these processes of mutual manipulation is paid to the role of information and communication technologies, i.e., the ways in which both strategies of the administrative elite and individual tactics of the employees are inscribed in technology and how they consequently recursively organize practice.

In this final chapter, the general conclusions are drawn from the various forces at play in the dynamic interplay of language, context and technique, bringing to light how subjective appropriations of the organizational artifact (virtual community) recursively organize practice by way of self-reflexivity (subjectivity), self-ordering (tactics of socialization and reputation) and self-presentation (profiling). In what follows, I will summarize the main findings of the study and discuss how they answer the central questions of the thesis: how technology is creatively appropriated in the context of the organization and how this appropriation recursively orders practice. I will conclude the chapter by giving future research opportunities based on the issues left unexplored. But first, in the next section I will briefly set forth the theoretical, methodological and empirical contribution of my work.

1 See the call for papers (2006) of a special issue of *Organization Studies* on "Managing Identity in Organizations".

8.1 Empirical, theoretical and methodological contribution

The contribution of my research lies first and foremost in the rich empirical evidence that it adduces. On a general level this means that the study provides insight into the ways in which narratives of modernity travel and 'work' for a particular industry at a particular historical moment. More specifically, by providing data on the constructed nature of technology as well as on the ways in which it is subjectively appropriated by individuals, the study demonstrates the complexity of technology appropriation in a computing firm just after the dot-com crash.

The bulk of the empirical material of the study relates to how users translate and enact the imposed idea of virtual community. First, the study shows how the socio-technical artifact is appropriated by the various kinds of users whilst putting it to different uses, functionally and symbolically, than those intended by 'design' (management and moderators). Second, the study shows how technology appropriation is an expression of affiliation (Suchman, 2005) and evokes matters of self-reflection (Turkle, 1995). Third, the findings of the study show how technologies are 'produced' whilst 'consumed'. These findings, respectively referring to technology appropriation as creative appropriation, cultural expression and active consumption, will be discussed in more detail in sections 8.4 and 8.5.

To continue, the contribution of the work is theoretical in that it shows that the negotiation of the meaning of technology occurs at various levels of interference. In line with recent insights from appropriation/domestication theory, my study shows that the meaning of technology is negotiated in relation to the encoded nature of technology, the messages it carries, as well as against the particular context in which it is used. Complementary to these insights, my study shows that appropriation should be understood as influenced by the so-called narratives of modernity. Since my study demonstrates that meta- and master narratives are actively used by social actors in practice it puts forward a conception of technology appropriation as social, material *and* discursive practice. Consequently, the study urges that appropriation be looked upon as a reaction to the possibilities and impossibilities of the technology, the prevailing structures and mores of the institutional context in which it is employed as well as the language it is introduced with.

Furthermore, the theoretical contribution of the research lies furthermore in the conceptualization of appropriation in terms of individual tactic (De Certeau, 1984) in that the study shows that appropriation of technology is influenced by the wider context of interpretation and that in appropriating technology the user is not a free-floating individual. First, in line with appropriation/domestication theory, appropriation as individual tactic is understood as a creative individual response to the environment and the 'property of others' in that environment. My study, in addition, makes clear that

how we appropriate technology reflects not only our interests; it is also constrained by dimensions of social structure, the environment and others in that environment.

Last, the contribution of my work is methodological in that it provides a good example of connective ethnography. The idea of connective ethnography is called for by Hine (2001) as a necessary revision of the traditional 'focus on the locus' understanding of ethnography. This need is preceded by the emergence of the multi-sited approach to ethnography (Marcus, 1986) as a way to better study the increased interconnectedness of social worlds. Connective ethnography, then, embraces an understanding of context in terms of interconnectivity such as enabled by modern information and communication technologies (of which the internet is the most prominent example).

In chapter two I proposed revising Hine's concept of connective ethnography. In such a revised concept of connective ethnography the sensitivity to the making of context includes both the increasing connections between information resources in the form people, systems and texts, as well as the sense of a local physical context. Hence, it incorporates experiences of immediacy in the form of physical nearness, local context, and as that enabled by computer-mediated communication. It is for this reason that discourse analysis, both online and offline participant observation and content analysis, and online social network analysis were integrated in the study. The various online and offline methods employed during the course of the research presented a *contextualized* understanding of the translation and enactment of the idea of virtual community in the form of people, networks and texts.

Adding further to the idea of context in terms of interconnectivity entailed including the various kinds of users and non-users in the research (Wyatt, 2003). Including both passive users and non-users in the study not only directed attention to how ideas and narratives travel but equally showed how ideas become stranded as a result of resistance and workaround behavior. Above all, it directed me to the wider context of resources in the form of both systems and people that employees call upon in their everyday work practices. This context of alternative information resources called upon is referred to in chapter two as consumption junction (cf. Cowan, 1990).

The preoccupation with how ideas become stranded is also exhibited by the rather unconventional use of social network analysis in the study. Whereas social network analysis is usually applied to show that there *are* connections between people, I initially used social network analysis to demonstrate the absence of links. The social network analysis furthermore gave me an understanding of the multiplicity of employees' memberships to the various formal groups and 'who shares information with whom', within as well as outside the boundaries of these groups. Together, the various methods applied in the connective ethnography provided an image of the organization, its reach, and the outside world in which IT professionals operate.

In the following sections I will elaborate on each of the three lines of contribution. In the next section I will start off with the discussion of the methodological contribution.

8.2 Exposing the cumulative layers of explanation

As I mentioned in the previous section, the chief contribution of the thesis is the rich empirical evidence it brings to bear illustrating the complexity of technology appropriation. In revealing these cumulative layers of explanation, the various online and offline methods employed as part of the connective ethnography proved to be crucial. For the purpose of illustration, in this section I will discuss the main steps taken in the research, the methods applied and the related layer of explanation exposed.

First, investigation of the relevant literature revealed how the management fashion virtual community 'traveled' in the relevant literature and the way the idea was subsequently translated in business discourse. This analysis showed how the process of translation occurred through a continuous taking over of the concept while going through necessary processes of abstraction.

Second, data gathered by way of formal and informal interviewing, participation in meetings and document review revealed how the idea of virtual community subsequently 'landed in locality' (Czarniawska and Sevón, 1996) and was concretized into 'proper' management instruments in context. The resultant expectations-in-context (the promise) thus showed how prevailing narratives of virtual community, and related ideas of ICT and community, were adjusted by management to fit the circumstances and goals of the organization.

Third, investigation of the metaphors as employed by the participants of the virtual communities provided insight into the wide variety of interpretations of virtual community prevailing amongst the employees. These interpretations ranged from 'flat' to 'interactive' interpretations of virtual community and hence exemplified the various movements employees desired to make with the technology (Fernandez, 1986).[2]

Fourth, in explaining employees' participation in the company's virtual community, I delved deeply into the kinds of arguments employees use while appropriating the proposed change idea. Interview data on intended or anticipated use, combined with observations of actual use revealed how employees appropriated the language and technology of the organizational change discourse surrounding the virtual community idea. These responses initially illustrated 'what is not' as opposed to 'what ought to have been', i.e., how the ideals of ICT and community as prescribed by management and moderators do not correspond with the images given by employees. The research hence showed the divergence between promise and practice.

2 As explained in chapter four, on the continuum of flat to interactive interpretation, flat interpretations refer to technology as a means for preservation and interactive interpretations to technology as action.

Fifth, talking about 'what is not' subsequently revealed the deeper layer of explanations given for employees' workaround behavior and disclosed 'what is' outside the imposed structures instead. The 'what is' refers to the intricate mechanisms of actual knowledge creation and network formation, how these mechanisms are constructed in the specific context faced and what these forms of engagement were based upon.

Together, the various online and offline methods employed during the course of the research made it possible to display the incongruence and interplay between promise and practice and enabled a rather elaborate circumscription of the firm and the professional self in terms of emergent processes of knowledge construction and complexity of personal social networks.

Whereas in this section I discussed the contribution of my work with respect to the methodology, in the next section I will discus its contribution to theories of technology appropriation.

