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IS supported service work: A case study of global certification

Thesis for the degree of Philosophiae Doctor

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"Wait! You have to take me to shore! According to the Code of the Order of the Brethren ..". "First! Your return to shore was not part of our negotiations nor our agreement. So I 'must' do nothing. And secondly, you must be a pirate for the pirate's code to apply and you're not. And thirdly the code is more what you'd guidelines than actual rules. Welcome aboard the Black Pearl, Miss Turner!" [from the movie *Pirates of the Caribbean. The curse of the Black Pearl (Walt Disney, 2003)]*

ABSTRACT

The thesis approaches the issue of IS support for service work, understood as distributed knowledge work taking place as a negotiation between diverse interests. It is based on an ethnographically inspired, longitudinal case study of certification auditing according to a formal generic standard. A handful of certification auditors are followed closely, periodically and comprehensively over three years. Observations are combined with interviews of subjects and colleagues, added by exploration of other material. The practices of company 'W' is placed within a larger historical and institutional context.

Research literature and theory is explored in four chapters from Social studies of science (STS), Computer supported cooperative work (CSCW), Information systems (IS), Information infrastructures (II) and Management literature. The aim is to identify basic characteristics of service work, its opportunities and challenges, from both the company's and workers' perspective. Main topics are *Decision Making* as negotiated sensemaking, contextual rationality and judgement; *Sharing* of understanding and meaning as ongoing practiced articulation work aiming for trust and an equifinal level of accord that will 'find and allow common action'; *Perseverance* in a capable role that will allow calibration of distributed knowledge is vital for auditors. Common Information Spaces (CIS) is used as a framework to explore the heterogeneous circumstances of identity work in work practices; *Predictability* in production is sought through various strategies of *standardization.* Approaches to avoid and counter the inherent side-effects of standardization are described. The empirical results of the research project are presented and analysed in four chapters that look at the issue of *i) being* an accomplished service worker and *ii) practicing* service work. Both issues are addressed from a local, individual perspective, and from an organizational perspective in terms of the continuation of quality production.

The thesis closes with a *Conclusion* of organized and standardized service work as displaying *Practical drift*, in response to the research question *RQ0. How is IS supported distributed service work negotiated?,* followed by implications for IS research and practice. The empirical case displays the role of information systems (IS) support in distributed service work - as part of a larger assembly of standardization measures, a broad-spectrum approach, displaying practical drift in its effect. The service work of certification auditing is characterized by ongoing negotiation of partly contradictory interests. It is heterogeneously standardized through material, rational/immaterial and social/organizational measures, many in place long before the advent of advanced IS. Traditionally, there are release mechanisms that, on the auditors' discretion, alleviate the inappropriate effects of standardization. With new harmonising efforts the scope of this personal latitude needs to change, but when first implemented the IS along with new procedures start off as too tight. However, over time adaptations are made, making the overall process self regulatory with feedback mechanisms.

On the whole, the thesis aims to contribute to the literature on information infrastructures, on knowledge work in general, and CSCW by drawing on insights from this specific collaborative work in controversial settings. The case provides practical insights for resilient systemizing of knowledge based global service work practices.

PREFACE

This thesis is submitted to the Norwegian University of Science and Technology (NTNU) for partial fulfilment of the requirements for the degree of Philosophiae Doctor. This doctoral work has been performed at the Department of Computer and Information Science, NTNU, Trondheim.

The thesis is a monograph of 12 chapters. The work has been funded by the department.

The organization under study in this case, here dubbed W, have after reviewing this manuscript made no objections to the publication of the thesis. A couple of footnotes, for information on later developments, have been added based on their comments due to changes in regulations or the circumstances of their work practices after 2006.

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First of all, I would like to thank my supervisor, Eric Monteiro, for granting me the scholarship allowing me to return to 'school', sixteen years into a MsTech career. It has given me the opportunity to explore theoretically and in new arenas, an interest born during my project based work as a consulting engineer: how to support communication and collaboration with ICT within and across large organizations. It is a rare opportunity, to be able to exchange timesheets and production goals, for a fairly self oriented research agenda over several years.

That being said, even with my pondering mind, switching mindset and vocabulary from: *How shall we best fix this?* to: *What, how and why are they doing?*, posed a greater challenge than first imagined. Slowing down, looking, listening, asking, pondering, describing once, being refused, looking again, seeing the same, using new words, but yet not really saying convincingly more. Thank you for your patience and for the variety of opportunities and arenas you, and your research community, provided for me and my fellow PHD students. We heard different stories and comments, different approaches, and got to venture our own. Out of quizzical comments, challenging questions, partial acknowledgements, plain indifference or new suggestions, clarity slowly emerged. Areas of a new image took shape, in fits and starts, like pieces in a jigsaw puzzle. Only, there was more than one image. Which of them belong together, overlap, or are best left alone - and why? Through it all grew the makings of analytical thinking and a personal, yet belonging voice. In short - your liberal supervision and encouragement has been invaluable to me and this research project.

So also to my good friends and colleagues Thomas Østerlie and Glenn Munkvold with whom I began this journey, Gry Seland, and later Birgit R. Krogstie and Gro A. Hamre, for critique and ideas, generous discussions, humour and laughter. For also being members of my *PHD student family*: Yngve Dahl, Jennifer Sampson, Sven Ziemer, Siv Hilde Houmb, Jingyue Li, Eli M. Morken, Gasparas Jarulaitis, Torstein Hjelle, Bian Wu, Laura Slaughter, Magne Syrstad, Carl Fredrik Sørensen, Inger D. Sørbye, Ole Alsos, Thomas Brox Røst, Ole Edsberg and Vigdis Heimly, Eli Hustad, Eli Larsen, Kåre Lines, Line Kollås - and my colleagues at NSEP, DMF, NTNU VIDERE and TK.

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Last but not least - thanks to family and friends, in particular my loving and ever supportive husband Geirfinn Sirnes, and our wonderful children Maia and Magne. To my parents Asta and Randor, my sister Gro, who all instilled in me a belief that “It is possible to figure things out – if you give it a go”.

My gratitude also goes to the many anonymous individuals who willingly participated in interviews and observations in ‘W’, including the clients who generously accepted my presence.

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ABBREVIATIONS

AB	National Accreditation Body
ABC	AB Certification (pseudonym for W's new brand of certification)
ANSI	American National Standards Institute (earlier AESC => ASA)
ANT	Actor Network Theory
ATL	Audit Team Leader
BIPM	Bureau International des Poids et Mesures /International Bureau of Weights and Measures
BSI	British Standards Institution
BO	Boundary Object
CB	Certification Body
CDB	Client Database
CEO	Company Executive Officer
CHI	Computer Human Interaction
CGPM	Conférence Générale des Poids et Measures / General Conference on Weights and Measures
CIPM	Comité international des poids et measures / International Committee for Weights and Measures
CIS	Common Information Space
CMC	Computer Mediated Communication
CoP	Community of Practice
CSCW	Computer Supported Cooperative Work
CSR	Corporate Social Responsibility
DARPA	Defense Advanced Research Projects Agency (ref. US Dept. of Defense)
DCP	Distributed Collective Practices
DIN	Deutsches Institut für Normung
DM	Decision Making
Doc	Document
DS	Dansk Standard (Danish)
DSS	Decision Support System
ESC	Engineering Standards Committee (later BESA)
HCI	Human Computer Interaction
IA	Initial Audit
IAF	International Accreditation Forum
IBM	The company: International Business Machines
ICS	The International Classification of Standards
ICT	Information and Communication Technologies
IEC	International Electrotechnical Commision
IEE	British organization of electrical engineers (now part of IET)
IETF	Internet Engineering Task Force
IGO	International Governmental Organization (e.g. ILO, IMO, WHO, UNECE ..)
II	Information Infrastructure
ILAC	Laboratory Accreditation Corporation
ILO	International Labour Organization
IMO	International Maritime Organization

ISA	International Standards Association (interwar predecessor to ISO)
IS	Information System
ISO	International Standards Organization
ISQ	International System of Quantities
IT	Information Technology
ITU	International Telecommunication Union
JTC	Joint Technical Committee (ref. ISO)
KIF	Knowledge Intensive Firm
MGMT	Management
MGR	Manager
MIS	Management Information Systems
MLA	Multilateral Recognition Agreements (ref. IAF)
NC	Non Conformity - a finding in the client practice that does not comply with the standard
NC1 / NC2	Non Conformity of level 1 / ~ level 2
NHS	National Health Service
nuΩ	Pseudonym for the revised Ω workflow system, planning began late 2004
OED	Oxford English Dictionary
ORG	Organization
PA	Periodical Audit
PDCA	Plan, Do, Check, Act – Model for an evaluation process
QM	Quality Management
QMR	Quality Manager
QMS	Quality Management System
QoS	Quality of Service
RA	Recertification Audit
RIF	Association of Consulting Engineers, Norway
RQ	Research Question
SC	Sub-committees (ref. ISO)
SI	Le Système International d'Unités / International System of Units
SIS	Swedish Standards Institute
SN	Standard Norge (Norway)
TC	Technical Committee (ref. ISO)
UNECE	United Nations Economic Commission for Europe
UNSCC	United Nations Standardisation Coordination Committee
W	The company Wisdom - A pseudonym for the case in study
W3C	world wide web consortium
WG	Working Group (ref. ISO)
WHO	World Health Organization
WTO	World Trade Organization
Ω	Pseudonym for a revised W's workflow system, locally halted in 2004

PART I - INTRODUCTION

1 INTRODUCTION

1.1 RESEARCH MOTIVATION - ICT FOR EFFICIENT WORK

Information and Communication Technology (ICT) has for most of us become a normal part of our daily activities, in both recreation and work. When we need information we check the web, buying tickets is done online, banking, filing tax returns, gaming, and so on. Anything and everything can be done with computers and an internet connection - or so we like to think. A recent TV commercial – pointing out that you can actually make phone calls with this smartphone, is a poignant reminder of how quickly and how much new functionality has turned up on the ICT consumer markets over the past few years. The phone's original purpose seems to be getting lost amidst everything else - and innovative marketing aims for the more conservative consumer segments. Either way, the apparent success, the applicability and flexibility of ICT in providing new functionality, makes us assume that it is straightforward to make good Information Systems (IS) for larger scale operations as well. But the success displayed by the evolution and presumable adoption of personal technology, stands in sharp contrast to many headline stories of IS projects which have fallen considerably short of their objectives.

In Scandinavia, and elsewhere, we regularly learn of large scale IS projects that have failed, or are described as failures, albeit in terms of a diverse range of criteria. Often they exceed their budgets, on top of a number of other issues. One of the more spectacular projects to make the headlines is the English NHS' new IT-program for the healthcare sector, at a staggering cost of £12.4 billion. Early talk within parts of the IS research community, tuned to combining a system view with user based perspectives, hinted at an accident waiting to happen [community emails]. An independent review done later by Greenhalgh and colleagues found for instance, based on in depth research, that the £235million Summary Care Record part was harried by: *"Repeated delays, technical glitches, unforeseen problems …* [with] *subsequent non-adoption, resistance and abandonment by users"* (slide in Greenhalgh 2010; Greenhalgh, Stramer et al. 2010). The interests of the variety of stakeholders: political, clinical, technical, commercial and personal, simply did not add up within the system in a way that warranted the expenditure for the functionality it actually came to deliver.

Headlines with a similar ring to them are common in Norway as well, and they tend to be found in the public sector, at least those that make the headlines. For instance the Norwegian government's eHelse (eHealth) system is presently years overdue compared to the original timeline, and the related systems at NAV (The Norwegian Labour and Welfare Administration) have been criticised for being fragmented, inappropriate, and lastly: that they have functionality which circumvent basic data privacy regulations (Haugan 2010). Are they more successful with their systems in the private sector, or is it that media and shareholders do not easily get access to this aspect of companies' bottom line?

Why is it so much more difficult to make suitable IS for large organizations than for the consumer markets? What is different, apart from size? Are our expectations set too high, making us reach for the stars – or the likes of the World Wide Web with its versatility and scalability? Is that unreasonable, or at all comparable? Why not? Technically, the construction of IS systems should by now be chartered terrain, even though the technical platforms come in new varieties, posing their own challenges which also affect end user functionality, technical maintenance and revision. Greenhalgh's critique of the NHS Summary record suggests that it is our basic understanding of the context of use, in all its diversity of contradictory interests, which fails to scale up when we convert visions and objectives into functionality, software, architecture, screen layouts and content. What is it that IS proponents, buyers, consultants, and implementers – and even users, have failed to grasp and put into their designs and specifications? Given that failure recurs, even when funds should be sufficient as with the NHS system, there must be something we are missing. With the kind of investments at stake, it is vital that different theories and approaches are found that could alter a course that too often leads to failure.

1.2 RESEARCH THEME – SEEKING IMPLICATIONS FOR IS SUPPORT THROUGH EXPLORING KNOWLEDGE WORK PRACTICES

So, lets look again at the context of use, as Greenhalg and many others in IS and related research have suggested, for decades. What characterises the work of large organisations? Is it the same today as ten or fifty years ago? Has the character of work itself really changed, along with adoption of technologies in work and elsewhere - or could it be that the tasks and objectives are still the same, but that we have new ways of performing it, thinking and talking about it? As new systems bring new tasks and professions for design and maintenance, I suggest that it is has proved difficult to separate the basic tasks of work from the tools, routines and systems integrated into it. For a number of practical reasons, well intended practice based research designs often start and end with looking at work for the sake of the systems to be improved, designed or implemented, by limiting its scope to the practical reach of the systems currently viable. Also, slowly and understandably, work practice research focus has expanded from the single users, to groups and now organizations, within, and across. *Spurious however, is the understanding of the additional work characteristics brought about by the shift from in-house cooperation to collaboration between incongruous organizational entities with legitimately separate interests.* And maybe, these issues are present also in small scale systems, but are less significant and easier to work around.

So, how do we talk about the work we aim to support with IS? An influential term, deriving from management literature (Drucker 1959; Nonaka 1994; Drucker 1999) and associated with the idea that we live in an information society (Castells 1996, 2000), is knowledge work. *"It involves manipulating abstract information and knowledge, rather than directly processing, manufacturing, or delivering tangible materials. Three general categories of information systems support such knowledge work: professional support systems, office information systems, and knowledge management systems" (in Encylopedia Brittanica 2010)*. Organizations that typically perform work where

information is to be manipulated through knowledgeable work (Robertson and Swan 2004) have for instance been termed Knowledge Intensive Firms (KIF). However, Alvesson (1993) contests the notion that knowledge work is unique to non-industrial or non-tangible production since knowledge is required in all kinds of work. Other categories used are intellectual (McCarthy and Wright 2004) or mental labour (Hochschild 1983). Perhaps the qualities of work we need to understand better can be identified by looking at less tangible kinds of work, where characteristics do not so easily drown in the practical and physical? Knowledge work is a term that focuses the less apparent, but – somehow we seem to rely on making it tangible by seeking to support it with facts, information, data - and information systems.

1.2.1 What does research say?

The Management literature – integrate and share

A key challenge for businesses in a global economy is to achieve a balance between efficient global wide production, while simultaneously improving its quality (Devinney et al. 2000, Bartlett and Ghoshal 1998). And, the recent diffusion of Internet-based technologies, inter-organizational networks, and technological infrastructure standards has made it more relevant and tempting to use advanced information technologies as a primary vehicle for striking this balance (Ciborra et al. 2000). Management literature points to that *".. a key aspect of success in process improvement is effective management of information about process performance, even independent of information technology"(Davenport and Beers 1995, p.57).* But in order to avoid fragmentation across sites, a single point of entry is to be preferred (Davenport 1998). That will assure the same quality of service to both the provider and its particular customers, irrespective of their geographical locations or particularities (Soh, Kien et al. 2000).

For distributed organizations that aspire to efficient and equal quality practices throughout, ICTs appear as the godsend that will enable affordable interaction, mutual learning, comprehensive data collection and distribution, as well as data mining for knowledge creation and innovation. Wider access to information, common arenas for documentation and sharing of experience, discussion forums, communication facilities and awareness provision being some of the facilities that office- and groupware promises. Real time or asynchronous, saved interaction with 24/7 access will secure information flows and compatible ways of working both within, but also across organizations.

IS research also finds – IS used differently, affects both individuals and work

On the other hand, research that looks at the actual work practices, how they use and cope with their IS, has tended to focus on the challenges and problems. As technological solutions and applications have expanded from the local and personal systems to support information and communication across groups, across town, nation wide organizations and so on, research focus has also moved (Friedman 1989), pointing out challenges but also opportunities for improvement. Initial issues were of course to make working computers, and to be able to operate them. These were the days when IBM saw a potential market *" .. for about five electronic computers"* – an unproven

quote accredited Thomas J. Watson, manager of IBM, 1943, which apparently held true for ten years (Wikipedia). As the technical scope increased from stand alone computers to computer-computer interaction, more users came to be routinely involved with them. The aspect of the interaction between computers and people fostered research in Computer Human Interaction (CHI), later refocused to HCI (Human Computer Interaction). User interfaces have evolved from cryptic command languages to navigation by windows, tabs and buttons, hyperlinks and icons, pointing devices and touch screens, or voice commands and moving bodies - and it will not stop there. Usability and cognitive issues have been explored to ascertain our abilities to discern, remember, recognize and relocate through colours, symbols, shapes and hierarchical menus. Seven +/- two, for instance, being the number of elements or tabs that apparently provides the best ease of navigating a screen (Miller 1994). The term *affordance* was coined by Norman (1988) to characterize the usability of artefacts. As computers came to be more common in organizations, groupware was developed to aid interaction and collaboration in small groups. Design and use of groupware to support work, being the focus of the research discipline of Computer Supported Cooperative Work (CSCW) and Computer Mediated Communication (CMC).

There are broad fields of research that deal with work and ICTs, IS, or MIS. Of central issue has been the insight that work and IS mutually both enable and constrain each other. As new practices are created, the delineations of previous categories change, such as who does what, how they interact to perform work, what needs to be done to get the job done (Gasser 1986; Orlikowski 1996; Ciborra 2000). A cursory list points to for instance: Zuboff who showed that new ICT in cellulose plants *informated* former blue collar workers and turned them into technicians that worked with abstract concepts (Zuboff 1988). She poses the prudent question of whether they now have become white collar workers. Turkle described how identities are shaped through technology interaction when both children and other Internet users experience new kinds of accomplishment or setbacks (Turkle 2000).

Several authors describe how appropriation of technology is an incremental activity that goes through a variety of phases (see for instance Lie and Sørensen 1996), but is in continuous change, requiring acts of improvisation and bricolage in order to make things work, to keep things working, to work around mismatches or inconveniences, or to improve utility. Ciborra et.al. coined the phrase *'from control to drift'* implying that circumstances always change and any attempt to strap things down, controlling through rigid measures, will inevitably result in something slipping between your fingers, to drift off, out of control (Ciborra 2000). Control is a never ending project, with or without IS technology. Just like there is inherent ambiguity in any linguistic statement there is inherent ambiguity in how information, artefacts and technology may be understood (Berger and Luckmann 1966), appropriated, adjusted or even rejected. This ambiguity adds to the potential for drift, along with the inherent dynamics of a non-static world where elements of the context for any activity is always in change.

While much has been gained, certain challenges remain – and their complexity increases as the scope and reach of networks and integrated system increase (Law and Mol 2002). Equally, it seems lessons learned do not propagate easily, especially across

technological shifts which involve new generations of designers and IT specialists - old flaws are repeated.

1.2.2 What do organisations want?

With increasing globalisation of trade and production, companies and governments look to ICTs to both support and improve both production and its management. Growing scope, diversity and complexity raises new issues for both design and use, as well as for research concerning Information Infrastructures (II) – the successful large scale IS that have become infrastructural. In particular**,** ***diversity*** increases in terms of both cultures and business interests to be spanned by the organizational actors, including technologies to support work. Equally the expanding organization's resources are spread thin – ***distributed*** in both time and space, effecting an increased role for ***mediation*** of relationships, both between colleagues and clients. The particular challenge being how to sustain in distributed settings, both company ***reputation and performance*** concerning agility, quality and competitiveness.

The theory chapters in this thesis will explore the issues raised by the keywords marked here and in the next section with ***italics***.

Where to look – the new organizations versus those with a history

Our society's predilection for ICT as a means to organize every aspect of human activity is in effect a standardization of those activities, along with numerous other both social and technical measures of varied intent. But standardization is not a new phenomenon. The effects of the Roman's standardizing practices are with us today for instance in our vocabulary. Wide reaching standardization took off with networked technologies such as the railway and electricity. And in turn with the insight that once in place, things are hard to change (Grindley 1995), I venture that insights on how standardization may be gainfully approached might be found where standardization is an old practice – namely the institutions that work with standards.

My site of research is a certification body, here given the name W. They perform third party assessment of their clients' compliance to standards. It is knowledge work in that they produce decisions. It is also service work as they serve paying clients. And they have their own IS projects that aim to support their own work and business.

1.2.3 Negotiate divergent interests? - look at Decision Making

A central aspect of far reaching IS and II is the fact that they cross contexts. Their use implies that different meanings and understandings are involved. Both collaboration through, and local use, implies that divergent interests need to be bridged or addressed - negotiated. The decision making work of W's certification auditors make their practices an ideal object of study. I suggest that decision making is a central aspect of work, with consequences for work and IS support, which is easier to study where interests legitimately diverge – across organizations. It is nevertheless also a central aspect of work within groups and organizations, but here its presence tends to be attributed to individual personalities or ignored as an irrelevant disturbance that will disappear when work itself proceeds fluently - in an ideal future. Focusing on decision making makes the following aspects of work stand out more prominently.