8.3 Technology as discursive practice & technology appropriation as individual tactic

As my study shows, appropriation evolves as a response to the material, social and discursive technologies the organizational artifact alternately represents. On all levels normative ideas exist on what practice should ideally look like and who is in- or excluded from use. Although the three elements are highly intertwined, most prominent in my research were the responses to the language of community the artifact was introduced with in the organization putting forth prescriptions of commonality and coherence. It is for this reason that I claim that positioning technology as discursive practice has been vital in understanding the emergence of the deviating appropriations.

First, in line with commonplace community thinking the artifact embodies classifications of essences of membership with a view to the prospective user. Employees react to these imposed classifications and notice that they do not concur with their common practice of forming groups. One can say that the relative coherence of the imposed classifications does not agree with the complexity of social life.

Second, employees furthermore respond to the prescription of strong social ties with internal colleagues anchored in a bonding sense of belonging that is implied by the idea of community and deemed necessary to improve the organization's abilities to learn and innovate. These affordances of community are interpreted according to the prevailing institutional logic of the organization in that employees perceive contradictions with the organization's institutional logic that is geared towards internal competition as a result of which the conditions for knowledge hoarding within organizational boundaries

rather than for knowledge sharing across those boundaries are institutionalized into its accountability and reward system.

Third, the prescription of essences of membership and the implied strong ties of community to learn from co-workers disagree with the nature of work in the organization. As my study shows, work in this organization is characterized by a high degree of specialization, rapid knowledge development, short-term projects, and decreasing job security resulting from disappearing life-time employment – all those features that are common to knowledge work in general. In such situations where flexibility is needed (Beck, 1992), fleeting forms of cooperation and weak social ties prove to be more useful for people than long-term relations (Granovetter, 1973; Boas and Wellman, 2004) which require a 'certain degree of aloofness' and a 'superficial willingness to cooperate' rather than tight social bonds and behavior departing from values such as loyalty (Sennett, 1998).

My point here is that people respond to the implied change ideas by comparing the prescribed behavioral norms and essences of professional selves with how they *naturally* engage in processes of social networking, learning, and professional identity construction. The result of this is deviating appropriations in terms of perception and use and the divergence between promise and practice of virtual community.

This brings me to the proposition of technology appropriation as individual tactic because I found that not everyone who disagrees with the classifications of commonality and coherence is at liberty to reject them. As my research shows, on the one hand, people in organizations act in connivance with formal rules and regulations, and safeguard their own position in the organization through pragmatic relationships with those who hold formal positions. On the other hand, employees disregard formal rules and regulations and are able to withstand the impact of them and indulge in alternative tactics.

Furthermore, appropriation as individual tactic underlines the fact that people have different responses to the environment and to each other and, hence, to the technology. By explicating the various responses to the language, institutional context and affordances the artifact represents and relating these to the individual experiences of everyday work practice, the variety in individual tactics comes to light. To take an example from my study, the flexible nature of work in the organization results in many professionals having short-term and highly directed information needs. Consequently, they use the available information systems, the virtual communities, for instant gratification rather than for deeper and sustained forms of learning. They are so specialized (or knowledgeable) that they, rightly or wrongly, believe they can only find interesting learning partners in the 'outside world,' and use the internal systems as reputation mechanisms, or not at all. They react to the increased risk of losing their job by shifting their loyalty from their employer to their domains of knowledge and the attendant personal social networks to

keep abreast of new developments and maintain their market value, and prefer external to internal information resources.

Taken together, my work shows how appropriation should be looked upon first and foremost as discursive practice and individual tactic. Why people resist or conform to the technology has to do with the linguistic practices surrounding it. Also, perceiving technology appropriation as individual tactics also directs attention to the constraining dimensions of social structure.

After having discussed the main theoretical contribution of my work, I will in the next two sections turn to the empirical contribution of my work and the extent to which the findings of the study answer the central questions of the thesis. In short, the empirical contribution of the research lies in the fact that it goes beyond indulging in a preoccupation with the divergence between the desirable and the actual situation of narratives of modernity, as it also shows what the consequences of its dialectic are. That is to say, apart from demonstrating that the idealized representations of human practice in the artifact do not appeal to the experiences of employees' everyday work practices, the empirical findings also show how technology is creatively appropriated and transformed in the course of it by its users. Or rather, how technology is appropriated as cultural expression and active consumption. On the basis of these insights I will in section 8.5 suggest how the artifact of the study recursively organizes practice. Prior to this I will discuss how the artifact is creatively appropriated as cultural expression.

8.4 Appropriation as cultural expression

Appropriation as cultural expression refers to the fact that in appropriating the organizational artifact, my informants expressed aspects of their professional identity, i.e., their knowledge claims and learning behavior and the degree of solidarity that exists between employees.

First, my research shows how engaging with technology is an expression of social affiliation, i.e., an expression of attachment to certain social groupings. This can be explained by the fact that the various meanings people attach to the artifact are constructed in relation to their work practice and others with whom they engage in (working) relationships by means of it. In talking about the virtual communities they therefore inevitably make assertions about the knowledge claims of others and (hence) the boundaries of the profession in terms of who does and does not belong.

Notably, in my research utterances of detachment and disassociation from the groups as defined for the sake of the virtual communities by far outnumbered expressions of belonging and attachment. Due to the meanings of collectivity and sameness community

thinking carries, these expressions of disassociation related to judgments of self and other not fitting the category. Consequently, such groups promoted distinctions between 'us' and 'them' based on ideas of righteous and unjustified and membership and inferior and superior knowledge claims. These judgments of self and other are referred to in chapter six as boundary work.

In expressing their superior/inferior knowledge claims, differences in processes of knowledge construction were put forward by my informants. The observed detachment and difference is explained in my study by the fact that information sharing and learning behavior is dependent upon the way people enact their professional roles and tasks differently. In these enactments, they define their professional identity vis-à-vis the human and nonhuman other, that is, they formulate their knowledge claims and gaps in relation to the clients, projects, or technologies they are involved with.

Apart from differences in knowledge construction processes, the emerging dichotomies of belonging indicated the existence of the alternative domains of belonging other than the ones as assumed for the sake of the virtual communities. These are the groups as a part of which professionals operate to legitimate their knowledge or share knowledge. Departing from the various dichotomies of belonging, I found that talking about the alternative resources the virtual communities had to compete with pointed at a rather big reliance on personal social networks. These personal social networks related to knowledge sharing and learning include both social and physical resources (knowledge objects) people draw upon in performing their work. They consist of colleagues, bosses, professional associations, peers, clients, competitors, and internet resources. As these networks increasingly extend beyond the boundaries of the organization, they showed how the interwoven practices of knowledge and identity construction increasingly proceed beyond the reach of any single organization.

One of the reasons for the increased reliance on networking, as opposed to the traditional reliance on institutionalized and formal education, is that learning processes and processes of knowledge construction are typified by acceleration and narrowing. This is especially the case in the computing industry.[3] As I indicated earlier, knowledge claims are defined against a 'generalized other' in the form of technology, project and client. As these knowledge claims are highly volatile and rapidly outdated, to keep up their market value, employees will have to keep track with related developments and quickly master them. This demands accelerated learning processes and extensive specialization. This bias leaves no curiosity for other, related, matters in the field and to invest in a broader education would entail losing valuable time and weaken one's market value.

3 Acceleration refers to the shortening of years of study and the quick succession of developments in the computing industry, making employees less able to make the necessary differentiations in their knowledge. Narrowing refers to the diversity of roles in the sector as its inevitable outcome

The result of which is a pragmatic attitude, that learning should be readily applicable, and a reliance on other people's knowledge.

The reliance on personal social network is furthermore explained by the sequence of mergers and acquisitions damaging the existing internal relation networks, the prevalence of outsourcing, because of which employees are displaced in other working contexts, the shortening of contracts which takes away the assurance of employment for life, and cutbacks in people's individual learning processes. As a consequence of these common characteristics of the computing sector at the time of research, people are increasingly left to their own devices (Nardi *et al*., 2000). This increased individualization in terms of heightened awareness of individual accountability and personal risk (Garsten and Turtinen, 1999) results even more in the dependency on other people's knowledge.

One aspect of networking worth mentioning here is the fact that it entails the increased importance of the judgment of others and therefore the growing importance of reputation. In anticipation of the judgment of others, the wariness about how to present oneself wins ground. What matters are issues such as: How do I come across? Can I call upon a large network of professionals? How can I convince others of my capabilities? This increased importance of reputation is reflected in one of the appropriation patterns as discussed later in this section.

The study also provided insight into the 'organizing principles' of the personal social networks as the confrontation with the artifact showed the cultural categories that are actually drawn on for the mobilization of knowledge sharing relations. Further illustrating the typical knowledge processes in knowledge work practices I found that these include shared classification, ideas of complementary competences and affinity. In other words, people engage in knowledge construction relationships not only on the basis of cost-benefit considerations and risk reduction (Douglas, 1986) but also on the basis of personal liking. The two forms of commitment are referred to as calculated and affective identification. Affective identification refers to a feeling of commonality with people, pleasure in technology (Law, 2001; Kleif and Faulkner, 2003) and pleasure in one's occupation or craft (Wallman, 1979).

Taken together, the encounters with the socio-technical artifact demonstrated how selves and others come into consciousness through how people relate to or ultimately differ from others; others in the group, other groups in the organization, people from matching categories outside the organization, and the other in the guise of the non-human other. IT professionals engage in relationships with these 'mirrors of reflection' within and exceeding the formal structures of the organization in networks of belonging and jointly determine what it means to be a professional in any domain of expertise. In these processes of professionalization, solidarity with both human and nonhuman actors is organized according to the lines of feelings of affinity aside from complementary competences. This shows how professionalization is not so much a matter of common

claims to expertise, as presumed in the prescription of memberships, but that it is increasingly a matter of affinity.

In answering the question of how technologies are creatively appropriated, the empirical findings of the study show that the appropriation of the artifact embodying classifications of self, other and membership provokes self-reflection and explains why certain practices do or do not emerge as the dichotomies of belonging indicate the alternative orderings of employees.

Furthermore, as I argued in chapter one, people are not necessarily resisting the inscribed narratives of modernity, and with it the technology, but are making them into something that reflects the way they perceive the world. The result of employees attempting to preserve their own ways of ordering is the emergence of alternative modernities in the form of four patterns of appropriation. First, negation refers to the behavior in which the technology is worked around entirely. Second, confirmation refers to the behavior that approximates the ideals as presented in the promise of virtual community, i.e., as a learning device. Third, socialization is the pattern in which the professional uses the virtual communities in order to learn to become an accepted member of the group. Fourth, reputation is the behavior in which the virtual communities are interpreted not so much as learning devices, but as one of the tools available to "guide the impressions" others in the firm form of the professional (cf. Donath, 1997).

So far, I have reflected on the emergence of alternative modernities as a consequence of the inappropriateness of the promise in view of the actuality of practice or employees' individual ordering. In my study, however, creative appropriation of technology refers not only to deviating interpretations and appropriation as cultural expression, it also refers to appropriation as active consumption. The idea of active consumption refers to the ways in which users mould the technology in accordance with their sense of ordering. My point here is that not only are classifications of self and other reflected in the instances of cultural expression. In appropriation of the artifact, classifications and professional identities are also challenged and constructed anew (cf. Bowker and Star, 1999). In providing the answer to the second central question of the thesis, how does the creative appropriation of the organizational artifact recursively order practice, I will in the next section discuss how the reflected subjectivities subsequently contribute to the ordering logic of technology (Law and Moser, 1999).

8.5 Appropriation as active consumption

As it is my contention that what the organizational artifact mediates is an outcome of the dynamic interplay of imposed structures and individual tactics, what the technology mediates is also a matter of practice influencing practice *through* the technology. On

the basis of the four patterns of appropriation and the reflected subjectivities, I will in this section suggest how creative appropriation of the artifact recursively shapes organizational reality. In doing so, I will focus on the following two generalized forms of appropriation: socialization and reputation.

First, in the case of socialization, the professional participates in the virtual community with the intention of finding out what other members of the professional group know differently. On the basis of the knowledge displayed in the virtual space and the members it contains, employees comparatively determine their relative superior or inferior status. Employees define their professional identity and their work practice against the other members of the group and other groups through the artifact, so to speak. The artifact, in this instance of boundary work, provides an alternative form of legitimization of individual professionalism, a *virtual mirror* as it were, other than the generalized other in the form of the previously mentioned client, project and technology.

In line with the fact that socialization is a continuous and 'incomplete process' (Trice, 1993), the following movements can be detected: entering and leaving a professional group or the organization, respectively referring to entrance and exit behavior. First, familiarity with the knowledges and practices represented in the virtual space may reassure an employee's belonging to the group and confirms his or her professional identity. The argument is as follows: 'If that is the level of the IT professional, then I can consider myself to be a member of the professional group.' In the case of feelings of inferiority, however, participants are likely to behave as the novice and appropriate the displayed knowledge in the virtual community in order to rise to the level of the group. Technology used as a tool for entrance shows how participants retrieve the knowledge posted in the virtual community so as to present it later as their own. On the basis of this, new tasks and roles may be performed and eventually new professional identities may be assumed.

The knowledge and practices displayed in the virtual workspace may also let the professional decide to be more knowledgeable, skilled or experienced in a certain domain. On the basis of this conclusion the elder, or established employee, may decide to 'move onwards', that is, turn to other information resources in the form of systems and people. These are more often than not located outside the organization as the elder is in search of new answers. Consequently, the elder exits the group and gradually enters a different group, or leaves the organization and eventually assumes a new professional identity. This exit behavior is included in the appropriation pattern referred to as negation. The pitfall of the simultaneous occurrence of entrance behavior of the novice and exit behavior of the elder is of course that it is a vicious cycle in which socializing newcomers or novices visit their virtual communities but do not find the colleagues from whom they could learn most effectively.

Second, in the case of reputation, the professional seems an active participant at 'face value' in terms of providing information in the virtual space, while in fact he or she may be participating in such a way that only the socially desirable information is presented rather than the actual 'working knowledge' and experiences on the job.[4] The virtual space interpreted as a way of fashioning the professional self (cf. Miller, 1995; Miller and Mather, 1998; Jacobson, Ellison *et al*., 2006) provides a new way of constructing professional selves in various ways.

To begin with, reputation with the aim of convincing others that they should be granted authority to perform a job or soliciting for new projects can also be looked upon as a form of entrance behavior. The reason for this is that on the basis of the online status *new* kinds of projects may be acquired, enabling the professional to gradually establish oneself into another domain of expertise on the basis of which new roles and tasks and gradually also new professional identities may be assumed.

Furthermore, in the case of reputation, the artifact may function as a confirmation of superior occupational status not necessarily derived from education, the traditional marker of professional authority (Dingwall and Lewis, 1983). Moreover, if people feel they have to live up to their and, more importantly, to others' online reputation, meaning "to act 'in character' with the projected [idealized professional] self" or various selves (Donath, 1997: 33), the artifact mediates the 'formalization of status'.

So far, I have reflected on the effects of technology appropriation when knowledge and professional identity construction are concerned. Yet, related consequences of the various patterns of appropriation concern the formation of group solidarity, referring to processes of binding and disintegration.

As my research shows, the kind of appropriation depends on membership statuses of novice and expert, the levels of commitment, the degree of 'feeling for', of an employee and the kinds of knowledges displayed online taken as the virtual mirror. In the case of the reputation, employees do share some irrelevant or redundant information but keep the important matters outside the tool. For, when someone is perceived as an active participant in the virtual community it might suggest that he or she is of high market value. As a consequence of such 'conspicuous information production' (cf. Feldman and March, 1981), and due to the obligatory codification mentioned in chapter five, a large part of postings in the virtual space concerns formalized and explicit knowledges typically representing the 'already known' or 'elsewhere widely available'.

When processes of bonding are concerned, for outsiders, newcomers or less inquisitive professionals wanting to enter the professional group, the 'already known' and 'elsewhere widely available' could confirm belonging to a particular group (Crogan,

4 The reason for this is that in order for their standing to be confirmed by other people, they should give some clues but not divulge all (Barth, 1990). In the age of knowledge as distinction (cf. Bourdieu, 1979) and education as public good, 'if this is the knowledge I distinguish myself from others with (defined interpersonally), then I do not want other people, especially of lower ranking, to possess the same kind of knowledge'.