Decision making - an inherent part of work and life

Decision making is an inherent aspect of any activity, including work, and thus involves, not only individuals, but the collectives within which decision making takes place. Collectives and organizations not only need to negotiate their own decisions, but they also need to establish how various kinds of decisions are to be made within the organization. Equally important, is how employees make decisions on an organization's behalf, for instance when interacting with clients or prospective partners, or even on behalf of clients themselves. Professional decision making is a type of work where making decisions is a focal aspect of work, and often **involves a variety of expertise.**

Practical Decision Making and Information Infrastructures

Decision making proliferates in daily life, both in work and elsewhere. It has been the focus of much research on management, organizations, cognition, and computer science, to name a few. Decision making is sometimes, something you do on your own, with no wider implications than your own situation. But mostly, decisions are made in order to set the stage for future activities. These activities will sooner or later interact or intermesh with the activities of others. Actually very few decisions are totally private, in that they are influenced by the context of their making and will mutually influence that context. **Decision making is done within a *context*.**

Any decision is shaped by the characteristics of its contexts with their common understandings of a priori categories and logics, given also in the collective mindsets of the people involved, their common ground and social representations (Moscovici 1981). The resources for our sensemaking are learned and sustained through a variety of experiences and education, of both a social, abstract and practical nature. **Decision making draws on a *collective effort* and the circumstances of *mutual relations* between those centrally involved.**

The collective effort of decision making needs to be articulated in concerted action. Common goals and values, give direction to activities, individuals, and collectives. Participants with opposing interests provide additional challenges for achieving concerted action. **Decisions are forged in the balance of *diversely motivated actors* with different *identities, meanings and experiences*.**

Decision making is also an exercise that may appear to be momentary, punctuating the instant of its announcement. However, its outcome is the symbolic and material result of a considerable collective effort that is bracketed and closed off, inside the black box (Latour 1987), once it has been made. Or layers of black-boxing. A collective effort that spans both the past as well as expected futures. While the moment of its closing might be time-stamped on its outcome, its creation is a process with both a close and a distant history. Decision making is an effort that attempts to bracket time and collectively accumulated wisdom. It attempts to reduce complexity into something tractable and durable for future use. As such it is also based on previous activities aimed at consistent meaning and action. **Decision making is an exercise aimed at reducing complexity to achieve *durability*.** A durability that is manifest in both symbolic and material artefacts.

As a decision is made in a context of equifinal meanings, by the application of more or less widely accepted logics, it consists of both ***calculation and judgement***. Judgement contains the elements of decision making that are more difficult to elaborate due to its complex mix of competencies, experiences and inferences which are difficult to pin down and account for. Sometimes judgement is simply assigned to irrationality, as a sixth sense or indescribable feelings where logics do not enter. As opposed to the rational logic of calculation, it is somehow suspect in a modern enlightened society. Another description of judgement is that of discretion. An opinion formed by a separate authority, for instance an expert with particular and appropriate qualifications. Such qualifications might arise from being on the spot with a local or time-framed insight, or from particular education or experiences. Decision making is framed by collective knowing, learning, meanings, both local and wider intentions and conditions, morals and ethics. **Decision making is applied, *contingent rationality***.

Decision making has been widely studied within research, especially in terms of organization and management, IS-based decision support, computer science, sociology, and psychology. This study addresses decision making and ICTs in a context of professional interactive service work - implicating issues such as knowledge work, consulting and competence in settings where direct client interaction is focal, and, the supplier is often alone with the client. By moving focus to include inter-organizational activities, the contexts of work and decision making are ***complicated by diverging interests***, as opposed to activities and collaboration within smaller groups and organizations which has been the arena of much CSCW research on IS and organizations. However – decision making will be studied as a means to learn more about how IS may support distributed knowledge work.

What work? – Service Work

The auditors' work may be characterized according to a number of categories used in the literature. It is interactive, in that it takes place face to face with the client. It is knowledge work, in that it requires extensive education, training and experience. It is a service as opposed to goods, and it is often tailored to the client's needs. In the following, for practical purposes, **we shall them *service workers*.**

1.3 RESEARCH QUESTIONS

This thesis intends to:

Explore the use and establishment of corporate IS for standardization of service work, by exploring how the distributed knowledge based work practice of client centred decision making is performed, and subsequently affected by the company's global harmonizing efforts. Further, how these service workers approach IS and standardization for work support.

With the following research questions:

RQ0. How is IS supported distributed service work negotiated?

RQ1. What characterises micro level certification practices?

RQ2. How is top down standardization of certification appropriated by certification auditors?

RQ3. How do distributed service workers maintain a calibrated knowledge base?

RQ4. How do service workers pursue global scale quality through standardization of their work practices?

The empirical results of this research project are presented and analysed in four chapters, that look at the issue of i) being an accomplished service worker and ii) practicing service work. Both issues are addressed from a local, individual perspective, and from an organizational perspective in terms of the continuation of quality production. For an illustration see Figure 1.1 *Research questions* and the relationship between questions, theory and analysis in their respective separate chapters. See Figure 7.3 *Treatment of research questions in analysis chapters* for a more nuanced illustration.

The theory chapters will explore the issues raised by the keywords identified above, marked in bold in chapter 1.2.2 & 1.2.3: In terms of knowledge and work: *diversity; distributed; mediation; reputation and performance;* In terms of decision making*: context; collective effort; mutual relations; diversely motivated actors; identities, meanings and experiences; durability; calculation and judgement; contingent rationality; complicated by diverging interests; service work.*

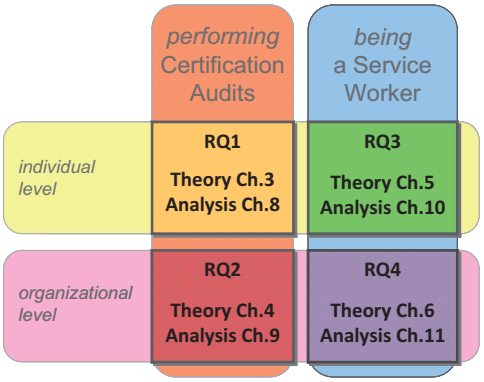

Figure 1.1 ***Research questions'*** *relationship to theory and analysis chapters.*

1.4 THEORETICAL APPROACH

Particularly the work of Lave (Lave and Wenger 1991) and Suchman (Suchman 1983; Suchman 1987) among others, has put the local and situated context of work and practice as it unfolds, firmly into focus in terms of research on both learning, use and adoption of technology. While early focus has been largely centred within the

organizations, the move to study interaction across organizational borders introduces the need to consider the organizational and juridical setup as part of the context. Focusing within organizations, it has been customary to assume a certain homogeneity of interests, or homogeneity as a quality in making. This has allowed the presence of a continued disparity of interests, as an inherent quality of interaction, to be largely left out. Schmidt for instance contends it is unnecessary to consider diversity of interests in analyses of CSCW, when claiming that generic concepts and conditions rule the interaction regardless of 'political' issues (Schmidt 2007). I believe however, that certain situations and perspectives do need to acknowledge diversity, at least by considering them before their dismissal.

In order to support work, it is necessary to understand work, to understand technology, but in particular to understand work and IS together, in situ. This turn to studying the particularities of practice includes understanding the social context of work, as well as the here and now, this single unfolding instance of work, rather than rationally theorizing about the ideally logical and rational versions of that work. The move towards practice as a research object, in favour of the earlier focus on rational explanations, is inspired by ethnomethodology and phenomenology. A subsection of phenomenology is symbolic interactionism (Akrich and Latour 1992) – which studies how symbols constitute and represent meaning as well as having practical rational uses. McCarthy and Wright (McCarthy and Wright 2004) further propose yet another turn away from rationalism, towards experience itself as a part of practice as research object. Experience includes not only the social context, but also the aesthetic and prosaic experiences of individuals within their collective practices. Strong descriptions must include the individuals' emotions and feelings in response to intellectual and prosaic challenges in practical work. Practice based research has largely denied emotions a place in theorizing on IS and work, just as rational research previously denied a role to the social context of work and IS.

In attempting to inform IS research and design, my focus and analysis is directed towards the use and creation of IS at an individual and group level. It is a tradition of IS research to theoretically draw on neighbouring fields to inform what necessarily is a multidisciplinary concern. My theoretical deliberations draw on the related research areas of Computer supported Cooperative Work (CSCW), Social Studies of Technology and Knowledge, as well as Management Information Systems (MIS).

1.5 RESEARCH SETTING AND APPROACH

About the Case

This thesis is based on an empirical ethnography inspired case study of professionals who carry out their work in fairly lonely conditions, in regards to interaction with colleagues. A work practice that involves a high degree of formality, both in terms of its internal processes, its products and its performers, as well as its *raison d'être* – the outside world of clients and society. It is all based on standards. Internationally ratified ones, business community generated ones, national ones or in-house ones. W is a global company of 6100 employees across some 85 countries, of which I have studied the practice of Certification as performed by some 50 auditors in a Scandinavian country.

The professional work of these auditors is to cope with and transform the tension between formal standards on the one hand and the daily practices of ordinary business on the other. Practice versus formality. Their own practices and those of their clients. A second issue is that they negotiate decision making within an adversarial context. Information systems (IS) of various kinds are integral parts of these practices. Increasing use of IS is a strategy for both the company and its employees, and possibly their clients. The case therefore provides insights to the topic of standardization, as system, but also on how universalising means, ordering and emerging standards are embedded in IS and in current practice.

The study is not a comprehensive study of standardization as such, but rather an identification of some of its aspects as they appear in the work settings of these auditors. This longitudinal study follows a handful of W's employees closely but periodically over three years in a comprehensive way (participation in audits and events, as well as many in-house courses and meetings, interviews with a variety of colleagues, exploration of documentation and information systems in use, including the intranet). The auditors belong to the System Certification branch of W, which represents a significant and increasing share of W's activities worldwide. W Certification performs systems assessments in terms of generic systems standards such as ISO 9000 *Quality Management Systems* and ISO 14000 *Environmental Management Systems*.

Data were collected during changing infrastructural circumstances, as certification was performed by mainly single auditors handling each client. The observations and their treatment are related in four analysis chapters, while the case under observation, – Company W and its wider context is elaborated in Chapter 2. *The Case - W*.

Certification auditors as case object display a work setting with a diversity of interests arising from the variety of who they interact with, and the amount of time spent on each of them. It displays a need for mediation of both colleague and client interaction, as a broad share of their working hours are spent distributed across various client premises. As professionals single-handedly representing their company they need to maintain both their own and the company's performance and reputation. ICT's figure as an inherent but changing part of their work activities.

Definition of decision & delimitation

See the definition in the box below. My focus on decisions and decision-making in work does not include formal procedures or systems specifically aimed at decision support of the mathematical, logical or technical kind, but relates to the first three varieties given by OED as inherent aspects of behaviour and work. However, my empirical material derives from work settings where formal decisions are the proclaimed objective of work activity.

The Oxford English Dictionary (OED 2007) defines ***decision*** *as*:
1. a. The action of deciding (a contest, controversy, question, etc.); settlement, determination.
b. (with a and pl.) The final and definite result of examining a question; a conclusion, judgement: esp. one formally pronounced in a court of law.

2. The making up of one's mind on any point or on a course of action; a resolution, determination.
3. As a quality: Determination, firmness, decidedness of character.
†4. Cutting off, separation. Obs.
5. attrib. and Comb., as decision-maker, -making, -taker, -taking, theory; decision method = decision procedure; decision problem [tr. G. entscheidungsproblem] Math. and Logic, the problem of finding a decision procedure for a class of formulas; the ENTSCHEIDUNGSPROBLEM; decision procedure Math. and Logic, an effective formal routine or mechanical method for deciding whether any selected formula of a given system, or a given class of formulas, is true or derivable within the system to which it belongs.

Table 1.1 OED definition of decision

Apart from the intention to expand and extrapolating from previous CSCW research on in-house collaboration, coordination and communication, I choose to examine the practice of certification auditors for the following reasons. The service sector represents an increasing amount of employees doing knowledge work, represented for instance by consultants and other kinds of professionals. Certification auditors represent professionals, for whom it should be important to display state-of-the-art competence - hence maintenance and calibration of knowledge is vital to their practice. Certification auditors in Scandinavia typically deal with small branches of companies, meaning that single auditors will handle a majority of audit visits alone. Although my informants represent what must be called a relatively homogeneous cultural background, they seldom work together with their colleagues. This implies a distributed and mediated quality to their work environment with concomitant challenges to building a company specific base of knowledge along with a culture of meanings and values to guide their lonely work. As part of a global company, the interests of more distant company cultures are never the less present indirectly through management's focus. The role of management in controlling production, with a global quality assurance perspective, implies that they have interests that do not necessarily match those of their individual clients or employees. The auditors' current use and attitudes towards IS figure against the backdrop of the company's ongoing global harmonizing and IS initiatives.

1.6 EXPECTED CONTRIBUTIONS

This thesis expects to contribute towards expanding the understanding of both the challenges and limitations to harmonizing service work and distributed knowledge work, by providing a rich description of *work where a legitimate diversity of interests is present and needs to be dealt with*. By looking at a case where *standardizing measures have been in place and evolving since before advanced IS was an option*, I hope to gain new insight, beyond the ordinary procedural descriptions of core work. Such procedural models are often used as input when IS specifications are made, and they pose the danger of missing central aspects of the practices the IS are meant to be a part of.

Secondly, I believe *the processes that negotiate learning and meaning*, with *an emergent distribution of responsibility and latitude amongst actors* in collaborative setting to be an important aspect of performing work, regardless what kind of technical

support one has. This is especially important when interests diverge. The overall system – the practices in a socio-technical environment - *need to support and mediate establishment and maintenance of relationships, trust and motivation*. This should be prominently displayed by the diversity of interests that must be negotiated by adversarial parties in certification audits.

Thirdly, the work expects to contribute to understanding the challenges of maintaining *calibration in distributed work*. The articulation of particular and 'correct' meanings for use in settings of crossing interests is often sought via IS, for instance in outsourcing.

Fourth, the thesis seeks to broaden the understanding of *the role of employees in informational infrastructure building beyond the adoption and workaround stance*. The independent nature of service workers' work practice, their experience in negotiating client interaction, at least when they have become experts, makes them particularly capable of making valuable contributions to both the design and improvement of their socio-technical resources.

Lastly, the thesis seeks *lessons learned in experienced organizations, where know how has over time become infrastructural and tacit*, hidden from view within 'normal' practice as 'invisible' articulation work.

Overall, the thesis seeks to *improve the awareness of the multifaceted and emergent character of situated work practice, in particular when several organisations and contradictory interests are involved*, by providing practical insights from resilient practices.

1.7 STRUCTURE OF THESIS

PART I - INTRO

This introduction chapter is followed by **Chapter 2** ***The Case - Wisdom Certification*** which presents *the company* starting with *its historical and institutional context.* W is a company whose raison d'être is standardization and certification according to standards. An overview is given of how they have been organizing their production from roughly 2002 to early 2005.

PART II - THEORY

To aid the analysis of my fieldwork – The intensive part: mid 2003 – end 2004, followed by intermittent visits 2005 and spring 2006, **four theory chapters** on the following topics will be explored.

The first theory chapter - Chapter 3 ***Decision Making***, deals with the intricacies of *a generic practical decision making process* – Contextual rationality, common sensemaking, in-qualculation and qualculation are key topics. Key elements of the process and its outcomes are identified.

As resilient decision making relies on a collective effort, the second theory chapter **- Chapter 4** ***How much sharing?,*** explores how shared understanding at an *equifinal*

level may be achieved. Key topics are practice based learning, articulation work, trust and social ties in business**.**

The next theory chapter – **Chapter 5** ***Perseverance,*** looks at how *both the social and technical supports distributed knowledge work* through comprehensive identity work. Key topics are identity and meaning, identity work, immaterial and material resources that add durability to action.

The final theory chapter – **Chapter 6** ***Predictability*** explores various strategies of *standardization in aid of globally predictable outcomes* of service work. Key topics are top-down, bottom-up, and the negotiated character of practical standardization as side-effects are addressed.

Chapter 7 presents ***Research Methodology and Data Collection*** with a reflection on the research process with a hermeneutical approach.

PART III - ANALYSIS

Consists of four (A-D) chapters of analysis, each mainly addressing one research question. Each chapter relies mainly on one of the theory chapters, in the same order.

Chapter 8 ***Who decides what - at the audit visit*****,** in response to *RQ1: What characterises micro level certification practices?* Case A - looks closely at a single onsite audit visit by presenting empirical evidence as an exemplar of several periodical audit onsite visits. The analysis shows that the auditor seeks to facilitate *mutual sensemaking, for - and of the parties involved.* The audit is a situated challenge of complex negotiations for decision making. It proceeds through phases of social relations building, followed by rational sensemaking along with assignation of roles and responsibility, to close with trusted delegation and motivation for further QMS work.

Chapter 9 ***Avoiding Loose Ends – When W Harmonizes the Audit Cycle***, in response to *RQ2: How is top down standardization of certification appropriated by certification auditors?* Case B – broadens the empirical perspective to a complete audit cycle as the scope of ongoing negotiations expand outside the onsite visit when W introduces its harmonizing measures. The analysis shows that *extra work*, both in time and content, is needed to *maintain an equifinality* that allows them to achieve a consensus on the audit decision and QMS, especially in terms of good working relations. New *tensions are introduced into the triangle of partly aligned interests*, the client, W and auditor.

Chapter 10 ***Lonely Decisions – The Role of CIS for Calibration and Motivation,*** in response to *RQ3. How do distributed service workers maintain a calibrated knowledge base?* Case C – reveals that maintaining a calibrated working knowledge is challenging for distributed service workers, as their identity hangs in the balance between the influences of client and W. The concept Common Information Spaces (CIS) is used as a framework to analyse empirical evidence of the service workers' context.

Chapter 11 ***Divide and*** **Conquer –** ***Global Certification in Action****,* in response to *RQ4. How do service workers pursue global scale quality through standardization of their*

work practices? Case D – relates empirical evidence of both top-down and bottom-up strategies for organising globally predictable certification practices, that combine in a broad-spectrum approach that *consists of numerous standardized elements, some tight and formal, others fluid and loose*, which add up to a socio-technical network of actors.

PART IV - CONCLUSION

The thesis closes with **Chapter 12 *Conclusion – Practical drift***, in response to the overarching research question *RQ0. How is IS supported distributed service work negotiated?,* closes with implications for IS research and practice. The empirical case displays that information systems (IS) support distributed service work - *as part of a larger assembly of standardization measures*, characteristically *a broad-spectrum approach, which displays practical drift* in its effect. Certification auditing presents itself as service work with an ongoing *negotiation* of partly contradictory interests. The work of these service workers is *heterogeneously* standardized trough both material, rational/immaterial and social/organizational measures, starting long before the advent of advanced IS. Traditionally, their various standardizing measures have release mechanisms that, on the auditors' discretion, would alleviate inappropriate effects by adjusting performance of the standard. With new harmonising efforts this personal latitude needs to change, but when first implemented, the IS along with new procedures start off as too tight. However over time, adaptations are made, making the overall process *self-regulatory* with feedback mechanisms.

On the whole, the thesis aims to contribute to the literature on information infrastructures, knowledge work in general, and CSCW by drawing on insights from this specific collaborative work in controversial settings. The case provides practical insights for resilient systemizing of knowledge based global service work practices.

2 THE CASE - WISDOM CERTIFICATION (W)

About this chapter

The chapter presents the organization and the local and wider arena for my study of knowledge based work practices and the roles of IS within this work. Given that the corporation wished to remain anonymous I have named them: W. W is a global foundation whose main product is the making of informed decisions about a client's product or activity, a scientifically founded assessment for the benefit of others. Decisions grounded in standards and in W's stewardship, for close to a century and a half, of expert knowledge and practices of conformity assessment in terms of science, engineering and practical operations. Their original counterparts deal mainly in insurance and assurance of W's clients. A mark of their trade has been both the application, but also development, of standards. Accepted standards, mostly internationally formalized, aimed at securing both knowledge-based, but also fair and equal, evidence- and evaluation-based decisions through certification audits of client or product compliance.

Both local and international standards form a central backdrop to: *i)* W's activities, and *ii)* how the organization itself is perceived by its surroundings. The chapter begins with a brief historical outline of the institutionalizing of international standardization, indicating the inextricable context for any description or analysis of W and its activities. This is followed by an outline of the certification procedure and its rationale as a central element in international trade and business. Finally, a portrayal of the organization and operations of W Certification – from hereon termed W. This includes their ongoing strategies of harmonizing certification practices, in order to keep and increase their market share and standing as preferred providers of - in this case - generic systems standards certification. Ch.1 presents an introduction to the thesis with its research questions, while theory is give in Ch.3- Ch.6, method in Ch.7, for the subsequent analysis in Ch.8-Ch.11, with conclusions in Ch.12.

2.1 INTERNATIONAL STANDARDS SETTING

"Albeit inconspicuous, standard setting has been among the nuts and bolts of globalizing industrial capitalism since its beginning, assuring that things needing to work together, fit from product to product, industry to industry, and country to country" (Yates and Murphy 2007, p.1). Standards are economic coordination mechanisms that may be accomplished by institutions whose own organizing mechanisms belong anywhere within the range from market to hierarchy. The international standards that are shaped by institutions like ISO and its predecessor ISA, fall somewhere in between these endpoints (2007), as they draw on encompassing involvement of scientists, engineers, a variety of organizations and companies, as well as governmental, national, and international institutions. *"They are similar to the professional and trade associations, whose interests are fundamentally different from those of any single firm, and [similar] to voluntary transnational organizations (e.g., Amnesty International),*

which have a kind of power that gains its legitimacy from something fundamentally different than the sovereign state" (Yates and Murphy 2007, p.2).

2.1.1 The creation of ISO

Several British engineering societies collaboratively founded the first of the private voluntary standardizing associations in 1901 – the Engineering Standards Committee (ESC, later the BESA). It modelled for its American sibling AESC (later ASA => ANSI), which was founded in 1918 with an explicit policy of using a voluntary consensus approach. Of these two however, the American organization started off with a more idealistic perspective that held off on industry memberships and thus also minimizing the industry as a source of income in the early years. Yates & Murphy (Yates and Murphy 2007) suggest that this policy contributed to economically restrict AESC's activity and its subsequent involvement in ISA and international standardization, until this membership policy was gradually changed to involve the actual users of standards who would be willing to pay for the expensive work of setting them. The background for the formation of these national standardizing organizations consists of a variety of standardizing activities over the latter half of the 1800's, especially within networking technologies such as railroads, telegraph and electricity, banking, or health (ref. the WHO). Up to the First World War the actors varied from the national organs of scientific and technical associations, with mandates that included standardization, to various international congresses and committees.

Today, the International Organization for Standardization (ISO; the name is currently explained to derive from the Greek word *isos:* equal), is the largest international standardizing organization, and perhaps one of the most commonly known, although there are many more of both national and international denomination (e.g. ANSI, BIPM, BSI, DIN, DS, IEC, ITU, SN, SIS, WHO...). The formal variety of permanent international standardization institutions began in 1906 with the establishment of the branch specific International Electrotechnical Commission (IEC) through initiatives of the British organization of electrical engineers (IEE) and its sister body in the US. However, while the IEC was under establishment following a resolution made by the 1904 International Electrotechnical Congress, a small and relatively informal group of primarily scientists, worked on the system of electrical units, and wrapped up its work with an international congress in 1908 and a follow-up working meeting in 1910. This group found that being few, had a facilitating effect on reaching consensus (Lagerstrom 1992; Yates and Murphy 2007). This insight laid the foundation for the principle of the sub-committee and the technical committee, which was later adopted by both the ISA and its follower ISO. The IEC designed an architecture for standards-making that was particularly aimed at achieving a broad consensus, with concepts which have since been adopted and adjusted by successive standards institutions. This included the ongoing involvement of engineers and representatives of private industry within their fields to ensure that manufacturing interests were represented. In the case of IEC it is illustrative of these issues, that the first chair was Alexander Siemens, nephew of the founder of the German company Siemens and manager of its British branch, and that Japan's first representative was Ichisuke Fujioka, the founder of Toshiba. Each country had one vote providing international legitimacy, and was to be represented by a local national committee formed by national technical societies. The consensual approach of the IEC

implied that split decisions were published with the names of countries respectively voting for or against, whilst the unanimous decisions were published as made by the IEC itself. A council consisting of two delegates from each country along with one elected President and Honorary Secretary would conduct business. Meetings would be called by the President of the Council and/or the Commission when desirable. Local committees would pay their own way and contribute equally to the upkeep of the central office.

The IEC was followed by the interwar non-specialized ISA – International Federation of the National Standardizing Organizations. ISA was established in 1926, and the the IEC president, Charles Le Maistre, was central to its creation. Le Maistre is considered in many ways to be the father of international standardization as he was pivotal in advocating the merits of standardization on both sides of the Atlantic, figuring also in the later establishment of UNSCC as well as ISO (Latimer 1997). ISA's starting focus was mainly within mechanical engineering where the first work was on screw threads, nuts and bolts. ISA arrived at a dual organizational structure due to the *inch* and *metric* camps with secretaries in both London and Geneva. However the continental 'metric' branch was the more active of the two. One central issue in the crafting of the ISA, was whether this organization would *create* standards or facilitate the *exchange* of local standards. The US (i.e. by now a more affluent ASA) finally joined ISA just two months before the economic crash on Wall Street in 1929, something which hampered ISA's later activity. Among ISA's greatest merits is perhaps the defining of the conversion ratio between the inch and the metric system, the standard sizes of paper (A4, A3 etc.), as well as defining the placement of sound in motion pictures film, which was an important industry of the depression period. In effect ISA was very much managed single-handedly by the Secretary in Switzerland, Hr. Huber-Ruf, a Swiss engineer living in Basel who coordinated committees and translated proposals. ISA however had to close down in 1942 due to World War II making it impossible to carry on the necessary collaboration. As its services however were now in more demand than ever, UNSCC was founded by Britain and the USA in 1944 to temporarily fill the gap of standardization demand caused by the allied war effort in seeking to enable the production of inter-working war materiel. The lack of such standards were later calculated to have cost the allied war effort an additional £25 million (Economist 1945) cited in (Yates and Murphy 2007, p.24).

After the war, delegates of 25 countries met in London in 1946 with the objective to ".. facilitate the international coordination and unification of industrial standards". This resulted in the official opening of ISO, in Geneva, Switzerland, on 23. Feb. 1947. Before this meeting there were discussions and negotiations on the role of ISO, its constitution and relationships to its predecessors of UNSCC and ISA, where it would be located, how it would relate to the losers of the war (Germany, Italy and Japan), which languages would be official, and so on. Hr. Kuert, one of the Swiss delegates to the London Congress in 1946 reminisces: *"The first question that had to be settled in London was the name of the new organization. There were different proposals. The English and the Americans wanted " International Standards Coordinating Organization", but we fought against the word 'coordinating'. It was too limited. In the end ISO was chosen. I think it is good; it is short. I recently read that the name ISO was*

chosen because 'iso' is a Greek term meaning 'equal'. There was no mention of that in London!" (Kuert 1997, p.20). The official languages of the ISO would be English, French, and Russian, although the Russian translation and publications would be effected by Russia. Today ISO, has 163 member countries of three categories: Member bodies, Correspondent members, Subscriber members (ISO 2010), and Technical Committees have their secretariats and Chair in selected member countries with their national standard institute.

2.1.2 Achieving a standard

The most commonly known standardized definitions, are probably the metric system of measurement (metre, kilogramme etc.), and the previously in use: *metre rod* prototype, which was created long before the advent of ISA and ISO. Today, more than 200 years after its inception, the metric system is in widespread use, is being continuously revised, but has not yet achieved complete global application. For instance the UK/US still, in part, hold on to yards, inches, and pints etc.. There are also two important exceptions in which metric measures are not in use, namely human blood pressure in medicine which is measured in unit *mm of mercury* [mmHg] and naval /aerial navigation where *nautical mile* for distance, *knot* for wind speed, and *feet* for altitudes persist (ISO/TC012 2004). The history of, and the current standing of the metric system illustrates some of the difficulties related to standardization and the encompassing and perseverance of efforts required to achieve anything close to widespread adoption.

A brief outline of the history of the metric system – based in part on Wikipedia articles on 'SI' and 'metre'(Wikipedia).
The metric system of different units not only defines units' names and their sizes but also a handy set of interrelationships of measures, such as a volume of 1 litre = 1 dm^3 of cubic length. The system was originally conceived by a group of scientists (among them, Antoine-Laurent Lavoisier, known as the *"father of modern chemistry"*) and had been commissioned by King Louis XVI of France to create a unified and rational system of measures. France adopted it after the French Revolution in 1799. Other nations followed by standardizing their own systems over the next century, e.g. The Imperial System (British Empire) and the American System (USA), or by gradually adopting/adapting to the others'.

The International System of Units, abbreviated **SI** (from French: Le Système International d'Unités) is the modern form of the metric system. It is the world's most widely used system of units in both everyday commerce and science. Currently three organizations are established to maintain the SI under the terms of the Convention du Mètre (Metre Convention) of 1875: **CGPM** (Conférence Générale des Poids et Mesures /General Conference on Weights and Measures*)*, **BIPM** (Bureau International des Poids et Mesures /International Bureau of Weights and Measures) and **CIPM** (Comité international des poids et mesures /International Committee for Weights and Measures).

In the 1870s, in light of modern precision, a series of international conferences were held to devise new metric standards. The Metre Convention (Convention du Mètre) of 1875 mandated the establishment of a permanent International Bureau of Weights and Measures (BIPM) as an intergovernmental organization, to be located in Sèvres, France.

At the end of World War II a number of different systems of measurement were still in use throughout the world. Some of these systems were metric-system variations, while others were based on the Imperial and American systems. It was recognized that additional steps were needed to promote a worldwide measurement system. As a result, the 9th General Conference on Weights and Measures (CGPM), in 1948, asked the International Committee for Weights and Measures (CIPM) to conduct an international study of the measurement needs of the scientific, technical, and educational communities.

Based on the findings of this study, the 10th CGPM in 1954 decided that an international system should be derived from six base units to provide for the measurement of temperature and optical radiation in addition to mechanical and electromagnetic quantities. The six base units recommended were the metre, kilogram, second, ampere, degree Kelvin (later renamed the kelvin), and the candela. In 1960, the 11th CGPM named the system the International System of Units, abbreviated SI. The seventh base unit, the mole, was added in 1971 by the 14th CGPM. The CGPM meets in Paris every four to six years, representing 51 member states and 25 further associate members.

Future development (ISO/TC012 2004; BIPM 2006)
The ISO standard *ISO 31, Quantities and units* and the *ISO 1000, SI units and recommendations for the use of their multiple and of certain other units for the application of the SI* are produced by ISO Technical Committee 12 (ISO/TC12). They contain recommendations for the use of the SI together with the *IEC 60027* for electrical applications. ISO/TC12's work is chaired by the Swedish national standards organization (SEK) and takes place in collaboration with a large number of organizations, notably BIPM as well as other TCs, e.g. *IEC/TC 25, Quantities and units*, with the aim to achieve a harmonization which aims to enable a common replacement in a planned *ISO/IEC 80000, Quantities and units*. The *ISO/IEC 80000* proposes that the quantities and equations used with the SI will be known as the International System of Quantities (ISQ). *Comment: As of 2010, several parts of ISQ are in place (keb).*

2.1.3 ISO today

Since France began its efforts to achieve a universal system of measurements in the late 1700's, both elaborate, and by now institutionalised, systems of international standards setting as well as multitudes of local and international standards have been created. The strategies for enabling consensus have evolved along with the historical conditions of the times. Lessons learned have been absorbed into the evolving institutions, giving the eventual international institution of ISO increasing weight and influence from its inception in 1947 to its present status some 60 years later. It is however an influence that relies on its member's participation and support both economically, in practical application and in compliance.

However, technical standardization related to the Internet, initially a defence and research communications initiative in the US (ref. DARPA) dating from 1963, started in 1986 with the Internet Engineering Task Force (IETF) on an even more collaborative and widely inclusive basis than ISO, as it was open to anyone interested and able to pay

their own way. With the invention of the *world wide web* (1989), its standardization has evolved with W3C (world wide web consortium) founded in 1994. W3C also collaborates with ISO, for instance on the Joint technical committee ISO/IEC JT1, *Information technology.*

Currently ISO has published more than 18,000 International Standards (ISO 2010), and most standards are revised within a timeframe of three to five years. The scope of standardization has broadened considerably. The standards accomplished, or adopted by, and maintained by ISO today, cover a wide spectrum of rationales ranging from the scientific, to the practical concerning technological and economical interaction and trade, now to include system standards on more abstract issues such as Corporate Social Responsibility (CSR) and Quality Management (QM) to name a few.

Present day ISO standards result from the work of diverse organizational entities including both industrial actors as well as publicly funded organizations. While in theory, participation is open to the entire world with special fees for developing countries, in practice the participation of less wealthy nations or industries is necessarily limited. Another problem with the process of international standard setting is that it takes time. Typically industry standards are developed by major industrial actors or alliances of these, serving primarily their own needs, which in effect have substantial influence on the international standard setting, both in shape of what gets proposed as solutions, the lack of alternatives or the lack of influence and backing for alternatives. De facto standards are established through major markets shares, judicial or practical lock-ins through network externalities, and may be adopted as ISO standards pending their voted endorsement.

Effects of standards – coordination & knowledge

While a central aspect of standards is their purpose as economic and practical coordination mechanisms, a second feature is their representation of knowledge (Schmidt and Werle 1998). They define boundaries and interfaces both in functionality, of inside features, and inter-workings as well as the nomenclature, causalities and logics. Inherent in these are the defining of best practices, negotiated balancing of opposing considerations of both natural/physical qualities and practical issues of various kinds. As such they are presented as available packaged solutions, i.e. knowledge for the wanting, and marketed as such towards for instance both developing industries and developing countries. Schmidt & Werle point to different groupings of the technical standards – those that define a system of interrelationships that allow the inter-working of black boxes – wherein the inside of the black box is left undefined, as opposed to the standards that define details, also within the black box. The interrelationship kind will not only define how components from different suppliers may fit together, – thus supporting collaboration. An interrelationship standard also allows for replacement of components, and thus supports competition amongst suppliers. But standards also have other effects, such as establishing powerful advantages for adopters by promising predictability, thus trust and legitimacy, and the promise of reduced costs. Also, standardization causes shifts in responsibilities and thus individual and role authority (Slaton and Abbate 2001).

2.1.4 Whose harmony and standard?

Without some form of harmonization, uniformities or unification of language, of ways of doing and seeing, the division of labour and effort that comes together in fruitful interaction and integration is not possible. The history of formal standardization efforts illustrate that effecting the basics that allow for integration or alignment are major accomplishments that take considerable time and the effort of many. The achievement of voluntary standards, not only their making but also their adoption in use, requires not only the practical issues of technicalities and physics to fall into place, but also relate to the practicalities that affect the situations of diverse adopters. Naturally, there are both priorities and concessions to be dealt with. As such, the process is time consuming as there may be many voices that need to be heard, addressed, accommodated or laid to rest. Formal voluntary standard setting represent the epitome of human endeavours of collective sense-making, order-making and collaboration. Standardizations may enter into our common information infrastructures, largely taken for granted as commonsensical, if or when they are widely accepted and adopted. Standardization essentially brings forth a few or one solution, but also brings about reduction of alternatives for choice. In effect a silencing of other alternatives, - for the common good of international production and trade. While widespread adoption and standardization may grant some solutions a long life, it is by no means a grant of eternal life.

Standards are sought, not only as coordination mechanisms, but because they are seen from an economical perspective as a prerequisite for economies of scale and the reduction of transaction costs. On the other hand, these effects rely on network externalities that might hamper or boost the standard's adoption in a non-linear fashion. The kind of network externalities that arise will depend on their interpretative flexibility, thus applicability and perceived usefulness, and the resulting relationships of critical mass and price (Schmidt and Werle 1998, p.73). There are no easy relationships that enable the prediction of a standard's ultimate fate and effect.

Schmidt & Werle's (Schmidt and Werle 1998) discussion of these processes in the area of telecommunications is illustrative of an area where technological evolution and development is moving very fast, where big money and major players are involved. The traditional formal processes of the ISO has problems keeping pace with this industry, thus alliances in industry create their own standards and concepts which enter also into the international processes of standardization as a number of alternative and competing industry standards. The clash for market shares and its resulting public adoption may enter into the standard setting debates as arguments of representatively achieved lock-ins and de facto standards regardless their technical superiority or inferiority, depending on the eyes that see.

Standardization efforts are necessarily also arenas of competing interests that result in parallel alternatives fighting for market hegemony. And yet, the institutionalised system of international standard setting does in many cases work out. *" .. [T]hree constitutive coordination interests have left their imprint on the institutional fabric of international standardization: a country-based political (control) interest, an organizational or business-based commercial (profit) interest, and an individual or professional knowledge (consolidation) interest. Elements of these three aspects are present in all*

standardization organizations, but they differ in intensity. The interests are complementary rather than substitutive. This, in addition to other factors, explains why the relationship of standardization organization is characterized by cooperation and division of labour rather than by competition" (p.56). .. *" 'In standardization organizations, work is based on 'technological paradigms, routines, heuristics, norms and standards'(Rip 1992, p.244), which provide a cognitive infrastructure"* (p.61). .. *".. [R]epresentation of political interests is declared legitimate but is eliminated from the technical working levels of organizations (Mansell and Hawkins 1992). Thus politics remains institutionally confined to what one might call a negative control of standardization. By collectively shaping the organization's memberships rules, working programs, resources, etc., governments can arrange for a general protection of national interests. Hence, some technical issues are never placed on the agenda, or they can be diluted or rejected before detailed technical negotiations start. The last resort would be the power of absolute veto for every government, - the other side of unanimity coin. To prevent too many deadlocks, .. Whenever possible, explicit voting is avoided. The chairperson's assertion that no objection is discernible usually substitutes for formal voting"* (Schmidt and Werle 1998, p.63).

It is interesting to note that consensus and workable solutions are achieved through pragmatic unvoiced trade-offs rather than the strict rule following of formal voting necessary with voiced disagreements. The institutional organization of international standard setting is complicated and shrewd in terms achieving its goals, with careful attention to balancing of interests and concessions, conciseness and ambiguity, along with an acclaimed focus on the scientific and technical. As the early standardization efforts could be said to concern purely the technical and scientific, and the realms of standardization to a large extent the domains of engineers and scientists, these professional groups continue to dominate standardization and standard use, also in the system and process areas which are less technical and more organizationally and socially oriented. Examples of this tendency are the generic systems, standards such as ISO 9000, *Quality Management*, to be focused in this thesis.

2.2 IN SUPPORT OF STANDARD USE AND DIFFUSION

If one side of the coin is the making and ratification of standards, then the other side of the coin is their upkeep and application. The institutional setups that contribute to sustaining the interpretation and uniform application of standards are extensive. This is where W and similar organizations come into the picture as central actors. The question they aim to answer being: – *How may clients be sure that their prospective business partners actually conform to the standards they claim to accommodate?* The answer is a system of accredited certification which constitutes a network, or a pyramid, of trust.

On top of this pyramid of trust resides the International Accreditation Forum (IAF), alongside the ISO, a body that is strictly separate from ISO. ISO has however set up some standards (such as ISO/IEC 17000, *Conformity assessment - Vocabulary and general principles*) and a number of guidelines for conformity assessments of its standards. ISO refers to the IAF and its members for third party, also termed independent, assessment and possibly registration. Both organizations make these

guidelines accessible via their web-pages. Certification is however not a requirement of the standards themselves, and ISO does not issue certificates. However, national regulatory bodies may have incorporated chosen ISO standards into public legislation. ISO states that seeking certification of an organization's implementation of for instance ISO 9000, is a decision to be made on business grounds, for example: if it is a contractual or regulatory requirement, a market requirement or a customer preference, an element in a risk management programme, or a staff motivating initiative for management systems development (ISO 2008).

2.2.1 Certification and Accreditation - upholds a uniform standard

The system of certification is elaborate, institutionalised, and serves to establish a pyramid of trust, see Figure 2.2 *A substantial pyramid of trust*, which seeks to ensure a uniform interpretation and application of both system standards and other standards. This involves a number of different organizational actors whose roles and tasks are listed in Table 2.1 *The actors of standards*.

Organization	***Activity***
Client O (~ Organisation)	• Is audited and receives a certificate - a license to trade • Pays CB for a certification process
CB (Certification Body)	• Performs audits /assessments & surveillance /monitoring • Ensures compliance with the standards • Maintains auditor's competence, together with AB • Pays for accreditation process
AB (National Accreditation Body)	• Performs accreditation and monitoring of the CB (Provides CBs the "license to operate") • Performs quality audits on the CBs • Basically national, but may operate internationally too
IAF (International Accreditation Forum)	• World association of Conformity Assessment Accreditation Bodies • Provides standardization of interpretation of the ISO standards for the ABs and CBs • Ensures that its accreditation body members only accredit bodies that are competent to do the work they undertake & are not subject to conflicts of interest • Establishes Mutual Recognition Arrangements (MLA) between its accreditation body members
ISO (International Organisation for Standardization)	• Coordinates & sets, maintains and publishes/sells the standard • Gives standards & guides for CB's "license to operate" & for the AB on how to check the CBs • No policing activities to ensure compliance

Table 2.1 ***The actors of standards*** *creation, maintenance, use and promotion.*

The IAF has two main responsibilities, namely *i)* the control of certification bodies, termed accreditation, so that the organizations that perform certification are deemed competent and independent; and *ii)* the establishment of Multilateral Recognition Agreements (MLA) that secure international mutual recognition of certificates issued by any accredited certification body. Their logo is, on their corporate brochure, accompanied by the catchphrase: *Certified Once, Accepted Everywhere* (IAF 2006). The IAF was established in 1993 in Houston, USA. However, the IAF announces its 22nd Annual Conference to be held in 2008, suggesting a history dating back to 1986. The first MLAs were signed in 1998 (IAF 2006). IAF also collaborates with the International Laboratory Accreditation Corporation (ILAC).

Similarly, the ISO with its broad membership and varied and numerous participants in Technical Committees (TCs), Joint Technical Committees (JTCs; ISO & IEC), Sub-committees (SCs), and Working Groups (WGs), comprise a separate pyramid of trust. In addition, both have the support and endorsement of various International Governmental Organizations, including regional ones, through alliances such as with the ILO, IMO, WTO etc., who seek to promote free trade (ISO 2004).

In effect there are three different sets of organizations/institutions (ISO; IAF; IGO's) that jointly seek to promote and legitimize the ISO standards. These provide support for the system of third party certification of the relationship between a supplier (1.party) and a potential customer (2.party), as illustrated by Figure2.3 *A system of third party certification*. The same stakeholders may in some capacity participate in all these forums, adding to their mutual support and promotion.