2004). Conversely, the elder and 'passionate or driven' professional can dispense with the established routines and, in search of new answers and people with skill, they use the technology in order to cross the formal boundaries of the group and the organization. Thus, the novice and less inquisitive professional conform and look inwards whereas the elder and passionate professional deviate and look outside (and most likely become the exit employee). On the basis of this observation one could conclude that the artifact has a binding effect for the former and a disintegrating effect for latter group of employees.

A final remark concerns the organizing principles of the emerging forms of solidarity. Novices and less experienced professionals incorporate the prevailing concepts of the group with the aim of learning to become a member of the group. This form of solidarity is comparable with the previously mentioned complementary-competences form of commitment of self and other. The newcomer's insecurity and search for clarity contribute to the willingness to adopt the values and norms being in force. This process of normalization can be referred to as calculated identification for it pays off to adjust oneself to the values and norms of the group (Kloos, 1991). In contrast, the exit behavior of the elder and the passionate professional is comparable with the affective form of commitment as they exhibit a certain drive in searching for new information and people with skill. Paradoxically, as they form networks across formal organizational structures a shifting of loyalty occurs. In some instances in the study informants indicated that the commitment shifted to the professional domain in place of the organization.

In this section I first explained that while appropriation of the artifact may confirm identity, it may also prompt the professional to assume a different role. Second, I argued that in appropriating the artifact the boundaries of the category of a certain profession are negotiated.[5] Thus, the consequences of computer-mediated communication on processes of professionalization, understood in terms of socialization, reputation and group solidarity (Dryburgh, 1999), are that the technology provides for new mirrors of the professional self. Legitimization, or justified professional identity, occurs in the face of the other confronted with through the technology. Who we say we are and what we say we do is constructed in relation to the institutions we are a part of and the human and inhuman objects we are confronted with in the course of our working existence, that is, in abiding by and opposing the ideas these artifacts carry. Accordingly, the technology of the study is one of the many structures against which to negotiate professional identity and individual practice.

Above all, the outcome of the recursive ordering shows how the (top-down) engineerability of practice is limited. The empirical evidence it furnishes shows how

5 This blurring of boundaries between 'novice' and 'elder' is referred to by some people as 'deprofessionalization' (Beck, 1997; Trice, 1993; Haug, 1973). Particularly in the IT profession, a profession which is not yet as formalized yet and, as I showed in chapter six, where job descriptions are acquired by simply 'doing the job', digitalization of expert knowledges promotes all the more such informal induction into social roles (Haug, 1973; Hardey, 1999).

technology is specifically appropriated by employees in an attempt to modify the various expectations the artifact represents. In doing so, employees impose their individual ordering on the groups as defined for the sake of the virtual community and, hence, on the organization. It remains a process of negotiation but as much as the technology may facilitate social relationships and influence how people imagine their working existence, it equally provides the employees the means to inflict their logic and contribute to the recursive ordering of practice.

8.6 New directions for research

On the basis of my empirical work, various new directions for research can be formulated. First, in order to further our understanding of how the four patterns of appropriation relate to each other and to the various kinds of membership statuses, levels of commitment and knowledges shared, the ethnography should be part of a comparative project. The research setting of my study is a context characterized by a specific tradition of knowledge hoarding and administrative structures stemming from the state-owned computing centre. Metaphors of tool and infrastructure are telling for the context, indicating a general detachment and lack of interest ('feeling for').[6] Because in a use environment with other characteristics the technology might have different effects altogether (Zuboff, 1988), a comparative analysis of the four appropriation patterns in a use environment where attitudes of pleasure in technology and occupation and feeling with commonality prevail is suggested.

A second strand of future research concerns 'completing' the empirical investigation of the travel of ideas as mediated by technological artifacts. This would require including the traditional design context in the study, i.e., the context in which technical designers give shape to the features and functions of a technology. In my work the design inscription is included in the research retrospectively, meaning it is inferred, or 'read backwards', from product descriptions and responses of users. A better understanding of the ways in which people imagine their working existence as influenced by technologically mediated narratives of modernity requires investigation of how specific narratives are translated into design specifications of a technology to begin with.

Third, to take the investigation of the overall movement of ideas further requires including a more extensive investigation of the movement of people. Despite the fact that my study provides insights into the connectivity of people and systems within and exceeding beyond the boundaries of the organization, it does not fully portray how

6 As I explained in chapter six, the technology as tool metaphor points at an instrumental view of practice and a relative distancing from the technology one is confronted with as part of everyday work practice. The organization as infrastructure refers to a low sense of belonging to the organization and is indicative for a pragmatic attitude.

people as carriers of ideas 'travel'. Just as the study of appropriation should not be confined to the technology under observation (a technological artifact as starting point of a research) but should be investigated in its consumption junction (the user as starting point for investigation), the context of technology use should not be confined to fixed geographical locations (the firm, albeit distributed, as starting point for investigation). Instead, studying the travel of ideas requires a more dynamic, boundary-spanning kind of research in which the formal boundaries of an organization should not be taken and mistaken for the circumscription of the research object.

As my research shows, such a conception of the research object would be more in line with my informants' experiences as the boundaries of the organization are in the eyes of the professional often perceived as rather arbitrary. Whereas in the past people described their career in terms of the organization they worked for, nowadays they are more inclined to describe their work in terms of their job description, making the organization secondary to their career. Notably, at the time of writing most of my informants, voluntarily or involuntarily, left the organization and continued their work as project manager, consultant or technical engineer in another organization.

In studies of work the object of research should thus not be confined to the locus of research. Instead, in studying the interconnectivity of professionals, individual professionals should be followed during the course of fieldwork as they move from one context to the next (cf. Henwood *et al.*, 2002). As professionals are increasingly connected in networks which extend the boundaries of the organization, the various professional communities and personal social networks professionals participate in should be included in the study of how ideas are transposed from one context to another, letting go of the physical and formal boundaries of the organization. Such an approach to corporate fieldwork would do more justice to the concept of connective ethnography.

Appendices

Table 1: Overview topics log file (most frequent 43)

Agenda	19.749
Meetings (business, social, trainings, seminars)	19.525
Minutes meetings	17.605
Client information	9.465
Relation matrices	7.255
Fringe benefits	6.396
Plans	4.977
Corporate communication	4.958
Market developments	3.570
Templates	3.479
Recruitment (personal)	3.321
Business plans (organization-wide)	3.300
Research (Gartner etc.)	2.967
Literature & Links	2.937
Manuals	2.783
Technical platforms (ERP, SAP, ORACLE, OLAP)	2646
Programming Languages	2.346
Organization charts	2.154
Price & Contract information	2.109
Architecture	1.760
Knowledge databases	1.724
Products & Services	1.621
Job specifications	1.477
Shared symbol system (letterheads, naming etc.)	1.417
Profile (groups and individuals)	1.265
Best practices	1.170
Software	1074
Methods	1004
Acquisition (projects)	873
Tools	841
Functional design	830
Quality & Performance	823
Wage freeze	781
Outsourcing	751
HRM	635
Annual reports	417
Archive	386
Security	383
Interviews with employees	273
Hardware	243
Quotation company stock	217
E-business	217
Marketing & PR	181

Table 2: Overview categories of knowledge posted in the virtual space

Sociability	64231	37,93 %
Social expertise	32555	19,23 %
Formal representations of practice	25526	15,07 %
Institutional	23645	13,96 %
Technical expertise	23368	13,80 %
Total	169325	99,99 %

Sociability: information concerning offline meetings, social gatherings and profile information.

Institutional: information concerning the politics of the organization and the shared symbol system (the wage freeze of the time, fringe benefits, annual reports, company stock, etc.).

Formal representations of practice: templates, plans, methods, checklists, standards, project plans, relation matrices, organization charts, manuals, etc. Also referred to as the general type knowledge.

The expert type, as opposed to the general type, is described as being focused on the exchange of information and knowledge pertaining to a specific field of interest (Coleman, 1998).

Social expertise: specific messages containing information about market developments, client information, prices and contracts, quality and performance, etc. Also referred to as business and management expertise (economical).