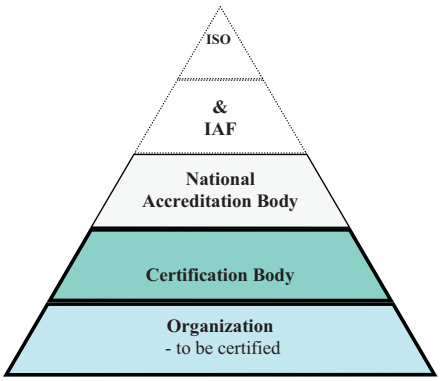

***Figure 2.2. A substantial pyramid of trust**, topped by ISO and IAF, form a backdrop for a certified organization, in effect validating the certificate.*

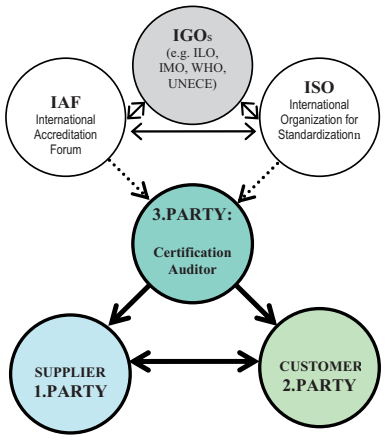

***Figure 2.3. A system of third party certification.** Supported by three groups of institutional actors: ISO, IAF, IGOs.*
See also Table .2.1.

The audit certification bodies, and the professional experts they employ or hire, are also significant players in the establishment of such standards. The standards often start out as in-house or brand specific, evolve into national or regional ones, before becoming part of established international ISO standards. See for instance Backhouse, Hsu et al. (2006) in MIS Quarterly Aug.2006, Special issue on Standardization.

The standards that clients and auditors deem appropriate to base a particular audit on are subject to choice. The purpose of a certificate is to provide on the one hand: assurance, or on the other hand: clearance for participation to one or several parties. Power (1997) emphasises the first when he states in his book on financial and similar practices of auditing: *"In' The Audit Society', I argue that institutionalised pressures exist for audit and inspection systems to produce comfort and reassurance, rather than critique"* (Power 1997, p. xvii).

W is a user of standards. As a certification body, they certify that a system or product is in compliance with the chosen standards. As such, they are a part of a system that aims at building and maintaining the legitimacy of an established standard by ensuring correct use of the standard as well as advocating its use. W, or its professional experts, may also participate in the formation or revision of standards as members of technical committees. The choice of standards to be certified against, over time becomes institutionalised within each specific field and business sector. Exactly which standards a client signs up for certification according to becomes as much a practical choice as well as an alignment to, the demands within, and to, the business sector where the W client operates.

In the early days of ISO 9000, partly competing, alternative certification like practices on quality and management systems were established by industry & trade organizations for the benefit of their own members, such as RIF - Association of Consulting Engineers, Norway (ref. personal experience as a RIF member employee). Other lines of business however, such as the oil drilling industry, see the generic ISO system standards and their Certification Body certification as inadequate but complementary to their needs, as customers often perform their own second party certifications of potential suppliers (ref. personal communication CorrOcean employee – a supplier company, 2004).

2.2.2 Certification in terms of a generic standard

The generic standard differs from the other ISO standards in that they are systems standards which are meant to be applicable to any organization, regardless of its size, location, maturity or business area. The first version of the ISO 9000 family of standards was published in 1987, and has since been revised in 1994, 2000, 2005, 2008. The 2000 version - *ISO 9001:2000, Quality Managements Systems - Requirements* was the version in use during my fieldwork.

The ISO 9001:2000 identifies eight principles for a quality management approach: *customer focus, leadership, involvement of people, process approach, systems approach to management* (eg. a system of interrelated processes), *continual improvement, facts-based approach to decision making, and mutually beneficial supplier relationships.*

The International Standards Organization web-page of Jan. 2005 (ISO, 2005) says:

> *ISO 9000 is primarily concerned with "quality management". In the everyday context, like "beauty", everyone may have his or her idea of what "quality" is. But, in the ISO 9000 context, the standardized definition of quality refers to all those features of a product (or service) which are required by the customer.*
>
> *.."Quality management" means what the organization does to ensure that its products or services satisfy the customer's quality requirements and comply with any regulations applicable to those products or services.*
>
> *.. Both ISO 9000 and ISO 14000 concern the way an organization goes about its work, and not directly the result of this work. ... While this confidence logically extends to the things it makes, neither ISO 9001:2000 nor ISO 14001:2004 contains requirements for specific products. Therefore, certifications to these standards should not be presented as product guarantees.*

ISO 9000:1987 was the first generic system standard defined by ISO. It is a process standard, as opposed to a technical functionality standard. Its approach was revised considerably in the 2000 version, by shifting the earlier explicit focus on required routines and procedures, towards processes and a process approach. It is now the most well known standard in the world (ISO 2006), and as of Dec. 2006: almost 900 000 ISO 9001:2000 certificates had been issued in 170 countries. This was a 16% increase from 2005 (ISO 2006). Following years of continued increase in certifications performed, the annual growth saw a significant slump in 2004 and 2005 to increase again in 2006. The worldwide growth figures according to the ISO Survey were: 2002: *122 736*; 2003: *330 795*; 2004: *162 213*; 2005: *113 735*; 2006: *123 999* (ISO 2006, p.8).

2.2.3 The accredited certification procedure

The typical ISO 9000:2000 certification client signs up for a certification program with a three year Audit Cycle. The typical ISO 9000:2000 3 year Audit Cycle:

- begins with an Initial Audit *(IA)*
- is followed by a yearly, or half yearly, periodical audit *(PA1, PA2)*
- after three years it is time for a Recertification Audit *(RA)*.

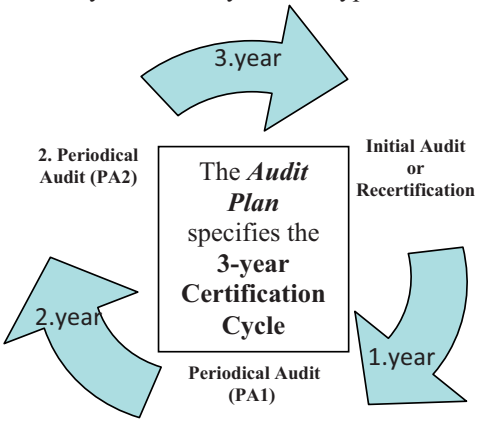

***Figure 2.4 The ISO 9000 3 year Audit Cycle**: IA or RA, followed by PA1 & PA2.*

The periodical audit is a limited version in that less time is spent, and unless something serious is uncovered, it aims at ensuring that the client keeps up the good work rather than checking whether the client deserves to have a certificate. However, serious discrepancies found at a PA may also revoke the certificate.

An Audit Plan is established to define which areas /paragraphs and processes are to be included in each periodical, - in order to cover all areas within the three year period.

A framework for this procedure is defined and controlled by the national Accreditation Body, limiting the elements on which different certification bodies can compete for clients. As different industries use different systems standards and industries have differing operational challenges, they require different technical and managerial experience and knowledge of the auditors who are to perform the certification. There are explicit qualification demands for the auditors' personal accreditation in regards to education, professional experience within a line of business, with a renewal scheme for doing certification on each separate standard. Keeping track of the status of each auditor's personal accreditation status is an important issue when deciding which auditor to assign to specific clients and audits. Each auditor's client base may thus be spread over a wide geographical area, even abroad for those with particular competence areas and accreditations.

2.3 THE COMPANY WISDOM (W) – A CERTIFICATION BODY

2.3.1 In the business of trust

Doing audits according to various system standards is the central work task for W Certification. W Certification also does consulting, but that part of the business is kept strictly separate from the auditing part to avoid conflicts of interest. This study is restricted to audits for certificates according to *ISO 9000, Quality Management Systems* (QMS). The same auditors also perform audits according to *ISO 14001, Environmental Management Systems.*

The ISO 9000-family of standards, aims at guaranteeing to a second party – the customer, that an enterprise - the supplier first party, can deliver good quality through its application of the certified QMS. W fills the role of the third party that certifies its client - the first party, with the aim of making it eligible for business with any second party customers. The certifcation does not involve the the potential customers, except that these in turn may also be seeking their own certifications, possibly from the same certification body, and even the same auditor as chance may have it. The standard defines in an abstract generic manner how an enterprise can assure its capability and quality through a focus on their internal processes and a systematic management of these. It is W's task to establish whether the business activity is such that a certificate can be awarded or as the case may be, which areas need to be improved upon in order to gain or keep a certificate. W may therefore be described as being in the business of verifying that the business in question has the knowledge, the skills and the conduct necessary as well as the capacity to manage these, in order to be considered capable - and trustworthy (Power, 1997).

While the certification audit process results in final decisions in the shape of registred certificates, recommendations and/or identified *non conformities* (NCs), the whole exercise aims at documenting trustworthyness, which necessarliy implies that trust is also a central issue for those involved in documenting its presence. Being in the business of trust, the credibility of all parts of W's own activity is a focus point for both

management and individual auditors. *"We mustn't let anyone hack off the limb we're all sitting on"* is a common expression used when discussing their own practices, those of their colleagues or competitors all over the world. To secure this credibility they subject themselves to certification by a competitor, in addition to the government regulated accreditation by the national accreditation body[1]. W aims to live as they teach.

An essential part of the credibility issue, is the alignment of W's practices across different offices and countries in order to serve global customers in a coordinated and uniform manner. Regardless of which individual auditors, office or country of W performs an audit, the result for the client should be the same, for all practical purposes – simply because it represents the application of a standard. Lack of a similar result could be taken as an improper application of the standard or a deficient knowledge of the standard. Diversity in auditors' judgement would endanger the trust their clients place in W. Ensuring an alignment of the auditors' interpretations of the standard, after all a fairly static piece of information, - together with their interpretations of clients' practices, which would certainly not be static or equal, appears to be a necessary but monumental, if not impossible, task to achieve. W Certification Head Office therefore wants to improve global control and coordination through 'harmonizing' (i.e. standardizing) work processes and strategies across different local units. They are putting major efforts into designing, aligning and implementing common work procedures and common IS-tools - on a global scale. Having global customers implies the need for a global wide accountability of their certification practices.

That being said, mostly everything within the certification department revolves around the audits: marketing, signing contracts, revising contracts, scheduling the audit and follow-ups as well as accounting and issuing the final certificate. Certified clients receive a grand certificate: embossed colour logo on cream watermarked paper, dated and signed with blue pen. Some frame it and put it on the wall to impress alike: customers, partners and employees - and possibly future auditors?

2.3.2 W's Organization

The company Wisdom (W), with its head office in a Scandinavian country, is a truly international organization. All branches of W, amongst them: Certification and Consulting, operate mainly within the business areas of Energy, IT, Maritime and Industry. The Systems Certification branch of W, established in the late 1980'ies, is a fairly new activity compared to its older counterparts of product auditing and ships classification which date from the 18-hundreds. They comprise a significant and expanding part of the 6100 employees worldwide, making the auditors main bread winners in the company. As of 2006 they cover 85 countries, some 300 offices, and hold global market shares between the 5 and the 10% mark on both *ISO 9000* certificates and *ISO 14000*. W is accredited to certify companies according to a range of different standards including: *BS 7799* (Information security), *OHSAS 18001* (Safety), HACCP and BRC (Food safety), EMAS and FSG (Environment), and SA 8000 (Social Accountability), to name a few. Some of these have recently been revised and accepted

[1] W informs: ISO 17021:2006 *Conformity assessment* in 2006 changed the rules of accreditation, including a stop of certification auditing of a certification body by another certification body.

as ISO standards and given an ISO code number in accordance to The International Classification of Standards (ICS).

W Certification has in many ways been piggybacking on the older parts of W by being located in the same offices, using much the same secretaries, accounting and ICT-systems, adopting some of the previous customers, and – perhaps most importantly, by adopting the same well established logo and brand of W. In contrast to the previously established parts of W though, Certification has emerged in a decentralized and regionalized fashion in the sense that the certification services to a large extent have been developed, established, and cultivated in local offices partly outside direct control and participation from W's head office. Thus, whereas the 'old' W cluster, in Ghosal and Bartlett's (1998) terms, can be perceived as a 'global organization', the Certification cluster was, as of 2003, closer to the 'multinational organization model' involving a more decentralized operation.

In the country of my observations, there are about 30 steady employees and an available extra capacity of about 20 approved auditors/experts for hire from other parts of W, or outside the company. Their own employees, doing the QMS certifications, are dispersed over 5 office locations. Three of these offices are very small, with less than 5 people expressly performing QMS audits, which add an extra dimension of professional loneliness to their in-house hours. Being professional and experts within their various areas, and formerly having local autonomy at each office, the auditors are used to a fairly flat organizational structure and enjoy extensive personal autonomy. Their performance is nonetheless tracked by the department management at the national main office in terms of individual earnings and future booking. My observations mainly cover the largest two offices.

2.3.3 Certification – W's audit process

The organizing of certification work mainly used to be performed by the auditors themselves. In addition to the auditors, there is a smaller team of people who handle marketing and various back-office functions with the administrative part of customer-handling. Local secretaries help out with mail and accounting. Both marketing and back-office functions are currently expanding and changing, both through elements of centralization of tasks, and an accompanied introduction of new IS. Previously, each auditor had their own portfolio of clients, on which they handled the whole dialogue with the clients all the way through: from quotes, closing the deal, through setting up appointments, arranging for additional expertise assistance if required, being audit team leader during the on site audit and handling the follow up. But this local and individual autonomy is changing.

In order of time, from a W perspective, the tasks listed on the next page in Table 2.2 *Process Tasks in a W - Initial Audit, 2003* make up the process of a client's first time Audit. Before the changes are introduced, the formal version of a certification audit procedure consisted of nine parts. However, for the Periodical Audits (PAs), which take place at least twice between the Initial Audit and a Recertification Audit (RA), the first four tasks in the list are often reduced to one - a revision of existing contracts.

1. First contact & information gathering
2. Quotation preparation
3. Quotation acceptance
4. Document review
5. Planning of audit dates
6. Audit - on site visit
7. Reporting & Follow up
8. Recommendation (/Denial) of Certification
9. Issue (/Revoke) Certificate

Table 2.2 Process Tasks in a W - Initial Audit, 2003

The process, before and after the changes, is illustrated respectively below in Figure 2.5 *The formal procedure of an Initial Audit (IA) in 2003,* and on page 44 in Figure 2.6. *A Complete Periodical Audit Cycle (Pre-Audit, Audit Visit, Follow-up phases) – before and after harmonization steps.*

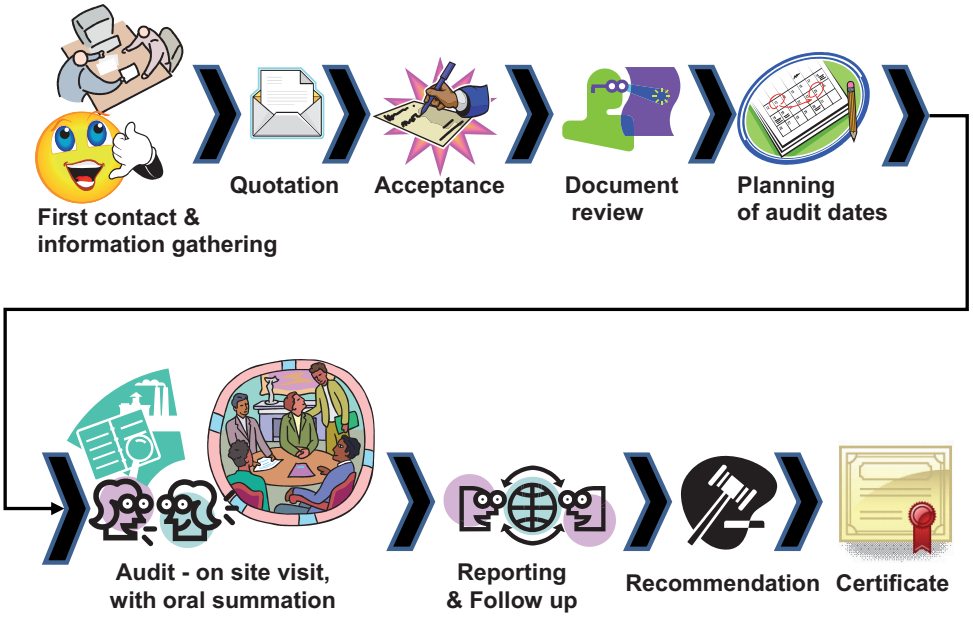

Figure 2.5 The formal procedure of an Initial Audit (IA) in W, 2003.

2.4 AUDIT PROCESS IN CHANGE

2.4.1 New actors and centralization

In 2002, a new post as logistics planner was established at the main office, to plan and to coordinate the audits across the country, possibly including overseas audits of international clients, with all the necessary appointments. The planning involves both client's and W's personnel, but may also involve additional assistance hired by both parties. In addition to the coordination of people, it may also be necessary to distribute to, or identify for the client, related material on the standards in question. The auditors on the other hand need access to what the client may have of available documentation

pertaining to their fulfilment of the standards requirements as well as an overall picture of the company, its organization and location, scope in question, along with the line of business or industry in question. Once appointments are in place, the auditor will contact the client.

The marketing department has been taking over part of the W-client dialogue for some time now. With mergers and acquisitions, reorganizing and sell-outs, the client landscape is continuously changing. Comprehensive contracts with outline agreements, volume discounts for numerous sites, or combined certification audits for several standards at once being amongst the possibilities. A professional sales initiative may be put in motion that spans both countries and other W products. This kind of contracting moves beyond the scope of most QMS auditors. While some of the interaction is removed from the auditors list of main tasks, they may still be called on to assist and participate indirectly by drafting bids for contract tenders, seeing as they know the client's organization and business on the ground.

Ideally, after the centralization steps of harmonization are introduced in 2002 (in the following termed step 1 and step 2), the first three of the tasks in Figure2.5 are to be performed by a central marketing function. The 5th – the planning of the timeline and dates, is to be performed by the central planner who also, to the extent possible, organizes the resources for the 4th – the document review. The scheduling planners do not have auditor expertise themselves, nor will the marketing people know everything about the clients' specificities, especially those old-time clients that used to be the 'sole' responsibility of autonomous auditors. So naturally, the first five elements of this process, regardless of reorganization, to some degree needs to involve the auditors who are the ones with the expertise or background insight necessary to deal with any judgements required for planning a quote for a particular client and audit.

Pre-Audit phase - Organizing the audit

While this is presented as a linear process, there are several things going on, possibly in parallel or in a different order. Contractual information about the client is registered in a client database along with invoicing data. Information about the client's type of business, size and number of locations, is relevant to how an audit is to be performed, its price and thus affects the quote, which standards might apply and which auditor accreditations are needed, and subsequently exactly which auditors to involve. Information about the client's business is collected and put into the current Client Database (CDB). All this pertains to W giving a quote with a price on the certification service. If or when the future client accepts, the next steps are set in motion. Appointments are scheduled for W's own auditor(s) including hired personnel, which fit with the client's agenda.

This articulation work, as it is called by Strauss (Strauss 1985), is now espoused as the responsibility of planners and marketing respectively. It involves communication by post and e-mail, fax, checking of calendars in MS Outlook as well as phone-calls, checking web-pages and ordinary post in order to finally store documentation, including contracts, in the client database (CDB), register appointments on the audit schedule in W's own Scheduler program and in the involved auditors' electronic calendars. The

Scheduler program also provides management with reports on predicted production and future booking of personnel. A vital motivation for the centralization of booking is better utilization of personnel by achieving a steady workload across the whole year for all the auditors in the company [ref. National Manager Certification, autumn 2004].

The coordination necessary, used to be the responsibility of the auditors more or less on their own, or amongst themselves, assisted on their own initiatives by local secretaries. With the introduction of the centralized scheduler and marketing functions, the delineation of responsibility has become subject to change. As one planner says, after she has been in the job for a year: *"They need to learn to trust me, and that takes time. And that is natural. Even though I have experience with scheduling from another line of business before I came here, I have had to learn a lot about certification auditing. But if it comes to technical or professional issues, I need to refer the client to the auditor. I do not try to assume that role or knowledge. And maybe the auditor will set up the dates with the client, and inform me afterwards. Some of them still like to do most discussions with the client on their own. I come in if there are changes made later, - like postponements* [Planner, sept.2003]*."* The scheduling planners, who started out as one and had become three people by 2005, clearly need to balance their responsibilities and actions against those of the individual auditors to establish working relations across auditors, office locations and clients. They somehow become third parties in the collaboration, brokering times and issues amongst auditors, experts for hire - and clients.

The delineation between marketing and the individual auditors also needs working out. As one auditor burst out to me: *"How am I supposed to know, there is a new agreement between W and the client's head office since they negotiated a general agreement with the client's mother company? Nobody told me, and how am I supposed to find out? .. Once I had to redo the whole quote process for a PA2 because marketing had made a deal I did not know existed! There is of course a contract document on the new outline agreement in the CDB stored under the mother company name, - which is a new owner by the way. They need to inform us directly instead of me finding out from the client, after I've given a quote!"* [auditor, spring 2004]. It seems the auditor felt this was somewhat embarrassing, which is perhaps not surprising, since this is perhaps the kind of issue that should be taken care of by a proper QMS. It is not easy to critique others if you feel that your own systems are less than perfect.

Single On-Site Audit & Post-Audit phase: follow-up & closing administration

The audit itself involves explorations of the interpretation of the standard as well as client issues in order to arrive at a common understanding of status and what other requirements are to be fulfilled before a certificate can be awarded. These discussions might involve iterations of both inspections and changes in company performance or routines. The subsequent actions must be reflected in documentation forwarded to the auditor during the audit's follow-up phase, all in order to reach the point where certification, or renewal of an existing certificate, can be recommended by the auditor. A recommendation is scrutinized by W Certification Comptroller at the main office, who subsequently awards the certificate.

Main working tools for the auditors are the various document templates used to communicate with the client, as well as to set up, guide and report from the on-site audit. Templates are used both as checklists for setting up quotes and contracts, setting up the agenda and carrying out the audit, to account for the actual audit, to communicate results to the client as well as to administrate the follow-up of the findings that need to be resolved and closed within given timeframes. The audit visit itself, is summated mainly in two types of document:

- A report gives an overall summation of the on-site audit, including any issues identified in any document revisions carried out as additional meetings before the on-site audit visit. Document revisions usually only take place in relation to the bigger recertification audit (RA), or the initial audit (IA), which has more effort allocated to it.
- Attached to the report, is a separate sheet for every '*Finding'*, – designed for information and coordination: logging of progress, the manner of solution and its closing when resolved. The different auditors have various preferences regarding whether a paper version is used or whether they do it electronically on their lap top, using e-mail to send the text documents back and forth between client and auditor.

So far, management has made no definite decision as to whether to go all electronic and disallow paper files. As the audit itself requires visiting various businesses on site, in their offices but also in factories, warehouses etc., dragging along a computer is not always practical. Also safety regulations, in explosive environments or clean areas of food production, sometimes make it impossible to have the computer close at hand. An electronic report would have to be compiled afterwards anyway.

Three year audit cycle

As the client normally signs up for a three year programme, the initial contract will cover the basics for the whole three year audit cycle. The contract will however need to be revised before each instance of a single audit – also the in-between PA1s and PA2s. Often, the circumstances of the client's business have changed since the previous audit, in ways that will affect both the shape of the audit and its price. Therefore each single audit will involve all the nine elements of the audit procedure, to some degree. The Audit Plan, which delineates the particular focus of each of the three consecutive audits, may also need to be revised during the three year cycle.

2.4.2 Ω Omega – W plans for a new global IS

As I enter W, mid 2003, plans were in motion, as of 2 years, to improve global control and coordination through 'harmonizing' (i.e. standardizing) work processes and strategies across different local units, on a worldwide basis. With its 85 offices worldwide, the variance in practice and background was considerable, with many offices originating from local initiatives and acquisitions. Their ICT solutions had varied, but most auditors now have the same kind of laptop and basic technical infrastructure. Locally however, they were/are using a variety of software applications for storing client information, accounting, their own templates for reporting from an audit etc. At this stage, the only common application across countries was the CDB, in effect a document storage system for storing electronic versions of audit documents and client information, on local or national databases. Although the CDB has a field for

Comments the systems manager tells me it is rarely used in practice. It is a problem that the CDB, and the way they use it, provides little awareness of changes to or additions of documents in terms of client status. Each nation's W had their own document templates with the common W logo ensuring its relationship to the W brand. The planned new IS will have a role in realizing the current strategy for differentiating W's certification services from the competition of other certification bodies by being perceived as especially innovative in using state-of-the-art technologies.

As W does not figure among the cheapest certification providers they do need to stand apart, for instance with their scientific competence. While W resides on the more expensive side in the certification business, they do hold a considerable market share, both in Scandinavia and elsewhere. This makes it particularly important for the auditors to supply good value for money. Their standards are high, in both terms of the performance of the company on a whole, as well as their personal performance. Added value is a concept that is frequently brought up in their discourses amongst themselves and in their marketing. How to supply it, what might fit into that category etc. This term is also featured in the material and focus of IAF (ISO&IAF 2004), so it is not a W specific service. With their standing, technical exepertise and experience they should however be able to provide relevant added value better than most.

A new global IS, a web-based information infrastructure for auditors which I dub Ω (omega), is underway and implementation has already begun in several countries. At the outset Ω was aimed towards assisting back-office functions with client information related to: quotes, contracts, accounting and the like. Using the same information systems should enable a 'free movement' of clients and auditors between offices and countries. Enabling electronic coordination and presenting the same recognizable W practices worldwide. During development, additional features have been added and by the time of planned launching in this country, mid 2004, a workflow module for the auditors has been included. A gateway to the Scheduler program has also been added to the functionality list. The goal was to establish an all encompassing tool for all aspects of their global systems certification business. With Ω the whole certification process will be supported - and performed, in a similar fashion in all countries. Expectations and some apprehension on Ω's behalf, and their own use of it, is evident in the auditors when I enter W for my first interviews and observations in 2003.

The Ω system implementation is however halted. The planned local implementation by mid 2004 is firstly delayed, and then abandoned as there appears to be both technical and other problems with the installations already in motion. During 2005 it is decided to keep going as is, with half of the global company on Ω, and the other half on the 'old' CDB, while a redesign of Ω along with an outsourcing of its technical production takes place. This is a strategy to contain the escalation of both functionality demanded by end users as well as resources spent in order to meet the variety of local user demands. At the end of my fieldwork in the summer 2006, it is still unclear when a new successor global system will be in place. This does not mean however, that nothing happens during these two years. Harmonization is carried on both by a new certification perspective: – a new brand approach, here dubbed ABC, as well as by the auditors themselves as they seek to improve on the resources of their work practices.

Due to complex environments, technological change and the creation of large international markets, Bartlett and Ghoshal pose that the organizational solution for global companies, is to move towards a transnational model. This model combines the needs for integration and control on the one hand, and sensitivity and flexibility towards local needs on the other. This should facilitate the simultaneous achievement of the three objectives: global efficiency, national responsiveness and the ability to develop and access knowledge on a worldwide basis. The dynamic interdependence of a transnational company is a company which thinks globally and acts locally (Bartlett and Ghoshal 1998) in (Ciborra 2000, p. 45). This transnational strategy model fits with the initiatives of W, as they start out their harmonization initiatives.

2.4.3 The ABC perspective

The harmonizing initiative which follows in the wake of the Ω-halt is a new W approach to certification audits. ***ABC***, which puts particular focus on clients' Hazards, is introduced globally within the space of a few months.

While both employees and management each have several reasons for wanting to change some particulars of the present ways of working, W management focus on their overall market situation and recent signs of slack in market growth. The content of ABC, along with local and recently introduced centralization measures are aimed at improving the relationship to both existing and potential clients by specifically targeting the interaction with clients' top management. ABC includes clarifying the proclaimed, inherent, but elusive *'added value'* of ISO9000 QMS certification by creating a particular *'W-added value'* approach. This should make the added value of certification become more apparent for clients along with identifying W as a preferred certification provider. All in all, W seeks beneficial communication with their clients through the previous and new harmonization measures:

- Specialization (i.e.Centralization) of Scheduling & Planning
- The client may choose their own *Focus Hazards* for the upcoming audit – in effect *Added Value* for the client is secured and made apparent through a standard inclusion of tailoring for the client - and by the client.
- IS applications & templates to support ABC with electronic client interaction.

ABC has impact on the whole audit cycle including the on-site audit visit and the follow-up phases. Figure 2.6 *The Complete Audit Cycle*, shows the complete sequence of events/tasks, for an existing client, before and after the three consecutive steps of harmonization come together, on respectively the left and the right hand side. The labels to the far left show which of W's employees are mainly involved in the various phases: starting at the top with the *pre-audit activities*, progressing downwards to the *on-site audit visit* (discussed in Ch.8. Analysis A), followed by the *post-audit activities* and *closing administration* tasks. The revised audit cycle, in the right column, has the new actors in the pre audit phase. In the former audit-cycle, the audit team leader was the main W employee in charge of the client all the way through to the *closing administration* tasks where W's audit comptroller and back-office take over with the professional and administrative tasks for handling the client.

The new scientific focus of ABC, with its Focus Hazards, also has impact on the on-site audit visit in ways that do not readily show up in work process models of tasks and actors. The ABC Focus Hazards introduces need of new articulation work concerning the development of common ground and meaning (Strauss 1985; Schmidt and Bannon 1992). This affects the auditor's interaction with the client's various representatives (discussed in Ch.9 Analysis B).

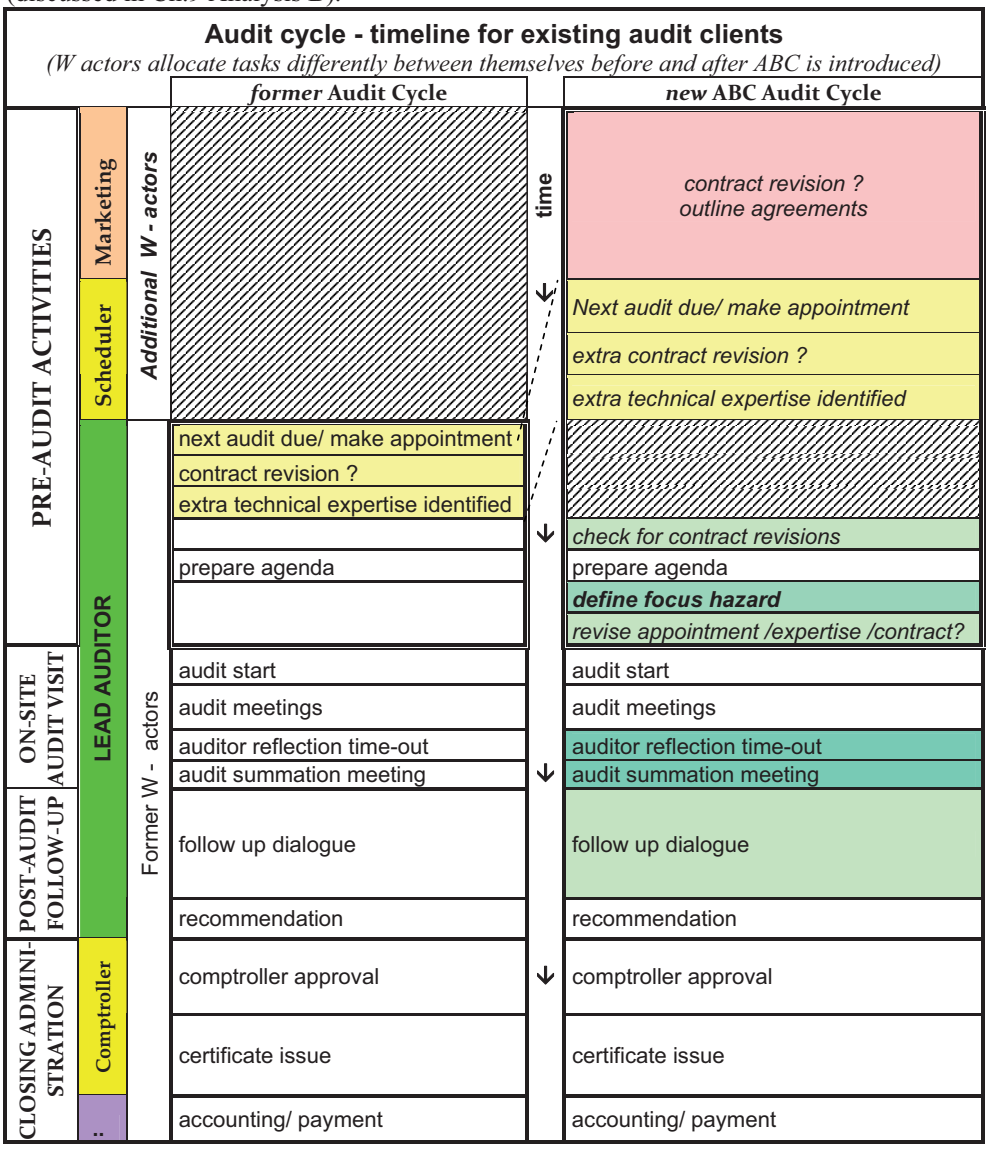

Figure 2.6 ***A Complete Periodical Audit Cycle*** *(Pre-Audit, Audit Visit, Follow-up phases) – before and after harmonization steps. Coloured areas indicate the new, altered or removed tasks of respective employees.*

2.4.4 W's Harmonization Strategies

While W as a certification body is an actor, amidst a web of organizations, institutions and standards which together are aimed at supplying trust in standards and their upholding through use, it is also an organization that lives by providing services to their clients - for which clients pay. The produce of W must in some way balance between providing the client with the services sought, and, being stewards and promoters of standards. The less technical and scientific, but more organizationally and socially oriented, generic system standards such as *ISO 9000, Quality Management*, are not readily easy to explicate as they deal with the behaviour of people, even if systematic behaviour. And people do not readily let themselves be standardized - or do they?

W is indeed in a position where they need to balance between what the clients' are willing and interested in paying good money for, while delivering a service of judgements that upholds that standards' qualities and remains in line and calibrated with the larger world's understanding of these standards. W's challenge is how to secure that their global organization, a vast number of auditors, is able to perform this balance of interests. Similar actions and judgements must be made by each and everyone of them. Novices and the more experienced, in Scandinavia, Japan, Pakistan or Brazil. Similar, even when their clients are so small organizations that each auditor most often works alone, without the benefit of colleague backup. Even when they are incredibly busy, they must stay up to date on both the current market challenges of clients, and the current understanding of appropriate QMS for the current ways of organizing businesses. The standard, phrased and written down, also in a small handbook which the auditor might bring with her, is an abstract representation of a collection of abstract notions on how to produce, trade and collaborate with quality. Quality is yet another abstract notion. It is the auditor's job to bring these abstract notions to life in a consistent way for each particular client and their business. And the way they bring these notions across must align with common notions of the standard.

How common must these practices be in order to pass as common? With the globalized world's expanding means of storing, transferring and retrieving data, the access to each others practices are increasing and becoming more visible both within and across organizations. The result of a Tokyo office audit is, or soon will be, available to the client's branch office in Rotterdam. It is in W's interest to secure that the Tokyo audit bears scrutiny both in Tokyo, in Rotterdam, with respective customers, suppliers and partners, or with any relevant Accreditation Body. W needs to secure harmonious work practices across offices - and across auditors. Some kind of standardization of certification auditor's work practices is clearly needed. More or less than they already are? Interactive service work, where a service provider interacts with the client while providing the servce, takes place in a setting where employer, employee and client have both shared but also diverse interests (Leidner 1993). It is into the balance of these three sets of interests that W's harmonization strategies will be brought to life - while they also need to accommodate the larger world of standardization and accredited certification.

My description of the harmonization efforts of W Certification during the period 2002-2006, may for ease of analysis and description be devided into three steps, as shown in

the table below. Following the centralization of scheduling and marketing, the initiative towards the workflow IS Ω, and uniform technical infrastructure, W continues its efforts towards harmonious audit practices. The first two (centralized scheduling & markerting), although they take place nationally, resemble the local practices in several other W coutries. The third step – ABC , which follows in the wake of the halted Ω, represents the new global wide strategy. All three steps, including the ABC audit perspective involves three elements – *) a new allocation of tasks, *) accompanied by the standardization of some certification feature, and *) new IS: *step 1: Scheduler system for the centralized planners along with e-mail and e-calendar for informing and corresponding with the auditors; step 2: nothing in particular, but the CDB is now used also by marketing; step 3: ABC comes with new templates for accommodating new mediation/interaction patterns with the client, including co-authoring the follow-up documentation together with client.*

Elements of W harmonization:	**Step 1: Scheduling** *(nationally, but Ω related)*	**Step 2: Marketing** *(nationally, but Ω related)*	**Step 3: ABC** *(globally, partly instead of, or in addition to Ω)*
Altered division of labour	Centralization of auditor task	Centralization of auditor task	Decentralization to client; Centralization to artefacts
Standardization of certification features	Domestication (/harmonization) of audit appointment-making	Outline contracts for sizeable clients	Focus Hazard to be defined by client
IS applications & templates	planners: Scheduler all: e-mail, calendar & laptop	new users of CDB	10 new templates: in powerpoint, word & excel; Electronic interaction with client

Table 2.3 Three elements of harmonization introduced in three steps.

Table 2.3 provides an overview of the main elements of the harmonization efforts, including the ABC- regime together with the centralization efforts that are under adoption. These will be described further in Ch.9 Analysis B.

2.5 IN GLOBAL GOVERNANCE OF PRODUCTION AND TRADE

The chapter has delineated the company W, its context of business and given an overview of how they have been organizing their production from roughly 2002 to early 2005.

To sum it up, *standards* is a keyword for defining what W is about – be it from a local practice (micro), global institutional (macro) or organizational (meso) perspective. They use them, may participate in making them and revising them, they belong to a global professional community that exists because of and for them, they learn them, teach them to others, ground their thinking and argumentation in them, check practices according to them, are guided by them, work through them, discuss them, advocate them, are judged by their use of them, in effect they operationalize them for a considerable number of organizations and individuals across the world. In short, W as service providers lives standards as their raison d'être in a competitive market. They have done so for almost 150 years which means that they are part of institutionalised global practices, probably

increasing in scope and reach as you read. They are continuously working to become better and more efficient at it. And like any contemporary organization with aspirations, they aim to use information and communication systems (ICT) to do it.

The next part of the thesis

The contexts, contents and effects of W's harmonizing strategies will be explored in this thesis: for certification, for the auditors' work practices and their role as auditors, for their employer W - and their clients. This chapter concludes the introductory part of the thesis. The next four chapters present a theoretical background for a comprehensive analysis of the work practices of the observed W employees as socio-technical circumstances change.

PART II

THEORY

PART II - THEORY

3 DECISION MAKING

About this chapter

We aim to explore a central aspect of the work of the certification auditors, namely the *performance of decision making for the benefit of clients*. In this chapter, this will be discussed without dealing with the issue of how the use of ICT as part in work performance might influence performance. By presenting and discussing a selection of different approaches, a comprehensive process-model of *practical* Decision Making (DM) is developed. This model gives consideration to the efforts, the broadly contextual and the local situational aspects that enter into and shape DM in service work, also QMS auditing.

To begin, a generic process model of production work is described to illustrate a common, formal way to illustrate organizational activity. This model, an ideal exemplar of work, is advocated by for instance the ISO 9000:2000 standard on Quality Management and Quality Assurance (QM & QA), through its focus on measurable product outcomes. The model is therefore both a working tool for the QMS auditors in their discussions with clients, while it also serves as backdrop for this theorization on the auditors' own work. Based on research literature, this is followed by a theoretical examination of the processes of decision making in organizational settings. Starting with a rational, logical production oriented model of DM, the deliberation moves on to include the context and a more situated perspective, involving sensemaking, calculation and judgement at a detailed, yet practical level. The discussion concludes with a generic, synthesized and expanded model of practical decision making with a broad yet detailed perspective.

This chapter, which looks closely at the main work process of certification auditors, opens for further theoretical exploration in the following chapters of particular aspects of practical DM in adversarial settings, including detours into the role and effects information systems in a broad sense. Firstly, the focal activity of the DM process in organizational settings, across communities: *sharing* of understandings (Ch.4.); secondly, a challenge for the DM process is the climate in which it takes place, requiring personal *perseverance* in face of contradictory influences (Ch.5.); and thirdly, as a process grounded in the use of standards in a globalized society, with increasing transparency due to ICTs, the need for global *predictability* in performance across time, space and culture (Ch.6.). Ch.2. describes the case and context of W's certification audit practices.

Questions to be explored in this chapter are: **What is organizational DM, what characterizes it and how is it carried out? What enters into its process, what comes out of it, - and what does not?**

3.1 A GENERIC MODEL OF A WORK PROCESS

The generic model of a work process perceives work as chains of activities. Inputs, such as raw materials, are processed to be made into products. Se Figure 2.1 *A: Generic Process Model*. Being a generic model, it should be applicable to any kind of production and any kind of input, including work which involves the treating of information. Knowledge Intensive Firms (KIF), as opposed to traditional industry, typically perform work where information is to be manipulated through knowledgeable work (Robertson and Swan 2004). The work of consultants and auditors should fit into the category of KIFs. Does punching data, the work of accountants, or the work of auditors all fit into this production focused process model?

The ISO standard on QM Systems (QMS) typically suggests that management should use a process approach in addressing quality, by identifying their company's processes, and monitoring their inputs and outputs, in order too evaluate the quality of each process. Properly designed process chains are under control - if the input/output values for each process element are within their prescribed ranges. If this turns out not to be the case, then the process should be redesigned to make it more transparent for measurement and control. A strategy which allows for new entry points for measuring and evaluation. This conceptualization of work presumes however, that processes may be divided into self contained parts that may subsequently be re-joined, without repercussions or side-effects, even when human beings, intellectual work, and collaboration are involved in a process.

Another variety of a work process model is the model for the process of quality improvement is cyclic in its approach, as described in the ISO 9000:2000, *Quality Management Systems* standard. The output of one cycle becomes input for the next cycle. This is a systematic approach to revision and reflection upon production work processes with four elements: *plan* the activity, *perform* the activity, *check* whether it matches expectations or requirements and subsequently *act* to improve it. Plan, do, check and act, – commonly known as PDCA. See Figure3.2 *B: PDCA Model*. Additional inputs are *customer satisfaction* and *product quality requirement*s which should be used as reference frames to be checked against, and the production process A is what is under scrutiny. So A too, is an input for B.

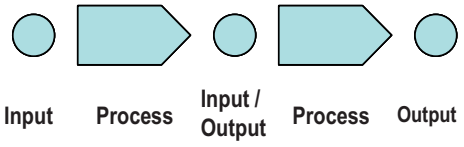

Figure 3.1 A: Generic Process Model
Note - Focus: Scrutinize & measure in-/output; Assumes stable surroundings.