Technical expertise: hardware and software programs, programming languages, techniques, etc.

Table 3: Overview Codes Qualitative Analysis

CODEBOOK[1]					
DOMAIN	**FACTOR**	**SUBFACTOR**	**VAR**	**Explanation Code**	**THEME**
Culture (knowledge, expertise and learning).	Education	Education, biography	EDU BIO	Formal education and training. From education to education. Length and sort.	Socialization: "the process of learning to become a member of society, including both formal education and the informal induction into social roles" (Fischer *et al.*, 1996), Knowledge, Technical knowledge vs. business knowledge, Learning: "to gain knowledge or understanding of a skill by study, instruction or experience" (Fischer *et al.*, 1996).
		Education, evaluation	EDU, EV	Formal education and training.	Socialization; Knowledge; Learning; Interest; Broader socio-economic framework/ lifecycle technology
	Work experience	Work experience, biography	WO EXP, BIO	Biography career (Dito incl.): from job to job; organization to organization. Length and sort.	Socialization, Learning
		Work experience, evaluation	WO EXP, EV	Evaluation career	Socialization, Knowledge, Learning, Broader socio-economic framework/ lifecycle technology
		Personal knowledge/ expertise	PERS K/E	My expertise is (not). Applicability of knowledge.	Personal vs. common knowledge, Learning, Reciprocity.
Technology	Technological metaphors	ICT, metaphor	MET	Image of ICT; as enabler, as change agent, as culture disseminator, as liberating device, etc.	Technological determinism, technological fetishism, Belief in technological progression, Technological framing, Symbolic or ideological role of technology.
					Identity, Interest, Status, Prestige, Trust, Boundary spanning practice, Routines, Hierarchies, Language usage: "project", "planning", "template", "presentaties", "best practices", "sparren", "toegevoegde waarde", "klant", etc.
Economic Activity	Practice	Job, description	JO DE	I am a … (personal)	Professional identity, Language usage, Categorical membership
		Job, evaluation	JO, EV	What I think about my work (personal)	Commitment, Interest (motivation)
		Profile/ employee, description	IND, DE	Profile of the Dito employee. Recruitment, education and training.	Formal structure, Sense of belonging

CODEBOOK[1]					
DOMAIN	**FACTOR**	**SUBFACTOR**	**VAR**	**Explanation Code**	**THEME**
		Organization biography, description formulae	OR BIO	General information: Dito and its history.	
		Work practice shared, description (formulae) (modifiers: OR/ SU/ BU/DEP)	WP SH	Shared practice. What is the organization/SU, BU, DEP about? 'What we DO'/ 'what sort of organization we are'. (As opposed to other organizations.)	Corporate identity/ image, Language usage, Rules, routines, customs Formulae versus actual practice.
		Work practice professional, description (modifier: personal or general)	WP PROF	What a profession is/does. In relation to what other professions do (general) Individual practice. What I do/ don't do (personal)	Professional identity, Language usage, Knowledge/expertise and related skills, Personal vs. common knowledge. Formulae versus actual practice.
		Work practice collaboration, description (modifiers: personal/ general; internal/external)	CO OP	Relation networks of collaboration. Which working collectives can be distinguished? (general) In my work, I work with (personal)	Sense of belonging to, Status within social structure, Boundary spanning practice
		Work practice, ways of working (modifier: personal or general)	WO (TO)	How? Obstructions?	Rewarding/ sanctioning system, Hierarchy/ power, Power (e.g. managerial determinism, decision making confined to specific individuals/groups). Authority/ influence of groups/ individuals. Formal/ informal; Language: ways of addressing people Enculturation/ socialization
		Work practice, information sharing (modifier: personal or general)	IN SH	How (if at all)? Open, closed. Obstructions? (general) What do I do? (personal)	Rewarding/ sanctioning system, Hierarchy/ power, Power (for ex. managerial determinism) and decision, Language: ways of addressing people, Enculturation/ socialization
	Resources	Work practice, information resources; systems, people, books, courses, etc (modifier: personal or general)	IN RES	What do you do to keep up your knowledge? Available information sources (general) I get my information from (personal)	Learning (study, instruction or experience), Enculturation/ socialization, (Second hand) knowledge

CODEBOOK[1]					
DOMAIN	**FACTOR**	**SUBFACTOR**	**VAR**	**Explanation Code**	**THEME**
					Boundaries, Formal/ informal structures (groups), Sense of belonging-to, Commitment, Language, Personal networks (ego-based, individual's efforts, experiences and history), Contact, reciprocity, opportunity, effort, need to create mutuality, Enculturation/ socialization
Society	Organization	Organization cohesion	OR CO	To what extent is the organization perceived as a whole? Organization as "we"/"us"?	Formal/ informal vision of the organization, Personal vs. common knowledge, Language: 'we', 'us', 'here', 'the organization', Identification
	Organizational groups OR/SU/BU/DEP/ NE (modifiers: general/ personal role	Group identity, description	GR DE	How are the various formal groups of people to be distinguished from one another in terms of: information sharing, ways of working together-, expertise or interests? (general) What is the individuals' role in it? (personal)	Corporate (group) identity, Formal structure, Sense of belonging, Individual status, Formal/ informal, Hierarchy, Power, Knowledge
		Identification groups (modifier: OR/ SU/BU/ DEP)	ID GR	Identification of Self with organizational units (subsidiary, business unit, department, individual).	Formal/informal (internal/external), Sense of belonging, Personal vs. common knowledge, Individual status, Boundary spanning identification
1	Networks (modifier: group; personal/ general; internal/ external; physical/ virtual)	Network, description	NE DE	Alternative groups of information sharing/ collaboration in the organization (general). In which I am participating (personal). In the core organization (internal). Exceeding the boundaries of the organization (external) Without a virtual component (physical). With a virtual component (virtual)	Group identity, Formal/ informal, Boundary spanning behavior, Sense of belonging, Ego-based (alliance) or institutional, Formulae vs. actual practice
2		Network, biography (modif: see 1.)	NE, BIO	Genesis and rationale of network	
3		Network, objective	NE OB		

CODEBOOK[1]					
DOMAIN	**FACTOR**	**SUBFACTOR**	**VAR**	**Explanation Code**	**THEME**
4		Network Expectation (modif.: see 1.)	NE, EX	What is expected of the network, for the org as a whole (general) and the individual participant (personal).	Prospective structure
5		Network Membership (modif.: see 1.)	NE ME	Criteria membership: who? SU/BU/ DEP/IN? How does one become a member?	Membership, Boundary spanning
6		Network use (modif.: see 1.)	NE USE	Current workings of the network. Activities (F2F). What is it used for? (general) Individual contributions/ activity (personal)	Status (an individual's position in a social structure)
7		Network in/activity (modif.: see 1.)	NE IN/ACT	Reasons for in/activity	Reciprocity, Obligation
8		Information sharing (modif.: see 1.)	NE INSH		Exchange, Altruistic/ opportunistic, Competitive/ co-operative
9		Modes of sustaining the network (modif.: see 1.)	NE SU	Solutions, Modes of sustaining the network, How to motivate people to co-operate/contribute?	Reward, Sanction
10		Network, Evaluation (modif.: see 1.)	NE EV	Value of the network for the organization (general) Value for individual practice (personal)	
11		Network Impact (modif.: see 1.)	NE IMP	Other activities that spring from it. Interacting with routines etc.	
	Virtual Community	VC, general definition	VC DEF	General description: What is a VC? What makes this group a VC?	Technological metaphor (democratizing, changing power structure, etc).
		VC experiences	VC EXPC	Experience with other VCs or similar applications	Technological metaphor (democratizing, changing power structure, etc).
1		VC, description		1st order features (structure, applications and content).	