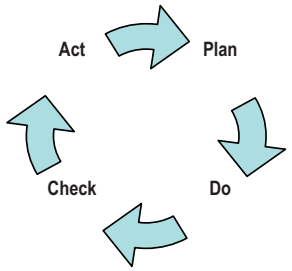

Figure 3.2 B: PDCA Model (Plan, Do, Check, Act)
Note - Focus: Evaluation; Acknowledges change.

The model diagram of this process of evaluation for improvement does not show the input/output entities but identifies the processes in focus. These two models fit together. B is a process that uses A as input, along with some other input. The B (QM) process is modelled as a 'side-activity', which uses the input/output measurements from A, the production process to be improved, as its input. The output of B (QM) is a potential change in the process of production (A), in addition to the feedback to B itself. B is a process of evaluation, and A is a process of production. Both of which must take place in a competent and QMS certified organization.

Both these models, which represent canonical ways to describe work, are presented here as a backdrop to the deliberations which follow on the process of practical decision making. A few general observations on process models are appropriate at this point. Firstly, the fact that there are two models enables a view of production work and quality control/management work as separate issues, - and that they are possibly different in kind, inviting separate use by separate bodies. Secondly, they illustrate that models in general, and their illustrative diagrams, directs our attention towards something, - and away from what it lacks/ignores by its non-presence. Thirdly, models illustrate an ideological progression of work, rather than the messiness that is inherent of daily activity (Suchman 1987). Fourth, it is also worth noting that with these two basic models, two different main foci are delineated – the process **or** the product. The work process model points us towards its products, the inputs and outcomes, perhaps because those are issues that represent the client' interests, or the moneymaking interests: the products for sale. In doing so, attention is directed away from the activities of production and its circumstances. The evaluation of activity and the participation in this evaluation is modelled as a separate issue apart from clients or production operatives. This kind of work is apparently more advanced, certainly more abstract, as it forwards a more comprehensive approach concerning the processes, provided that the state of the product in-/outputs indicates that such scrutiny is warranted. A warranted question is whether the work of a KIF would be profitably modelled in terms of its in-/outputs like A, like the Figure 2.5 *The formal procedure of an Initial Audit(IA) in 2003* in Ch.2.3, or as more of an evaluative exercise like B? While separating the issues of process and product allows focus and perfection of each when circumstances are stable, their mutual dependence does not figure in the product model A. This means that model A does not readily cater for the change inherent of dynamic contexts.

And what about the auditors who perform certification as their line of work? Certification is their production. Which of these models fit them? A, B, or yet another one? They treat information, they even gather it. They evaluate it and they produce a decision, which is materially and symbolically put into a certificate. This thesis intends to explore this, both theoretically and empirically, in order to gain insight on the use of ICT in these auditors' work. The starting point is an exploration of theorizations on the characteristics of decision making as a practice.

There are of course other ways to describe work, and a variety of modelling perspectives and models to choose from. The one chosen here as a starting point, is chosen due to its widespread use, its simplicity and therefore its applicability for certain objectives, and that fact that it is closely related to the theories in use by the objects of

study in this thesis - certification auditors on Quality Management Systems (QMS). ISO 9000:2000 *Quality Management Systems* aims to be a generic strategy for achieving quality management and assurance, regardless the kind of industry or production to be managed. That being said, both auditors and their clients may use a variety of other models, perspectives and techniques both in addition to and instead of the one presented here. This simple one does however amply illustrate the context for one basic objective of rationality, that of measurement for control - and QM.

3.2 HOW ARE DECISIONS MADE?

3.2.1 A Rational Model of DM & Decision Support Tools

The so called scientific and rational model of decision making illustrates the basic elements of producing a decision, as well as being a basis for design of decision support tools. See Figure 3.3 *Rational Model*. A closer look at such tools, such as those of the medical arena, illustrate the content of the model. Berg (Berg 1997, p.3-4) refers to three types of support tools in the case of medical decisions: *i*) computer based systems, *ii*) protocols, and *iii*) decision analytic techniques. Each of them are illustrated like this: *(i)* In the case of Computer-Based Decision Support, Reggia & Tuhrim (1985) is quoted: An *Individual patient description* is compared against a *Knowledge Base* by an *Inference Mechanism* which generates *Advice tailored to the patient (Reggia and Tuhrim 1985).* The inference mechanism may be embedded in symbolic 'conditional rules' or statistical formulas. *(ii)* Computer support in the shape of Protocols, offer pre-defined, stepwise, optimal paths through complex or troublesome medical situations. Finally, *(iii)* Clinical Decision Analysis brings statistical techniques to bear on problems concerning the management of individual patients, allowing the physician to choose strategies based on projected utility. The rational model of a DM work process is abstract and made generic by ignoring the context of its application, both in terms of setting, involved actors, variance in inference mechanisms, the historical development of the present situation, or the future consequences of its output. It could be said to be simplistic or just having a very specific focus on the technicalities of inference.

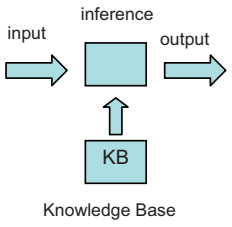

Figure 3.3 Rational Model of decision making *(Reggia and Tuhrim 1985)*

Berg explores, ethnographically in context, the use of decision support systems, and debates the various kinds of criticism brought forth by other researchers on the subject of technical decision support. He concludes that there can be no simple answers to the utility of such systems. He further refutes, various generic claims of, the futility of strategies based on translating, or, reducing complex realities into formal systems as part of larger contexts (Berg 1997). One explanation for the non-conclusive utility of

computer based Decision Support Systems (DSS) is provided by Silver (Silver 1990), who illustrates that they may be designed on the basis of two very different strategies. One, in which the tools are based on either loose and flexible designs, as opposed to the second of rigid and controlling designs. When the user may choose intelligently amongst various types of support tools, such as programs for calculation and statistics, this is the flexible kind. The other variety retains control, limits options of workflow, in order to guide the user towards appropriate decisions and actions.

Silver points to the fact that technological systems vary in their approach to when and how, and on which kinds of issues, the user is in control. Is control and discretion delegated to the system - or to the user, or somewhere in between? Either way, there are implicit suppositions within every system's design: about the capability of the user, on the organizational context itself and on the latitude suitably allowed the user in the application of the system. Such suppositions about the context and its stability, including users and their awarded latitude, are neither visible nor addressed in the rational model of DM that the DSS instantiate. This illustrates that for understanding the practical work of decision making, on more than an instrumental level, the rational model has limited value.

The following will explore two different approaches from the literature where the context of DM is included. Finally, all three perspectives will be combined into a comprehensive model of practical DM. One approach comes from Science and Technology Studies (STS) by Callon and Law and begins by considering reflexive agency and calculation, and expanding those into a term called *qualculation* (Callon and Law 2005). The other, is from Organizational Studies where Weick (Weick 1993) proposes that an alternative approach for the study of DM is *contextual rationality* as a practice of *sensemaking*.

3.2.2 DM as a Process of Reflexive Agency

Callon & Law (Callon and Law 2005) debate calculation and judgement as examples of both social and rational action. Action that is socially taken to be reasonable is reflexive in its approach. Reasonable action represents action that comes out of a self-reflexive agency. The issue being how rationality may enable - or disable action. Self-reflexive agency is the capacity of the thinking, reflecting and revising subject "*to resist causality and initiate new kinds of action"* (Callon and Law 2005, p.2). One way social action has been theorized, dates back to Weber's classification of social action in four categories of reason: *'ends'-rationality* (zweckrational, as a logic of means to achieve an end), *'values'- rationality* (wertrational, as a logic aligned with values), *affective action* (as following a state of mind), and *traditional action* (as a routine repetition of the way things always have been done) (Weber 1930; Hewett School 2007). These distinctive reasons for action have been developed to theoretically separate rational from irr-rational action. The last being action that follows from 'not thinking, just doing', in short: thoughtless action. Callon & Law however make the claim that both the rational and the irr-rational is present in all kinds of action, including all of the four 'Weber-rationalities'. Rather, the issue is that *action results from a multitude of different kinds of logic or rationality, in variant combinations, that grow out of the material and social efforts of the situation and its context.* In Foucault terminology: different logics are

dialectical, multiply present and mutually constitutive. *"[A]ll calculation builds itself with and against non-calculation – and vice-versa"* (Callon and Law 2005, p.2). You do not have one without the other, too some degree.

To put it shortly, the authors claim that both the shape of action and the ability or propensity to act, the agency, is shaped by a hybrid of various kinds of logic, made available by socio-material arrangements (bounded reflexivity). This hybrid argument effects a reflexive agency which assigns both a capability, motivation and trust, all based on the same hybrid of logics which constitute the argument. ***Making decisions is an act of reflexive agency***. Reason and calculation, in this wider perspective of mutually constituting logics, contributes to a more detailed understanding of how DM is performed when several parties are implicated and involved.

To begin with the basics : a stepwise and practice oriented view of decision making, is described to consist of three main elements: *i)* assembling and choosing resources for evaluation, *ii)* their translation into calculable elements *iii)* and eventually their summation (Callon and Muniesa 2003). See Figure 3.4 for a comparative illustration. It has also been usual to distinguish between two types of decision making, namely calculation and judgment. Calculation is based on codified information that holds it shape. It is quantitative in both its algorithmic mechanical form, input elements and results. Judgement on the other hand, uses information that is partly tacit and unaccountable in its deliberation (Berg 1997; Moser and Law 2006). Both calculation and judgement fit into this three-step model, although the types of information involved, how it is selected and translated for use, and which kind and number of logics are involved in its eventual summation will vary. The term summation is taken to illustrate a variety of logics, including the mathematical.

The three-stage stepwise model appears at first glance to be analogous to our previous rational model – at least in terms of 'pure' calculation. But there is more to decision making than calculation, and this model is explicit on the fact that there is assembly and choice involved, directing attention to the host of preparations, relating to the context, that is performed before the final summation. What gets assembled and what is left out? The claim is that considerable effort is made in terms of: assembly and translation of resources in order to fit them together in a way that allows summation. A quick comparison to the rational model: resources constitute all of *input* ≈ information, *knowledge bases* ≈ experience & knowledge.., *inference mechanisms* ≈ rules & logics.., and even the *output* ≈ conceptions of effects & consequences.

To explain the dialectical nature of *calculation* and *judgment*, as well as *rationality* and *irrationality,* the authors turn to the term Qualculation - along with its double-faced twin: In-Qualculation.

Qualculation, - not Calculation

As pointed out by several authors within STS (Porter 1995; Callon and Muniesa 2003; Callon and Law 2005; Moser and Law 2006), it is ventured that calculation and judgement are not really very different in kind, but that they both include mechanical elements with rational calculation to varying degrees. However quantitative the finally

translated elements may be, just prior to the final call – possibly making the final stage a mere calculation or choice, there will always be some evaluative judgement going on in the earlier stages. There is always some element of evaluation, both preceding and during calculation for decision making. The decision on which elements to include may be evaluative rather than algorithmic. Measurement, numbering and ordering always implies some way of translating real life issues into numbers, with some measure of evaluation involved (Latour 1987; Porter 1995; Bowker and Star 1999).

The need for consideration when making decisions is substantiated by organizational research literature in several ways, such as the consideration warranted by the present and situational (Suchman 1987), including consideration on potential consequences of a decision, or the utility of experience (Weick 1993). The formal descriptions of activities, whether as reports, models, or as guiding plans (Suchman 1987), serve to disguise the evaluative judgements that must be performed as part of actual practice. By looking past the situational element of evaluations, the formal descriptions of decision making both disguise and fail to give credence to the evaluative elements, thus hiding the role of the evaluative in decision making, or the evaluative aspect of any activity. The value of the tacit and unaccountable in action and knowledge is acknowledged in Weick's prescription of delegation to experts in situations of risk in need of resilience (Weick 1993). These issues will be discussed further in the next section, in relation to sensemaking.

Callon & Law (2005), based on the neologism 'qualculation' coined by Cochoy (Cochoy 2002), go on to discuss the relationships between calculation and judgement, and the necessity of effort and resources in order to carry out qualculation. The term qualculation joins both the terms calculation, a quantitative enumerative element with judgement, a qualitative evaluative element, into a hybrid that constitutes both. *The calculative and judgemental elements are mutually constructive forces in an undefined and inextricable balance of indefinitely many variants.* In this way, calculation is redefined and expanded by including and acknowledging judgement as ever present to some degree. In effect, ***decision making is judgement - although some part of it may be made calculative***. This judgement encompasses a variety of rationalities shaped by contextual issues. And the dialectical opposite of qualculation, non- or in-qualculation, is a situation where logics are altogether made inappropriate or inapplicable.

In-Qualculation

Instead of the separation of rational versus non-rational, or of calculation versus judgement, Callon & Law (Callon and Law 2005) venture that the interesting issue is *the duality of qualculation* versus *non-qualculation*. Non-qualculation or in-qualculation, being the lack of agency resulting from *the efforts to render something impossible to calculate or decide upon*. Just like for its opposite: qualculation, effort and resources are required to achieve a situation of in-calculation. Two contrasting examples of in-qualculability, its double face: *rarefaction* and *proliferation* will be presented.

In-Qualculation – type *Rarefaction*

The first example relates to the act of *rarefaction*, wherein materials to qualculate upon are not present, as their possible presence has been removed by rendering them

inadmissible. Examples of this are agapè and religious belief, where certain facts and kinds of logic do not count. This implies a shift or choice of context that incurs another kind of logic than the rational, scientific kind. Agapè is a Greek word describing selfless action based on unconditional love. Agapè's 'logic' is that such actions require no remuneration or gift. In requiring nothing in return, acts of agapè are made unaccountable, and, there is no need of counting. However, introducing accounting on acts of agapè may reduce them from their empowered and elevated position (of its own internal 'logic'). Talk of calculation will turn agapè into calculation, in effect re-shifting context again. This happens when a gift is reciprocated with a gift – and it turns into gift-giving, back and forth, which is accountable, albeit often in other terms than money. Callon & Law suggest that the self-less gift should be called a present – something that is made present. A lot of effort, a kind of disentanglement, is required to create a situation, like the agapè one, in decision making, as the resources, including the formulas for qualculation, must be removed. "*Because qualculation insists on its rights everywhere. .. Then agapè is under threat*. .. [for instance] *Justice, it is argued, can only be achieved if powerful groups – teachers, professionals of all kinds – are made accountable"*(ibid., p.7-8). A kind of unconditional trust may arise from agapè, a 'pre-trust'. If accounting is introduced, then this pre-trust dissolves into a need for verifiable trust, like the kind provided by auditing. *"Qualculative effects replace* [pre-]*trust"* (ibid., p.8). Effectively, blind trust dissolves at hints of distrust. Logics of rarefaction exist as a counter-position to qualculative logic. The qualities of one logic stand out in contrast to our experience with the other.

And while it requires effort to establish an in-qualculation as valid in a given situation, with its accompanying requisite 'blind' trust, it is obvious that it is also possible to tear down. If destabilized, the in-qualculation must be replaced with qualculation, and 'blind' trust with a verifiable reflexive trust.

In-Qualculation – type *Proliferation*

The second type of in-qualculability, is *proliferation* wherein the amount of materials, to ground a decision on, proliferate to the extent that calculating, or balancing them, is made impossible. Too many accounts make its totality unaccountable, and many accounts is often the result when there is a *multiplicity of interests involved*. By performing some kind of denigration, a removal of elements, the proliferation may be turned into a selectively tuned qualculation. Making a decision or taking a stand in such a situation, through selective 'tuning', will most often result in *only a temporary or local closure*. One example Callon & Law (ibid.) present in this case, draws from a public inquiry into a railway crash. During the inquiry, an increasing amount of arguments are brought into 'the equation' by the various involved parties, all implicating each other, and others, inviting chaos. The legal systems does however render some of these inadmissible, and some juridical conclusion is reached, but perhaps only in terms of certain interests, for instance as a tactic towards the prevention of similar future accidents. Such a circumscribed decision does not guarantee that the debate is closed forever from other perspectives, or even from the closure's initially motivating perspective.

Again, the way out of in-qualculation and into a decision is based on some argument that defines the boundaries of what is relevant to it. The ability to credibly argue boundaries, that imply proliferation with a way out the impasse, includes some form of trust in someone to resolve the issue. Possibly trust in the one who argues, or that someone who is in possession of the resources that the argument defines to be necessary. The creation of a qualculability, out of an in-qualculability, implies shifting to a realm of reflexive trust rather than blind trust.

Boundaries drawn, logics defined & awarded trust of bounded capability

Rarefaction is about removing relations (i.e. logics) or resources in order to deny the possibility of calculating an outcome. By removing resources, something simply is the way it is, there is nothing left to translate and qualculate. The rules of the situation are already given in religion or agape. Or, translation and summation requires some specific kind of resources or expertise that others do not have access to, such as those a priest might have. By defining an issue to belong to the realm of religion, in effect by redefining it from a possible context of qualculation into a context of religion, or tradition, ordinary logics are removed from the issue at hand. Both kinds of in-qualculation are about sorting away or including resources by defining boundaries for what belongs and what does not. *".. [C]losure is usually achieved in some mixture of negotiation and power"* (ibid., p.11). By reducing and eliminating, picking and choosing in ways that are appropriate to the logics of the day, it is made easier to draw final conclusions. *Also, for both kinds of in-qualculation, trust is placed in some set of actors as part the argument and effort that goes into the establishment of the in-qualculation, or its bounded local re-shift into qualculability.*

Figure 3.4 shows and offsets the various approaches to decision making discussed here, which found the basis for the synthesis to be made. The next approach, that of DM as contextual rationality and sensemaking, provides suggestions for how situations of in-qualculation come about.

3.2.3 Organizational DM as Contextual Rationality

What is particular about decision making in an organizational setting? Reed (Reed 1991), criticises a tendency in previous research on organizations to both end or begin with decision making, stretching the concept well beyond being able to say anything useful about it. The responses of the research communities to this criticism, is summarized by Weick (Weick 1993; 2001, p.106) as belonging mainly to three distinct research directions. The first addresses decision making as something naturalistic (Orasanu and Connolly 1993), paying attention to situational assessment and sensemaking (Klein 1993). Secondly, making decisions is described in terms of power frameworks (Brown 1978) which delineates what decision making might be within power-contexts. Thirdly, the normative models of rationality, e.g. Hirsch (Hirsch, Michaels et al. 1987) that were based on an asocial 'economic man' (Beach and Lipshitz 1993), were replaced by *"more appropriate models of rationality that are more sophisticated about social relations, such as the model of contextual rationality (White 1988)"* (Weick 2001, p.106).

Contextual rationality can be described as *action* motivated to *create and maintain* institutions and traditions that express some conception of right behaviour and a good life with others (Reed 1991). Contextual rationality, with its broad focus, implicitly encompasses the other two strands identified by Weick, but directs focus to a holistic perspective of a social and affective human, as opposed to the asocial, calculating, biologically determined, scientifically rational, or economic man that tends to stands out when looking in isolation at distinct roles from distinctly focused theoretical perspectives. Mutually, the decisions made will dialectically influence their context, such as the organizational settings involved in or implicated by their reach.

This focus points to the fact that decisions are made within certain local and wider contexts, to which the decision makers are not immune, nor wish to be – at least to some extent. As decisions are made in order to serve some purpose relating to the activities, and maintenance, of the institutions, traditions and morals, they must attend to these interests, and possibly balance them. But decisions may be intended for specific purposes that define what kinds of interests they are supposed to defend or uphold. Often, what is called neutral, rational or scientific decisions are sought. But what are the boundaries of neutrality? These boundaries must be sought and negotiated within their context. A legal decision made in a court of law might differ from verdicts of public opinion, or even that of a different court. *Neutrality also is a question of context.* For a QMS audit neutrality is, for instance, also a question of upholding a common conception of the relevant interpretation of the standard.

So what is contextuality, apart from diversity of interests which relate to meanings, traditions, ideas, or even – the coordinative arrangements for public governance such as auditing and certification? Contextuality relates to space, the local as well as more distant and wider implications for and of a decision. It also relates to time: the past, stipulated futures and plans, - and their influence on the present. The situated nature of actions is emphasized by Suchman (Suchman 1987) in her study of copy-machine use and design. Through an ethno-methodological study, she describes and analyses in minute detail how users struggle to make sense of, and decide on appropriate action, in response to what the copy-machine does, what it says in its display, in relation to what they actually wish to achieve. The plans of how copying is to proceed, as concocted by the designers and implemented in the hard-/software of the machine, misses out dramatically on being able to handle the local contingencies such as: when failures appear like paper-crashes, when misunderstandings arise, when people change their minds, when their evaluation of how far they have reached into the process does not match the machine's evaluation of the same issue - or a totally different issue. She demonstrates that unpredictable situations arise, whatever the neatness of design. From this it is inferred that plans of action may only direct action, but can to a limited degree constrain action, since local contingencies will arise that will influence and affect how the action actually might unfold, given the circumstances, then and there. Subsequently the plans must either left behind for the remainder of the action – or they need to be adjusted to deal with the new contingencies. Plans are resources for action (Suchman 1987), and not the action itself. Rationality is drawn upon to handle whatever situations may bring along.

This is the same point as has been made on the distinction of canonical descriptions of work as opposed to the non-canonical and 'messy' way daily work usually unfolds (Brown and Duguid 1998). Action unfolds in an ad-hoc fashion, guided at some level by the plan. Reference to the plan itself, in everyday action, usually appears after the fact, after the activity is carried out, more or less successfully, when actors talk about, or retrospectively give accounts of their behaviour or decisions (Suchman 1987; Weick 1995). Similarly, accounts of decision making, in retrospect, often display how they were guided by formal schemas and rational calculation in accordance to accepted norms of how they are to be made. Feldman & March claim that such retrospective accounts fill a symbolic purpose that indicates rationality. This demonstrated rationality adds to a validation of the decisions made (Feldman and March 1981). Partly in line with Reed's criticism (above), I contend that the symbolic element is not to be overdone as an end in and of itself, although not to be ignored either. Rational accounts, albeit retrospectively created, also serve the purpose of becoming experiences to learn from, and draw on in the future. Rational accounts and refined models, serve as plans and resources for recognition in situated decision making, as well as acknowledging and sustaining available common conceptions of rationality by referring to them. As such, they have utility both as a repertoire for negotiations of collective sensemaking, but also as resources that define the actors' conceptions of their own and others' identity and purpose (Lave and Wenger 1991).

Weick suggests that a closer look at sensemaking is necessary to understand contextual rationality and decision making.

Sensemaking

Seeing the concepts of sensemaking and in-/qualculation together may provide a richer understanding of decision making with its inherent contextual rationality, as it might take place in practice. First a summary of sensemaking, as elaborated by Weick, is described.

"Contextual rationality is sensitive to the fact that social actors need to create and maintain intersubjectively binding normative structures that sustain and enrich their relationships. Thus, organizations become important because they can provide meaning and order in the face of environments that impose ill-defined, contradictory demands [that require decisions]. .. *The basic idea of sensemaking is that reality is an ongoing accomplishment that emerges from efforts to create order and make retrospective sense of what occurs."* (Weick 2001, p.106) based on (Reed 1991, my underlining).

To illustrate the concept of sensemaking, Weick (ibid.) relates and analyses, based on second hand information, a fire disaster at Mann Gulch. This account illustrates situated decision making going on in a situation where the fire-fighters' ability to communicate with each other is reduced due to heat, wind and noise. Rationality and sensemaking are described to rely on *past decisions and experience* (i.e. 'knowledge base'), combined with *sought corroboration* from ongoing activities and surroundings (i.e. 'individual case description'). Corroboration is sought through *making sense* (i.e 'inference') of the perceived behaviour of trusted group members, including trusted legitimate leadership. In the extreme situation described, the present happenings for the fire fighters fail to

make sense in terms of their *experience and expectations*. The fire does not behave as 'planned', or rather as their preconceived category of it, which was later identified as faulty information. Their leader's behaviour suddenly seems to 'changes' as it no longer matches expectations, due to the fact that they do not see the fire change direction, as he does. They do not understand his curt orders, and no one is filling the customary role of repeating orders, thereby disallowing counterchecking of orders, their meanings, or the possible reasonability of behaviour. When the fire-fighters find that their ability to communicate is reduced, and they find that their own experience fails to be relevant or applicable, while the observed behaviours of the group and its leader do not make sense either – then sensemaking unravels, and trust in the leader unravels. Very few of them survived the fire, one exception being a pair who pooled their resources amidst the calamity. *The ability to make clear cut decisions on how to act, based on clear cut questions is not present in the middle of this crisis.*

What is Deciding?

"*Sensemaking based on contextual reality is built on vague questions, muddy answers and negotiated agreements that attempt to reduce confusion"* (ibid.). Sensemaking seeks corroboration from, and negotiates between, the available resources during the act. Without sensemaking, it is impossible for a decision maker, be it a decision that involves choice or some other kind of calculation, to make a final inference. Sensemaking is needed to carry out the identification of resources necessary to enable sensible choices, pick appropriate knowledge-bases, find appropriate kinds of summation/inference, and effect the translations for qualculation. Sensemaking is in other words a necessary part of decision making that enables the implementation of a DM process. Sensemaking has elements of a tacit and unaccountable nature. It is sorting and inferring all at once, or rather, an embedded and iterative 'background process' in any activity. It is about plausibility and search for meanings (Weick, Sutcliffe et al. 2005, p.415).

"It is about continued redrafting of an emerging story so that it becomes more comprehensive, incorporates more of the observed data, and is more resilient in the face of criticism" (Weick, Sutcliffe et al. 2005, p.415) . This also implies that decision making itself may be understood as an iterative, cyclic process of sensemakings and qualculations that 'eventually' arrives at a decision, as illustrated by the cyclic 'feedback' illustrated in Figure 3.4. And - lack of sensemaking is the corresponding characteristic of what Callon & Law term in-qualculation. The fire displays that in a sense-deprived proliferation, there is also lack of trust. New sense builds on past sense, while trust must be rebuilt.

3.3 SYNTHESIZING A MODEL OF PRACTICAL DM

3.3.1 A comprehensive model

The three presented models all cover decision making, but each has its individual focus. As the juxtaposition in Figure 3.4 attempts to illustrate, there is a difference in timeline, as in where each model begins and ends.

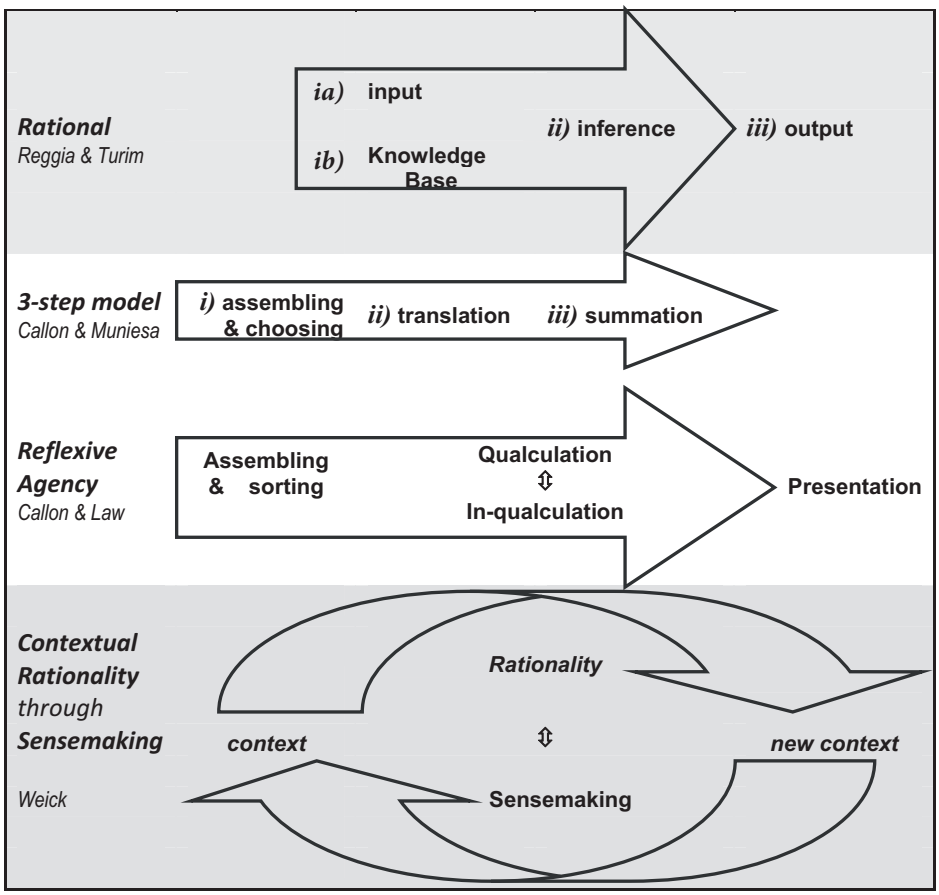

Figure 3.4 Alternative models of the Decision Making Process

The rational model focuses on the inference, a calculative, or perhaps qualculative, part. The other two both address DM from a comprehensive and practical perspective, although they use different frameworks and language. Both approaches effectively defy a linear and orderly progression, but consist of a cyclic, iterative and emergent deliberation that ends in a decision, or indecision. They direct differing attention toward the context, and the effort involved in making a decision that may serve its purpose. And yet, their differences allow them to draw attention to issues that enrich our understanding of challenges that face those taking part in DM. Both theories mention, in passing, the issue of *trust as something that may be lost* when rationalities or motives are challenged or questioned, while *motivation directs and drives* the process forward.

Sensemaking is a comprehensive approach to the complex human and social process that constitutes organizational DM that defies any evident way of splitting it into elements that could be rearranged. It does not operate in a orderly manner but rather as an on-going and iterative accomplishment, and puts focus especially on what takes

place before a final inference. Sensemaking *incrementally leads towards a choice*, or a kind of summation. The concept enriches in particular the rationality part of 'contextual rationality', as in how one tries to understand and create order out of the context as the situation progresses. Recognition and expectations are central. Sense is created incrementally, resources are gathered: there are those that get included, and there are those that do not. Sorting away the unnecessary, confusing and disruptive in order to identify the relevant and productive in terms of objectives. But also trust and motivation are issues of sensemaking, in particular in terms of the separate actors involved, but also in terms of the collective enterprise that focus collective interaction and sensemaking. There is no discrimination between types of resources that may be included in the making of sense: such as bodies, actors, artefacts, ideas and concepts, knowledges, experiences, times of past, present and expected futures, relations, processes, activities, interests, motivations, goals, et cetera, - even intuition. On the other hand, sense may also be 'lost' when one is not able to make sense of a situation. Sensemaking is both an individual activity, but also a collective activity - and they mutually construct each other, again as an incremental accomplishment. Weick also mentions, that *trust is lost when sense is lost,* which should imply that *trust is gained when sense is made.*

The pair of In-/qualculation looks at particular kinds of reasoning, the number and kinds of elements that are drawn attention to, and how this reasoning affects the agency and latitude of those involved. A reflexive agency is an agency created out of a reflexive evaluation of what might be socially reasonable. What constitutes the socially reasonable is built from the available resources, the agreed boundaries of reasoning, and a hybrid of logics. Each of these logics lie in the range: rarefaction ⇔ qualculation ⇔ proliferation. Any decision lies in the resulting balance of an indefinable hybrid of logics.

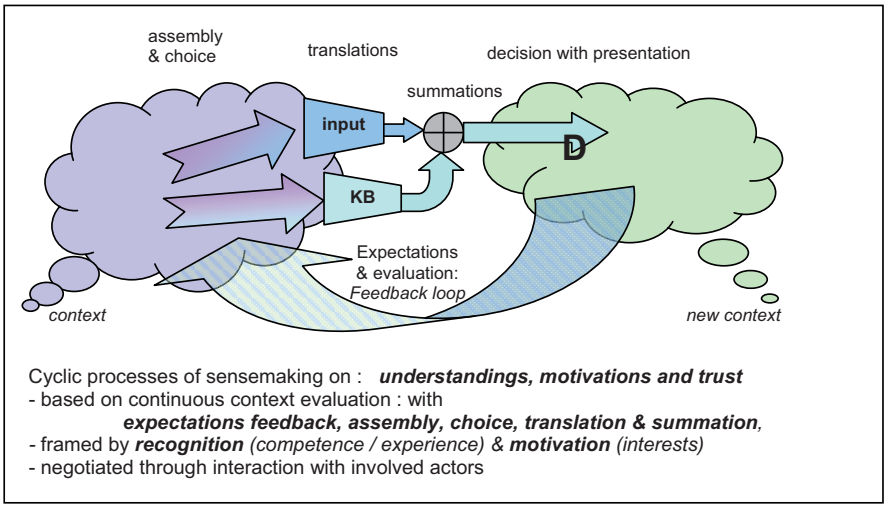

Figure 3.5 Comprehensive model of decision making [decision D]
Practical DM is cyclic and iterative sensemaking that establishes the relevant logics and resources with a responsible consideration for the situation at hand.

Sorting out a rational argument, out of the available resources, not only produces agency, it also allocates the agents of that agency, their motivation to follow through, as well as the reflexive trust of the others, the latitude to perform. The argument is not complete, there is no agency, unless it includes these factors (competence, trust & motivation), – and thus closure, a decision (D), hangs on all these elements.

So, the logics used and the competence needed to effect a decision also defines who takes part in that decision, or in which way they take part. Inversely this effects which kinds of decisions each individual takes part in. And so individual participants find their own sensemakings distributed over the same range of in-/qualculation, depending on the topics involved. *In a collective setting of differing objectives and capabilities, both objectives, logics, and the relevance of various resources becomes subject to negotiations.*

The sensemaking concept, especially when there is lack of it, makes the establishment of in-qualculations appear more natural and reasonable, less conspiring, than a preliminary glance at the concepts of rarefaction and proliferation might invite. A comprehensive model is illustrated in Figure 3.5 *Comprehensive Model of DM.*

A comprehensive theory of DM sees DM as a practice of contextually focused and attentive, negotiated sensemaking. The model above illustrates how resources, based in particular on recognition, are picked out of a larger context, thus framing the decision to be made. These frames are negotiated by the actors involved, based on training, skills, knowledge, past decisions - and the purposes to be served. Expectations, concerning the arena that the final decision is about to enter – including its purpose, provide feedback and enter the original context as resources, along with conceptions of how to present this decision. The resources are translated to make both the chosen information and knowledge bases applicable to the effected frames. The distribution of actors across the various parts of the process, the effected agencies which vary with the resources each actor has available, is not visible in the model. The feedback loop illustrates the iterative character of this practical DM process, which is sensitive to both its local and present situation, as well as future interests. It is a negotiating exercise for a creation of some common ground amongst possibly opposing interests, situated and local.

Do timelines, or mediation, affect the sensemaking processes, and thus DM?
The actors and the timeline of various actors' involvement are not visible in the illustration of the model. This is an issue that presumably will affect the sensemaking of those involved, especially in terms of the time-critical issue of trust; hence also the delegation of latitude might be affected. *New sense builds on past sense, while trust must be renewed or even rebuilt. When* and how actors are present and involved – and how this might influence the situatedness of negotiations, is an issue for empirical investigation, as the interaction and sensemaking grows out of the socio-material efforts of the situation.

The **timelines of involvement** in sensemaking processes for DM seems to be a factor to consider **when multiple actors are involved**.

3.4 CHARACTERISTICS OF PRACTICAL DM - IN CROSS-ORGANIZATIONAL CONTEXTS OF DIVERSE INTERESTS

This chapter has explored the intricacies of *practical decision making.*

Firstly, organizational DM has an eye to being reasonable by taking place as a cyclic and iterative sensemaking process that establishes judgement by picking up the relevant logics and resources with a responsible consideration for the situation at hand. It has the following characteristics:

Cyclic processes of sensemaking on: understandings, motivations and trust:
- relies on continuous feedback of expectations & context evaluations for assembly, choice, translation & summation of input
- framed by recognition (competence, experience) & motivation (interests)
- negotiated through interaction and dialogue with involved actors

- It is local and situated, resulting from present negotiated agreements
- and it affords a local and situated agency grounded in these agreements
- and it affords a local and situated amount of common understandings
- => into respective responsibilities and agencies towards the common enterprise

Decision making is a collective practice - an achievement which both draws on a collective effort and implicates wider practices.

Figure 3.6 Characteristics of practical Decision Making

Secondly, what enters into a DM process depends on the dialogue in which it takes place. Who, and on what terms they are involved in the deliberations. If the decision is seen as mutually reasonable it may contribute to sustain future associations. Organizational decision making does however not guarantee that its conclusion will be adhered to beyond the circumstances of it creation. Both motivation and trust are labile qualities in relationships. So, if DM in service work was to be performed purely as an imposed, inconsiderate or unfair calculative control-exercise it could end as a service encounter rather than an ongoing service relationship.

For certification auditing a successful audit should mean that the client has found the activity useful, and is motivated to continue on their journey of QMS improvement by following up on the terms of the audit, including staying on in the certification program.

4 HOW MUCH SHARING?

About this chapter

Given that people are different and have differing interests, how is it that they are still able to work together towards a common objective? Piece together their various capabilities and interests in a productive way which allows them to arrive at consensual decisions? What does it take to achieve a shared sense and perspective that allows fluent interaction, also on a regular basis? Decision making in organizational settings is rational action that must take heed of both future and past.

In close knit groups, typically characterized by the fact that people work together, shared competence and objectives is the usual state of affairs, as seen both from a theoretical or a real life perspective. But, on an organizational level the merging of disparate capabilities and capacities in a way that provides efficient practices of desired quality is the tricky goal of management - and expected by clients. While we readily label something as poor quality when we find fault, the measures of its resolution are harder to specify - and agree upon. Competent members of an organization[2] are expected to perform their work in a manner that fosters mutual confidence in their capability and delivery, but our theoretical understanding of collaboration in multi-interest settings is sketchy. Especially, when ICT plays a significant part in the cooperative efforts, across groups and organizations where at best interests only partly align. The dominant approaches prescribe shared data or information, mutual win-win functionality in IS-systems along with an affordance of progress awareness. Is that enough of a strategy when interests are contradictory?

The previous chapter (Ch.3.) looked closely at the tasks involved in organizational decision making. This chapter will explore the basic processes and mechanisms – the articulation that allows us to collaborate and organize our actions, also decision making. We start by looking at some insights from studies of traditional learning – the apprenticeship to a master and the derived theory of Communities of Practice (CoP) with related literature on the merits of practice based situated learning. Legitimate peripheral participation facilitates learning and cohesion – a merging and unification of conceptions towards an adoption of common ground that defines membership, belonging and identity. Yet, when different organizations have common tasks we can not expect, nor do we always want, a total merging of ideas. Third parties are often used exactly for their differences in competence and outlooks. A setup that is typical of knowledge based service provision. This brings us to collaboration across communities, and between representatives of communities where only partial common grounds are held – *equifinal meanings* that may support (some kind of) action. This type of collaboration relies on good communication based on – processes of connection and

[2] The concept organization used here is not necessarily that of a formally defined entity, but covers also a loose collection of individuals that display these characteristics, possibly across their formal organizational memberships. The words organization, community and collective will be used somewhat interchangeably.

reflection to bring forth and maintain enough common ground, with recognizable motivation and trust, for collaborative and expectant ongoing action.
Questions to be explored in this chapter are: **How much, and what, needs to be shared for productive interaction to go forth? How does this sharing come about?**

4.1 PARTICIPATING KNOW HOW AND KNOW WHY

A third party setup is a complex context for activity. To unravel the intricacies of competent collaboration across organizations we will begin with individuals in a group expected to work, and learn, together. In order to do so they must know how to perform, what to perform - as well as why.

4.1.1 Traditional master & apprentice learning[3]

The traditional learning context of master and apprentice, where learning takes place through practice, observation through presence, thus gaining knowhow, is a typical example of a social learning context. Starting out in a practice as a novice with legitimate peripheral participation, both roles and work are gradually learned as a mix of tacit and explicit knowledge, conscious and non-conscious learning (Lave and Wenger 1991). This provides a fertile ground for the development of skills and familiarity. In such a learning setting, the individual self as an inherent part, is being influenced by and influences in a personal manner, the learning taking place. Acquiring knowledge through practice with feedback through acknowledgement of competent performance, nurtures a performer into command of know-how and responsibility. Capability is lived out through practice with limited, if any, amounts of formal theory involved. Using an example of a tailor's apprentice, Lave illustrates how tailoring is learned by doing the process 'backwards' through experiencing firsthand which qualities are important from the previous production steps. Sewing together a garment, for instance, requires enough surplus material round the edges to allow for the inherent fraying when working together the pieces, with awkward geometry, that make up human clothing. Sewing first allows hands on, personal experience of what matters, as in which are the tight spots when cutting the material, and how it might be resolved. Legitimate participation in groups also allows one to sort out how and what others can perform appropriately or effectively, if a rearrangement of tasks becomes necessary. The possible combinations of competent bodies with tasks, roles and responsibilities delineate who belongs where and who does not.

While traditional learning through legitimate participation provides resilience in the performance of familiar tasks through personal experience and observation of others' experiences, along with an opportunity for calibration of concerns with affirmation of capability and belonging, it also has its weak sides from an educational point of view. Firstly, it is not easy to gain access to such learning arenas, and secondly, they do not guarantee that a participant will be able to work competently in unfamiliar and 'foreign' settings which bear little resemblance to the familiar learning environment (Lave and Wenger 1991).

[3] Part of this text is adapted from Berntsen, K. E., G. Munkvold, et al. (2003). "Communities of Practice vs. Practice of Communities." ICFAI Journal of Knowledge Mangament (Dec.).

4.1.2 Communities of Practice (CoP) and storytelling

Walsham (2001) points to CoP, a development of the traditional master-apprentice learning, as one possible strategy amongst others, for alleviating the challenges of continuous knowledge sharing and learning of our modern society. The concept of Communities of Practice (CoP) (Wenger, 1998) describes what kinds of social engagements provide beneficial contexts for learning and innovation. It is often used as an approach to understand better the activities and circumstances of work, learning and cooperation within a community with a common activity or objective. Initially introduced for discussing the significance of apprentices' learning through participation in a community consisting of several apprentices, inexperienced practitioners, and a master (Wenger 1987), the concept was later related more broadly to situated learning *through legitimate peripheral participation* (Lave and Wenger 1991). Wenger (1998) also develops several aspects of the concept into more of a theory of CoPs, while recent research has focused more on the cultivation of CoPs, especially informal ones, both within and across organizations (Wenger, McDermott et al. 2002; Thompson 2005).

In general, Wenger (1998) defines a community of practice along three dimensions:

- a joint enterprise that is continually renegotiated by the members of the community
- mutual engagement, that bind the members together into a social entity
- a shared repertoire of common resources that the members have developed over time (routines, vocabulary, artefacts, experiences, stories, etc.).