CODEBOOK[1]					
DOMAIN	**FACTOR**	**SUBFACTOR**	**VAR**	**Explanation Code**	**THEME**
2		VC, biography (modifier: personal or general)	[HI(P)C]	Historical reconstruction. Rationale project its predecessor (general) Reason joining (personal)	
3		VC objective (modifier: personal or general)	[OB(P)C]	Goal and intended use. What to reach with it (general). Reason for joining. Intent of participation (personal)	
4		VC, expectations (modifier: personal or general)	VC EX	What the VC should become; **role, value, development**? For organization (general); for individual practice (personal).	Prospective structure, Divergence between the different interest groups, Expectation statements
6		VC membership (modifier: personal or general)	ME(P)C	Nr. of people. Where located. Who excluded.	Boundaries in terms of levels of access.
6		VC current use (modifier: personal or general)	VC US	What kind of activity? Uses and purposes to which VC is put. Most popular features and functions? Information posted (and, what not) (general). Usage (personal)	Difference with physical conduct, Representing the different interest groups as a manifestation of power struggles, "De-colonization" strategy? Hoarding information? Or exaptation: use technology in different ways than intended, Degree of openness, hierarchy, and socialization in virtual space, Information behavior, netiquette, relevant social groups.
7		VC reasons (in) activity (modifier: personal/ general)	VC IN/AC	The organization is obstructing the use of VC (general); Individual is obstructing (personal)	
8		VC Info sharing (modifier: personal or general)	VC IN SH	Information sharing in VC (general) Reading/ posting (personal)	
9		VC sustaining (modifier: personal/ general)	VC SU	Modes of sustaining the VC: self-organization, stimulation co-operation.	Reward, Sanction
10		VC evaluation (modifier: personal/ general)	EV(P)C	Normative def of VC; value; perceived usefulness	

CODEBOOK[1]					
DOMAIN	**FACTOR**	**SUBFACTOR**	**VAR**	**Explanation Code**	**THEME**
11		Impact of VC (modifier: personal/ general)	IMC	Perceived effect in terms of interpersonal relations, group formation, interacting with routines	Colonization (acting out as normative regulations), 'Disrupting technologies'
		VC technical management	VC TECH	Management, network, security	
		VC technical functionality	VC TECH FUNC	Description functionality in technical terms	
Research-process	Role interviewer	Self reflection	Self reflection	Reactions to ethnographer, Influencing/directing outcome.	Reflexive researcher

1 The Codebook is inspired by the following 'supercodes' of the APFT Content Code System (Fischer et al., 1996): CULTURE: 1. Symbolic expression; 2. Boundary work; 5. Ritual; 6. Socialization; 7. Knowledge; 9. Language, Modifiers: public (commonly shared); private – personal. SOCIETY: 1. Group; 2. Individual; 3. Corporate; 4. Categorical; 5. Institutional; 6. Political (power); 7. Alliance; 8. Gender; 10. Status, Modifiers: c. cooperative d. competitive e. altruistic f. external g. local. ECONOMY: 1. Exchange (reciprocity); 14. Property; 15. Resources. JURAL: 1. Norm; 2. Sanction; 7. Deterrence; 11. Obligation

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Samenvatting (Dutch)

De huidige samenleving wordt vaak aangeduid met de term 'informatiesamenleving'. Kenmerkend voor deze informatiesamenleving is de opkomst van kenniswerk (lees: individuele autonomie en creativiteit) en de toenemende toepassing van informatie- en communicatietechnologie (lees: het geloof in lineaire vooruitgang). Het doel van mijn onderzoek was te bestuderen hoe enerzijds mensen in specifieke microsociale contexten onder invloed van dergelijke laatmoderne narratieven hun bestaan ervaren en anderzijds hoe als gevolg hiervan zich nieuwe 'sociale denkbeelden' (*social imaginaries*) ontvouwen. Meer specifiek was mijn onderzoek gericht op de rol die door technologie-bemiddelde visies van werk en organisatie spelen in het vormen van professionele werkpraktijken en op de manier waarop deze moderne narratieven aangepast worden op basis van de zogenaamde 'kleine verhalen' van de praktijk. Om te bestuderen hoe door technologie-bemiddelde ideeën materialiseren in microsociale contexten heb ik een etnografisch onderzoek uitgevoerd naar het gebruik van een intern informatiesysteem in een grote Nederlandse IT-organisatie.

Creatieve toe-eigening van technologie

Omdat het onderzoek de materialisering en vervorming van door *technologie-bemiddelde* moderne narratieven betreft is de belangrijkste referentiediscipline voor de theoretische achtergrond van het onderzoek de 'sociale bestudering van technologie'. Met name de theoretische inzichten van inscriptietheorie, de sociale constructie van technologie en domesticatietheorie spelen in het onderzoek een belangrijke rol. Het gevolg hiervan is dat zowel aandacht wordt besteed aan het ingeschreven karakter van technologie (inscriptie), als aan de verschillende manieren waarop technologie subjectief toegeëigend wordt (interpretatieve flexibiliteit). Een belangrijke toevoeging hierbij is dat zowel de bredere context van inscriptie en interpretatie in acht worden genomen.

Ten eerste is technologie meer dan de optelsom van technische eigenschappen. Het belichaamt ook sociale en discursieve elementen. Op elke niveau (maatschappelijk, institutioneel en materieel) zijn technologieën ingeschreven met specifieke verwachtingen met betrekking tot de beoogde gebruiker en zijn of haar (werk)praktijken. Wanneer mensen met technologie interacteren, worden ze geconfronteerd met deze normatieve ideeën. Ook in het geval de 'voorgeschreven' (*prescribed*) gebruiker niet overeenkomt met de daadwerkelijke gebruiker (*user-in-the-flesh*) zal de confrontatie met de geprojecteerde ideeën actoren beïnvloeden in de perceptie en constructie van praktijk en identiteit.

Ten tweede trachten mensen op het moment dat ze gebruik maken van technologie zoveel mogelijk de essentie van hun eigen economische, sociale en culturele ordening te waarborgen. Daarom schrijven ze op hun beurt de technologie in met betekenissen

(*actieve consumptie*). De verschillende toe-eigeningen door de 'relevante sociale groepen' veroorzaken een dynamisch spel van onderhandelingen ten overstaan van de verschillende elementen die de technologie vertegenwoordigt. De (tijdelijke) uitkomst van deze continue en wederzijdse manipulatie is in mijn onderzoek aangeduid met de term 'alternatieve moderniteiten'. Zowel praktijk als technologie worden gevormd in dit proces van wederzijdse onderhandeling: technologie herdefinieert de gebruikers en hun praktijken, en gebruikers herdefiniëren de technologie.

Om de individualiteit van toe-eigeningprocessen van technologie te onderstrepen doe ik tevens een beroep op de praxistheorie van De Certeau en met name op het begrip van 'individuele tactieken'. Individuele tactieken zijn in mijn onderzoek de creatieve, individuele, antwoorden op de technologie. De notie van individuele tactieken onderstreept het feit dat toe-eigening van technologie wordt ingegeven en beperkt door dimensies van sociale structuur. Individuele tactieken worden gedefinieerd in interactie met 'de eigenschappen van anderen'; het zijn reacties op strategieën, zoals bijvoorbeeld belichaamd door technologie, maar ook reacties op de omgeving waarin ze geïmplementeerd wordt en de ander waarmee men geconfronteerd wordt in die omgeving. Creatieve toe-eigening moet daarom begrepen worden als de alledaagse onderhandeling van betekenis ten overstaan van een meervoudig gelaagde context.

Om te bestuderen hoe professionele werkpraktijken en technologie onderhandeld worden, zijn de volgende twee centrale vragen in het onderzoek beantwoord: *(1) Hoe ziet het proces van creatieve toe-eigening er in verschillende lokale contexten uit? (2) Hoe wordt de praktijk (recursief) gestructureerd door het proces van creatieve toe-eigening?*

Door deze vragen te beantwoorden beschrijft mijn proefschrift enerzijds de verschillende manier waarop mensen zich de waardegeladen technologie toe-eigenen en hoe dit een actief en vooral creatief proces is. Anderzijds laat het aan de hand van de individuele tactieken zien hoe dit onderhandelingsproces de kenmerkende aspecten van de informatiesamenleving, kenniswerk en de bemiddelende rol van moderne (informatie- en communicatie)technologie aan het licht brengt.

Empirische studie

De etnografische studie is uitgevoerd in een Nederlandse IT organisatie (Dito) in het begin van de 21ste eeuw, een tijd die wordt gekenmerkt door de ineenstorting van de dot-com industrie (de zogenaamde dot-com crisis) en het begin van een economische neergang. In de tijd van het onderzoek is Dito een organisatie van ongeveer 9000 werknemers, 15 dochtermaatschappijen en 25 kantoren verspreid over het land. De informanten van het onderzoek noemen zichzelf managers, consultants, projectmanagers, software-

engineers, datawarehousearchitecten en salesaccountmanagers. Naar aanleiding van de persoonlijke werk/technologie biografieën van de informanten (zie hoofdstuk 3) wordt duidelijk dat deze groep 'kenniswerkers' allerminst gezien kan worden als een homogene groep. Dit is het gevolg van het verschil in economisch klimaat en werkgelegenheid van de tijd waarin mijn informanten zich voor het eerst op de arbeidsmarkt begaven, de snelheid van technologische ontwikkelingen in de IT-industrie en de mogelijkheden voor IT-scholing.

Het onderzochte artefact is het informatiesysteem dat in de organisatie is geïntroduceerd met de bedoeling om 'virtual communities' te vormen. Het begrip virtual community verwijst naar informele verbindingen tussen mensen op basis van gedeelde expertise en interesse, bemiddeld door informatie- en communicatietechnologie. Het artefact is specifiek bestudeerd als een modern narratief van technologie en werk, temeer daar de idee van community/gemeenschap een centraal begrip is in het narratief van de informatiesamenleving. Het empirische object van het onderzoek is dus de toe-eigening van de idee en technologie van 'virtual community' in de verschillende contexten van de organisatie.

Om de verschillende krachten in de dynamische wisselwerking van taal, context en techniek te onderzoeken was het empirische werk in de volgende drie fasen van toe-eigening onderverdeeld: (1) het 'discurieve reizen' van de ideeën ICT, community en virtual community in de wetenschappelijke en populaire literatuur; (2) het 'landen' van de ideeën in de organisatie en (3) de 'translatie', 'uitvoering' en 'modificatie' van het sociotechnische artefact door de verschillende relevante sociale groepen in de organisatie in termen van interpretatieve flexibiliteit en daadwerkelijk gebruik. Deze aanpak is in mijn onderzoek aangeduid als de 'reis der ideeën'.

Om de verschillende toe-eigeningspatronen vanuit het perspectief van de actoren te bestuderen heb ik een etnografisch onderzoek uitgevoerd. De speciale vorm van etnografie die in het onderzoek wordt toegepast, is aangeduid met de term connectieve etnografie. In tegenstelling tot de traditionele etnografie die gebaseerd is op geografische plaatsen met onveranderlijke en gesloten grenzen, biedt de connectieve etnografie een ontwerp voor etnografisch onderzoek gebaseerd op de verbindingen tussen mensen, ideeën en objecten. Deze herziening van etnografisch onderzoek is noodzakelijk gezien de toenemende interconnectiviteit van sociale werelden in het algemeen en de toepassing van computer-bemiddelde-communicatie (CMC) in het bijzonder. Naast belang toe te schrijven aan het delen van tijd en ruimte met informanten, positioneert de connectieve etnografie het idee van connectiviteit als medebepalend voor de betekenisvolle context van etnografisch onderzoek. Connectiviteit verwijst hier naar de toenemende verbindingen tussen informatiebronnen in de hoedanigheid van mensen, technische systemen en teksten, zowel met als zonder CMC.

De connectief etnografische methode vertaalt zich in mijn onderzoek naar zowel traditionele (*offline*) als virtuele (*online*) technieken van dataverzameling. Ten eerste laat een discours analyse zien hoe het begrip virtual community is overgenomen uit de wetenschappelijke en populaire literatuur en vervolgens 'landt' in de organisatie. Ten tweede brachten 60 formele interviews met werknemers de verschillende gebruikservaringen aan het licht. Participatieve observatie in de organisatie maakte het vervolgens mogelijk deze verhalen in verbinding met de onderzoekssetting te brengen. Ten derde maakte een sociale netwerkanalyse van de 'log-file' data van het systeem, de 'digitale voetsporen', het mogelijk de toe-eigening van de voorgeschreven virtuele gemeenschappen in termen van daadwerkelijk informatiegedrag te bestuderen. Ten vierde zijn participatieve observatie in en inhoudsanalyse van de virtuele werkomgevingen toegepast om te begrijpen hoe de verschillende toe-eigeningspatronen zich verhouden tot het doel van de communicatie in de virtuele werkomgevingen en de inhoud van de gepubliceerde berichten.

De diversiteit aan methoden integreert de verschillende niveaus van toe-eigening van het virtual community idee en voegt context toe aan de etnografie in termen van intertekstualiteit en interconnectie van mensen, zowel met als zonder behulp van computer-bemiddelde-communicatie. Met name de combinatie van de interviewgegevens en de *online social network analysis* (OSNA) vestigde de aandacht op de bredere context van alternatieve bronnen van informatie in de vorm van zowel technische systemen als mensen (*consumption junction*). Temeer omdat observatie van de log-bestanden het mogelijk maakte om de niet of minder actieve deelnemers (*lurkers*) in het onderzoek te betrekken.

Bevindingen

De resultaten van het onderzoek zijn drieledig. Ten eerste vertoonde het artefact van het onderzoek een divergentie in de organisatie tussen wenselijke en werkelijke praktijk. Ten tweede weerspiegelde de confrontatie met de verschillende niveaus van inmenging aspecten van het professionele subject in termen van kennisconstructie en groepsvorming. Ten derde liet de toe-eigening van het artefact zien hoe deze processen van professionalisering zich specifiek in de IT-industrie en met behulp van moderne informatie- en communicatietechnologie voordoen.

Te beginnen bij de belofte van virtual community. De discoursanalyse maakte duidelijk dat het begrip community/gemeenschap zowel in de sociale theorie als in het organisatiediscours nog altijd een sterk positieve connotatie heeft gekenmerkt door een sentiment van 'behoren-tot' (*belonging*). Dit optimistische en geïdealiseerde beeld van menselijke praktijken is weerspiegeld in wat virtual community (ICT en community) naar

verluidt in het organisatiediscours mogelijk maakt voor de deelnemers: 'empowerment', ervaringsgebaseerde kennisdeling, overschrijding van formele structuren en horizontale verbindingen.

Dito's managers introduceerden het idee van virtual community in overeenstemming met het ideaal zoals aangetroffen in het organisatie discours. Echter, geconfronteerd met een verslechterde economie en de noodzaak tot 'reorganisatie' zien managers in de idee en technologie van virtual community een instrument voor efficiëntie, coördinatie en toezicht.

Dat de professionals op hun beurt in het gebruik van het sociotechnische artefact afwijken van het ideaal heeft te maken met tegenstrijdige beloften wat betreft de mogelijkheden van de technologie (*affordances*), deels gezien de specifieke context van toepassing, en de onverenigbaarheid met de taal waarmee het artefact in de organisatie geïntroduceerd werd. Allereerst, met betrekking tot de mogelijkheden en onmogelijkheden van de technologie wordt ICT, in tegenstelling tot het ideaal, gezien als een onpersoonlijk, geabstraheerd (doelend op de noodzakelijke codificatie van kennis) en een gedecontextualiseerd medium ongeschikt voor kenniscreatie en deling. Informanten laten vervolgens zien hoe specifieke eigenschappen van de technologie onverenigbaar zijn met het beleid en de structuur van de organisatie. Genoemd worden het beloningssysteem dat gericht is op interne concurrentie als gevolg waarvan voor werknemers het delen van kennis samengaat met het verlies aan individuele marktwaarde.

De meeste argumenten ter verklaring van de 'afwijking' in interpretatie en gedrag van de deelnemers van de virtuele gemeenschappen zijn te vinden in de classificaties van behoren-tot die het begrip community/gemeenschap veronderstelt. Dat wil zeggen dat in tegenstelling tot ideeën van gemeenschappelijkheid, homogeniteit en uniformiteit van lidmaatschap die het gemeenschapsdenken (abusievelijk) uitdraagt, het onderzoeksmateriaal laat zien hoe verschillende wij-zij dichotomieën op basis van verschillen in leerfoci en kennisclaims de voorgeschreven groepen fragmenteert.

Ten eerste, veel informanten zien een discrepantie met de gepubliceerde informatie in de virtuele werkomgeving en wijten deze aan de grote verscheidenheid aan informatiebehoeften en snel veranderende leerfoci. In het algemeen is het leergedrag van IT-professionals afhankelijk van de manier waarop ze hun professionele rollen en taken invulling geven. Dat wil zeggen, afhankelijk van wat professionals van centraal belang achten in hun werk formuleren ze hun kennisclaims en hiaten ten overstaan van een 'gegeneraliseerde ander' (*generalised other*): de projecten waarin ze actief zijn, de klanten die ze op een bepaald moment tevreden moeten stellen, of de technologie waar ze in hun werk als IT professional mee te maken hebben. Een bijkomend gevolg hiervan is dat veel IT professionals een korte termijn houding hebben ten opzichte van

leren waarin kennis zeer gespecialiseerd en direct toepasbaar is, hetgeen kennisdeling bemoeilijkt.

Geconfronteerd met de gepubliceerde kennis in de virtuele werkomgeving oordelen professionals vervolgens of hun kennis superieur of inferieur is ten opzichte van de algemene kennis (*common knowledge*) van de virtuele groep waarvan ze deel uitmaken. Dit oordeel ging gepaard met uitspraken over waar een IT-professional in een bepaald domein van expertise aan moet voldoen, oftewel wie wel en niet een rechtmatig lid van een bepaalde beroepsgroep is. Zo werd bijvoorbeeld onderscheid gemaakt tussen professionals mèt en zonder gedegen kennis van informatie- en communicatietechnologie. Dit verschil werd aangeduid als het verschil tussen 'generalisten' en 'specialisten' of 'techies' en 'socio's'.

Deze wij-zij dichotomieën werden vervolgens geïnterpreteerd als indicatie voor de daadwerkelijke domeinen van behoren-tot van de IT-professional. Deze werden gevonden in de alternatieve bronnen van informatie in de vorm van mensen en technische systemen waarop IT-professionals een beroep doen in hun dagelijkse werkpraktijk. Deze alternatieve bronnen wezen met name op een toegenomen afhankelijkheid van persoonlijke sociale netwerken, zowel binnen als buiten de grenzen van de organisatie. Een van de redenen voor deze toegenomen afhankelijkheid van persoonlijke sociale netwerken, in tegenstelling tot geïnstitutionaliseerde en formele vormen van opleiding, is dat processen van leren en kennisconstructie met name in de IT-industrie gekenmerkt worden door de snelle opeenvolging van ontwikkelingen en de veelheid (diversificatie) aan specialismen. Dit heeft versnelde leerprocessen en een pragmatische houding ten opzichte van leren alsook de afhankelijkheid van de kennis van anderen tot gevolg. Een andere reden is de verslechterde economische situatie die er toe leidt dat mensen meer op zich zelf aangewezen zijn (*individual accountability*).

De interviews laten vervolgens zien dat de persoonlijke sociale netwerken gemobiliseerd worden op basis van zowel overwegingen van kosten en baten, als risicovermindering en affiniteit. Twee bindingsvormen kunnen dus onderscheiden worden: calculatieve en affectieve identificatie. Affectieve identificatie verwijst naar gevoelens van gemeenschappelijkheid, passie voor de technologie en plezier in het werk. De verschillende identificatieprocessen weerspiegelen de verschillende individuele tactieken van IT-professionals.

In antwoord op de vraag hoe technologie creatief toe-geëigend wordt, kan gesteld worden dat het sociotechnische artefact van de studie dienst doet als een vorm van culturele uiting. Het lokt zelfreflectie en uitdrukkingen van alternatieve ordening van professionals uit in termen van kennisclaims en ideeën van verwijdering (*detachment*) en behoren-tot. Deze uitingen van Zelf en Ander zijn in hoofdstuk 6 getypeerd als 'grenswerk' (*boundary work*). Hierin wordt technologie gepositioneerd als een object, een grensobject, waarin verschillende sociale werelden samenkomen.

Als gevolg van de poging om vast te houden aan de eigen individuele ordening (wat veroorzaakt dat de technologie de manier weerspiegelt waarop de professionals de wereld zien), zijn vier patronen van toe-eigening (alternatieve moderniteiten) te onderscheiden: confirmatie, socialisatie, reputatie en negatie. C*onfirmatie* is het toe-eigeningspatroon dat het dichtst in de buurt komt van de belofte van virtual community. In dit geval worden de virtuele werkomgevingen daadwerkelijk gebruikt voor kennisdeling en -creatie. Het moet echter wel gezegd worden dat het hier in veel gevallen technische (gecodificeerde) kennis betreft. *Socialisatie* is het patroon waarin nieuwkomers de virtuele gemeenschappen gebruiken om erachter te komen welke kennis nodig is om geaccepteerd te worden als een volwaardig lid van een specifieke professionele groep. In het geval van *reputatie* wordt de virtuele werkomgeving gebruikt als instrument voor impressiemanagement met als doel anderen van professionele autoriteit te overtuigen. Tenslotte verwijst *negatie* naar het 'workaround' gedrag waarin leden niet of nauwelijks bijdragen aan de activiteit in de virtuele werkomgevingen. Dit gedrag betreft vaak de meer ervaren en vakkundige (bekwame) professionals omdat voor hen dergelijke formele representaties van de praktijk bij uitstek dat-wat-al-bekend-is vertegenwoordigt.

Het onderzoeksmateriaal laat vervolgens zien hoe de toe-eigening van technologie de praktijk (recursief) structureert en beantwoordt daarmee de tweede onderzoeksvraag. Allereerst, in het geval van socialisatie definieert de professional zijn of haar professionele identiteit ten overstaan van de andere leden van de groep waar hij/zij mee geconfronteerd wordt door middel van het artefact. De gepubliceerde kennis in de virtuele omgeving wordt aanvaard als de algemene kennis of verzameling van kennisclaims van een bepaalde professionele groep en wordt daarom de norm op basis waarvan de eigen inferioriteit/ superioriteit wordt bepaald. Er zijn twee mogelijkheden: in het geval van inferioriteit neemt de professional de norm aan (*entrance*) en in het geval van superioriteit gaat de professional op zoek naar andere informatiebronnen van mensen en systemen (*exit*).

Ten tweede, in het geval van reputatie delen deelnemers in plaats van hun expertise slechts informatie over zichzelf. Omdat op basis van de zichtbaarheid in de virtuele werkomgeving bijvoorbeeld nieuwe opdrachten verworven kunnen worden kan reputatie ook gezien worden als een vorm van *entrance* gedrag. Een andere consequentie van reputatie is dat het een bevestiging van superieure (beroeps)status in de hand kan werken, anders dan zoals traditioneel gebaseerd op niveau van opleiding en werkervaring. In het geval dat mensen zich meten aan de virtuele reputatie van anderen kan het bovendien de formalisering van status veroorzaken.

In de beide gevallen van 'grenswerk' (reputatie en socialisatie) verschaft het artefact dus een alternatieve vorm van legitimatie van individuele professionaliteit; een nieuwe 'spiegel' van het professionele subject (*mirror of the professional self*), anders dan de eerder vermelde gegeneraliseerde ander.

Het empirische materiaal laat zien hoe technologie wordt toegeëigend in een poging de verschillende verwachtingen die het artefact vertegenwoordigt te vervormen. Net zoals de technologie sociale relaties faciliteert en beïnvloedt hoe mensen hun werkende bestaan ervaren, verschaft het hen de mogelijkheid om hun eigen logica op te leggen aan de praktijk en daarmee bij te dragen aan de ordening van werkpraktijken.

Mijn proefschrift beschrijft hoe de toe-eigening van de idee en technologie van virtual community niet alleen een reactie is op de mogelijkheden en onmogelijkheden van de technologie, maar ook op de taal (lees: ideologie) waarmee het in de organisatie geïntroduceerd wordt en de omgeving en de 'ander' in die omgeving waarmee men geconfronteerd wordt door middel van de technologie. Het beschrijft niet alleen de divergentie tussen wenselijke en daadwerkelijke werkpraktijken, maar ook de uitkomst van de onderhandeling tussen beide op basis waarvan zich nieuwe sociale denkbeelden ontwikkelen.