The resources developed by the community can be considered the accumulated knowledge and competence of the community. CoPs are described as *'shared histories of learning'* (Wenger 1998, p.103), indicating that members of a community conceive themselves as members when they have shared stories, and this sharing has a history developed over some time. However, as time passes, discontinuities will occur since there will be differences as to which body of stories has been shared amongst various participants. Thus boundaries form, separating CoP's, but at the same time means of connecting them are developed. Wenger names two types of connecting means – boundary objects and brokers. *Boundary objects (BO)*, coined by Leigh Star (Star and Griesemer 1989), are according to Wenger, reifications, objects as opposed to people, around which CoPs can organize their interconnections. *Brokers* on the other hand, are connections provided by people that can introduce elements of one practice into another (Wenger 1998, p.105), enabling understanding, learning and nurturing of motivation for various practices, including the uses of boundary objects. See Figures 3.1 and 3.2 for an illustration of degrees of sharing created by shared practices, and cooperation with the aid of BOs and brokers.

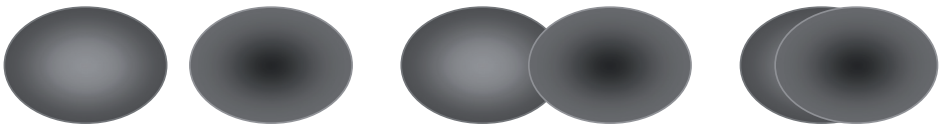

Figure 4.1 Two separate communities move towards shared knowledge, *through common practices*

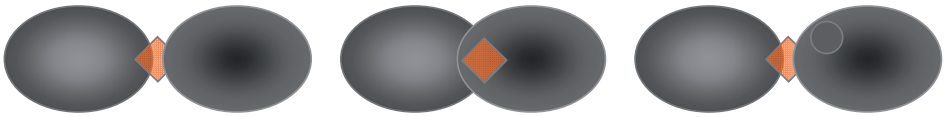

Figure 4.2 Two communites collaborate through differing measures*: a boundary object (BO), some shared practice combined with a BO, and a BO together with a Broker*

Storytelling

The way people perform work in practice often differs from the abstract ways, often formal, in which organizations describe that work in manuals, training programs, organizational charts, and job descriptions (Brown and Duguid 1991). CoP is based on the fundamental belief that learning by separating theory from practice is unsound. Hence CoP theory contradicts modern organized practices of learning, where learning, as in schooling, and working are often conceived as separate processes. CoP argues instead that learning should be contextualized and situated, by acknowledging its presence and allowing it a role, as an integrated part of work. Based on the PhD thesis of Orr (later published as Orr (1996)), Brown and Duguid (1991) with the Xerox case draw a telling example of a well performing CoP. They illustrate how formal descriptions of work and know how have been abstracted and disembedded (Giddens 1991) from actual practice, and how a working knowledge is socially constructed through informal interaction in a community. A group of repair technicians, who meet regularly in an informal fashion, *trade stories* and insights from their work of repairing different types of copy machines. The technicians actually make a point out of spending more time in each others' company. After a while management realizes that these activities are actually a significant part of becoming, being and remaining a good copy machine technician. It is central to how they learn, how processes improve, how they form bonds as a community of practice, and how they familiarize, adopt, hone, and renew amongst themselves their knowledge and expertise of photocopiers and the individual machine models' peculiarities.

The creation, maintenance and evolution of knowledge in the Xerox case is related to the social interaction among the technicians. Through *storytelling*, the technicians were able to share, not only the type of knowledge that had been put into words and figures, but also the type of knowledge that would not be explicitly stated in the company's instruction manuals. The practice included, indirectly, sharing both the explicit and the tacit aspects of a working knowledge. What was said and left unsaid thus served as an intrinsic part of solving problems.

Tacit knowledge is non-conscious, thus non verbal, and impossible to explicitly relate to others. Comprehension is iterative and begins with the brain's detection of stimuli, such as light, which is followed by interpretation which tells us light is present. This is automatic to us and constitutes tacit know-how (Polanyi 1966). With the aid of tacit know-how we make inferences about new experiences, which are in turn internalized to become new tacit knowledge which we do not consciously contemplate. Things that we do often might over time become automated (overlearned), tacit and embodied, – such as handling a stick-shift gear and appropriately adjusting the gas pedal while driving.

Also organizations, or parts of them, have tacit knowledge and capabilities of which they have no description or consciousness. Articulation work is often a tacit capability of both individuals and organizations, therefore remaining unacknowledged (Strauss 1985).

According to Brown and Duguid (1991), stories act as repositories of accumulated wisdom that allow people to keep track of sequences of behaviour and of their wisdom, in keeping track of the stories' facts and their contexts. The technicians were able to construct a *shared understanding* out of bountiful, conflicting and confusing data. This approach is highly situated and improvisational, often described as *bricolage*. The variety of stories told, people present and their responses, technologies and artefacts addressed, connections made or implied all enter into a heterogeneous collective of resources for sense making. A resource-pool that is basically not systemized in terms of scientific theory or procedures, but in terms of stories with their own storyline and internal logics. Possibly even a pool of stories with partly contradictory logics which outsiders might not make head or tail of. In the moments of situated problem-solving, driven by action and the subsequent responses of the context, competent technicians bring forth the useful know-how that fits into the relationships of the situation. Knowledge-as-useful is intersubjective and instantaneous, orchestrated to the tune of the moment (Ellingsen and Monteiro 2003; Suthers 2006).

With all our senses – informal and shared

Communities rely on the *informal depictions* that each member generates of it: who is part of the community, which are the different modes of participation that are accepted, who knows what, what cultural tools are used to mediate communication and interaction, and so forth. The depictions of the community evolve continuously as community members share experiences, take action and interact with each other, as well as with the outside world which is also reasoned about. A shared understanding is negotiated and emerges from the collective of scattered pieces of knowledge and knowing. Equally, a shared understanding of the motivations, values and priorities is practiced into a more or less tacit existence. Engagement and dedication are both enabled and nurtured through social interaction, while what to avoid or refrain from is also delineated in the CoP's evolving norms of activity.

This informal, narrative and contemplative nature of a CoP, does not preclude that a community may also make formal representations, checklists, tools etc. as well as define concepts and ideas, to aid them in their endeavours of work (Wenger 1998, pp. 62-71). These representations are termed *Reifications*. Practice is a duality of *Participation* and *Reification* in which both require and enable each other. *"Participation is not merely that which is not reified. .. On the contrary, they take place together. ... There is no reification without participation ...* [and vice versa]"(Wenger 1998, p.66). The reifications/artefacts play a key role since they are often used as explicit representations, *cues*, of the informal and tacit model which members share. Reifications may also work as *boundary objects* through which different communities can relate to each other. A boundary object has a "common denominator" that each community can identify and relate to, but may play different roles and have 'extra

meanings' within each separate CoP, in line with the context and joint enterprise of that particular CoP (Star and Griesemer 1989).

4.1.3 Knowing and belonging in shared togetherness

The nature of knowledge as an applied resource in action has been described in many ways in various fields of research. The practice and situated perspective of CoP holds a rather benevolent and conflict free perspective where the means and motivation for collective action is negotiated into emergence – out of something? While useful for explaining the novice's trajectory of learning towards expertise (See Figure 4.3), the historical emergence of communities and their separation, and describing the evidence of capable communities' activity, it does not illuminate the actual processes or mechanisms that bring about collective competence, or its renewal and evolution. What assures that its stays up to date? How may real (revolutionary) innovation take place? Collaborative action will over time present new issues, circumstances and tasks change, new objectives require new solutions all which will require more of the CoP than being together, sharing – what and how much?

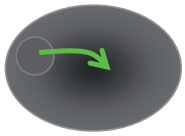

***Figure 4.3 Novice on a trajectory** towards full expertise and membership*

Contu and Wilmott have criticised CoP for being naïve by disregarding the politics of power in organizational life (Contu and Willmott 2000; Contu and Willmott 2003). Ciborra and others (McCarthy and Wright 2004; Ciborra 2006), on the other hand, point to a restricted and bland use of the concepts of situatedness and practice both in CoP and other research literature where the concept situated is used often in a purely cognitive and rational way. Ciborra refers us to the concept *situated* which originates from the phenomenology of Heidegger and Husserl (Heidegger 1962; Husserl 1970) and the German term *Befindlichkeit.* Befindlichkeit relates to the state of mind of the individual, as in the expression *'How are you?',* relating also to the inner life of the actor, mind and heart, which encompasses both the present but also *"the ongoing or emerging circumstances of the surrounding world and the inner situation of the actor"* (Ciborra 2006, p.130). Similarly, McCarthy and Wright argue for the inclusion of the pragmatic experience of technology use by acknowledging the aesthetic and emotional aspects. The claim being that practice based research has until now, largely denied emotions a place in theorizing on ICT and work, just as rational research previously denied a role to the social context of work and ICTs (McCarthy and Wright 2004, p.2).

According to Göranzon (2006), who discusses dialogue and tacit knowledge in a manner that complements CoP but also reaches beyond it, occupational knowledge consists of three parts: *1) Skill* (practice & experience) *2) Familiarity* (exchanging experience with colleagues, i.e. shared) and *3) Propositional Knowledge* (from studies: theory, method, rule). There is a clear tendency to overrate propositional theoretical knowledge at the expense of the other two. There is however a relationship between them to be expressed as follows: "*We interpret theories, methods and rules* [3] *by means of the familiarity* [2] *and experience* [1] *we have acquired through our participation in practice. .. if we remove from an activity, the experiential knowledge*

and the knowledge of familiarity, we are also emptying it of its propositional knowledge. Practical knowledge [1&2] *is not susceptible to systemization in the same way as theoretical knowledge* [3]. *But it plays an equally important part, and it is best maintained and applied by means of reflection on examples taken from places of work and from art"* (p. 190). In effect, influences are needed beyond the local. To the support of this knowledge-relationship Göranzon relates texts from several authors that illustrate intelligent behaviour in work and crises, of both individuals and groups.

Performance relies on more than homogeneous collectives that share

To sum up, there are several issues to take notice of in terms of capable action in an organizational setting: *i)* formal and systematic *descriptions* of work and theories as opposed to *performing and participating* in work, *ii)* that there are some things we need to *know before* can reasonably make use of such descriptions, *iii)* that *individuals* may benefit from others' experience and expertise, and *iv)* that the collective must both know and continue to *learn collectively* through reflection in order to perform collectively, *v)* that personal *practical experience* is a vital element of acquiring skills. Also *vi)* by *reflecting on work*, we may learn more, which *enables intelligent behaviour in new circumstances*, *vii)* and by documenting work in some way, even as art, and reflecting on others' manifold documentations we may learn *across time and space*. Finally, and inversely, *viii)* experiencing the practical application of knowledge, together with others, breeds an *acquired familiarity* not only of skills and propositional knowledge, to the extent that it is acknowledged, but also *of the others we collaborate with.*

Consequently, sharing on a broad scale is a prerequisite of capable and organized performances. However, as Grudin's the classic study of efforts for ICT support for groups amply illustrates, even within groups actions do not necessarily add up in an efficient manner (Grudin 1989). Grudin found that both gains and efforts needed balancing even amongst individuals within groups. A new system for efficient planning of meetings failed when some users failed to keep their calendar up to date, as they saw no need of it themselves. Another example is use of messaging technologies where he found that receivers will prefer text-based messages, as these are faster and easier to process, but message-senders often prefer voice-mail as it is often faster or more practical to talk than to write. These two examples illustrate that there are boundaries to be found amongst potential collaborators along a wide range of parameters – also within apparently homogenous groups.

But what more can we do, than sharing and practicing together, when interests will not align or when sharing is fragmented in time or space? The following looks to research on Computer Supported Collaborative Work (CSCW) and the concept *articulation* to delve deeper into characteristics of capable work and the mechanisms and processes to support it – with or without technology use.

4.2 PROCESSES OF ARTICULATION IN COLLABORATION

4.2.1 Division of labour requires articulation

Work is cooperative when,*"[t]he cooperating actors in a given cooperative work arrangement are interdependent in their work in the sense that one actor's actions will change the state of a set of objects and processes and in turn, this change of state has implications, directly or indirectly, for the work of the other members of the ensemble, and vice versa."*(Schmidt and Simone 2000). *Cooperative* efforts need coordination in order for separate tasks to be accomplished in a suitable order. *Collaborative* work on the other hand, is work where efforts of collective labouring proceed in a more parallel fashion. However, at some stage, also the results of collaborative work will need to mesh with, or match up with the efforts of others, be they cooperative or collaborative. The distinction is a matter of granularity - and an issue of what kind of coordination is needed. A central aspect of efforts to achieving cooperation and coordination in work has been termed *articulation work*, literally: the joining together of separate pieces into a whole. Articulation is also associated with the coherent pronunciation of syllables, stringing them into words.

Decision making (within an organization) is also a cooperative effort, even if 'the state of sets of objects and processes' often do not reside in the physical world for them to be readily identified and pointed at. Decision making (DM) constitutes activities that fall into the categories of for instance: knowledge work, intellectual or mental labour (Hochschild 1983; Alvesson 1993; McCarthy and Wright 2004) which involve both practical manipulative tasks but is also characterized by disembedded and abstract activity (Giddens 1991). Although DM is abstract, mental, and knowledge based, it is aimed at dealing with the real world of both concrete and abstract entities, where people relate to each other in various ways. Thus relations, meanings, beliefs and emotions also figure in DM, along with facts, knowledge, and practical circumstances. The nature of DM might therefore appear to be more collaborative than cooperative, as activities may proceed seemingly without need of coordination. However, abstract entities are also in need of coordination, especially when the actors involved have different backgrounds or differing interests. And so, coordination of the abstract, of language, concepts and meanings, is vital articulation work for Decision Making.

Articulation work

Articulation work is "*the supra-type of work in any division of labor, done by various actors"* (Strauss 1985, p.8). It *"arises as an integral part of cooperative work as a set of activities required to manage the distributed nature of cooperative work"* (Schmidt and Bannon 1992, p.18). Strauss describes articulation work as the work surrounding production work. Division of labour implies a need to coordinate and organize, tasks-to-tasks, people-to-tasks and people-to-people. Strauss' original focus was mainly on the first two: tasks-to-tasks and people-to-tasks articulation. Equally, early research on articulation work was mainly concerned with coordination of tasks, people and efforts, but studies of collaborative efforts, especially across communities, illustrate more clearly that also the coordination of " *..incommensurate opinions and beliefs, or inadequate knowledge of local circumstances.."*(Gerson and Star 1986, p.266) needs addressing (Schmidt and Bannon 1992, p.18).

Articulation, and the efforts required for articulation are often assumed and go unmentioned in the espoused and formal descriptions of work (e.g. the process models). Capable employees and organizations have learned their work to the extent that their articulation work has slipped into the shadows, out of focus and attention as a matter of course, a natural part of being competent. It only reappears by requiring conscientious attention when ordinarily fluent production is disturbed in some way. It follows that a central aspect of what takes place in CoPs is the articulation of practical knowledges of skills and familiarity, together with the propositional formal knowledges into a coherent whole. Much research has been dedicated to exploring a variety of articulation work which also been included in a concept termed *the double level nature* of work (Fitzpatrick 2003) encompassing dichotomies such as: formal vs. informal; core work vs. work about work, (production) work processes vs. interaction processes. The first of these, formal vs. informal can be divided further, such as: description vs. practice; plans vs. practice; the post-rationalised documentation of work vs. its practical performance. The formal level, the abstract, is also described as *disembedded* from the actual world that it attempts to describe. When the formal version is to be used in practical ways it needs to be *re-embedded* again (Giddens 1991).

So far we have discussed the aspects of knowledges, the know-how, what and why that may be shared through practice and reflection, in order to allow coherent action within communities. Indications suggest that we look closer at the social aspect of collaboration, especially when actors hold differing views and interests intend to collaborate.

Hampson and Junor suggests that also emotion work, together with diverse 'peoples skills', figure as articulation work in interactive customer service (Hampson and Junor 2005) since providers and customers only have partly aligning interests (Leidner 1993). So, especially when the scope of actors involved in cooperative activities is inter-organizational or inter-cultural, issues concerning the relations between people become a more pronounced part of articulation work. In connection to people-to-tasks articulation, Strauss also mentions the issue of rights and responsibilities. But, rights and responsibilities are issues that directly affect the people-people coordination in a division of labour. Relations, their establishment and maintenance, are a central aspect of collectives and collaborative activity, especially when there are disparate competencies, beliefs and meanings at hand. Essentially, communication lies at the core of this articulation work which has also been studied within the research on Computer Mediated Communication (CMC).

4.2.2 Good communication relies on connection

The distinction between, and inseparability of, ***a common ground*** of knowledges and beliefs (Clark 1992) versus ***connections*** to others is also made by Nardi in her exploration of interpersonal communication with technical mediation (Nardi 2005). Communication lies at the heart of cooperation and collaboration, and: *"To communicate with ease, we must come to feel connected to each other, we must experience a mutual commitment to joint undertakings, and we must gain each other's attention"* (Nardi 2005, p.92). Feelings of connection provide a state of communicative readiness. *"The work of connection is complementary to the accomplishment of*

common ground. Common ground concerns shared information, but both are needed for sustained communication" (Nardi 2005, p.122). On the other hand, common ground is a state of shared knowledge, explicit or inferred, that enables one to 'get the picture' based on limited information. Common ground increases over time as people converse, while connection *"is a labile state of readiness that degrades over time unless interactions of a special nature occur"* (Nardi 2005, p.98). That connection work is present is evidenced by several studies on aspects of small talk and informal conversation which reveal *"that 15-20 % of the discourse was not about the substantive matters at hand..."* (Nardi 2005, p.112).

In theory on Computer Mediated Communication (CMC), the channel metaphor (Walther and Parks 2002; Whittaker 2003) was central in the attempt to establish a theoretical relationship between the affordances of the technology and the resulting mediated communication (Nardi 2005). The concept channel bandwidth misses however, the effects of media on *"social contexts, relational goals, salient norms and temporal frames that promote or inhibit the strategic use of CMC in relationally supportive or detrimental ways"* ((Walther and Parks 2002) in (Nardi 2005, p.98). To explore connection, Nardi based on interpretative empirical material, suggests three dimensions of connection: *affinity, commitment* and *attention*, which all require effort in both *establishment* and *maintenance*.

Affinity is defined here **as feelings of connection between people**, and is achieved through activities of social bonding. Activities that can promote social bonding include: touch, eating and drinking, sharing experience in common space, and informal conversation. *".. touch is the most powerful way to create a bond through the movement - reaching - of the body towards another body"* (Nardi 2005, p.99). She illustrates through narrative examples that touch is simulated in mediated interaction, such as phone calls. *"I suggest that it is touch and the presence of bodies, not simply information, that must be substituted for in mediated communication"* (p.103).

"A second dimension of connection is the expression of ***commitment*** *to participant's mutual relations. .. The expression of commitment is not about actually doing the work or engaging in the mutual project; it is simply about being there. .. under some conditions, mediated communication can also communicate commitment effectively"* (p.112). **Commitment confirms a relation.** However, there is a *".. lability of the dimensions of connection, ..* [an] *ever present need to refresh and renew connections"* (p.114). This is illustrated with an example of a contract lawyer, that always made sure she had time to 'share' and 'talk', always accepting incoming calls *:" the clients demanded her live body ("see that you're alive") as an assurance that she was really working for them"* (p.114).

"Before communication of any sort, including social bonding and showing commitment, can occur, people must gain the attention of the participants with whom they wish to communicate. ***Attention*** *involves locating the intended recipient (hence the need for awareness information), and either attaining attention through eye contact in a face to face setting and/ or sometimes negotiating availability through a verbal exchange for further conversation"* (p.117). The first step is to gather information on a participant's

availability. Making the connection for an actual conversation is a second step for gaining recognition. *"Ashley [a production manager,] suggested that attention is engaged at a deeper level by making eye contact while talking to people"* (p.118).

Nardi points out that the dimensions of connection are labile, and in constant need of renewal, as they ready people for further communication and collaboration. The values of the dimensions fluctuate in a field of connection between dyads, according to the history of communicative activity that has taken place between two actors. *"Sustained human communication is readied by the creation and renewal of social bonds of affinity, the establishment of commitment, and the capture of attention. These fragile linkages demand our constant engagement, both conscious and unconscious. They bind us in mutually constituted fields of connection within which we communicate and collaborate in everyday activity."* (ibid, p.125).

Connection and relationships have been found to matter for collaboration, not only on an individual level, but also for organizations. The following explores qualities of different organizational relationships, in particular service relations, and how the use of information technology may affect them.

4.2.3 When shared meaning and knowledge is limited

While collaboration, unless it is extremely routine, relies on good relations and communication, and its character is inextricably linked to the qualities or degrees of common ground between those that communicate. The kind of common ground that CoPs produce. How much needs to be common and shared in order for collaboration to proceed? Modern practices of specialization and division of labour suggests that there are limits to the sharing needed. How then does communication take place when common ground is limited? Carlile suggests that there are ways to proceed even when shared understandings are limited.

Communication across community borders

A practical take on communication across professional boundaries is described by Carlile (2004), based on studies of collaboration on car design. He elaborates on the difficulties involved in communicating and collaborating across different areas of expertise. The design challenges facing the engine constructors were difficult to communicate to the chassis designers as they had no common conceptions which could adequately relay issues and their consequences for their own work to the other party.

To separate between the challenges of communicating across different kinds of organizational boundaries, Carlile labels three types of context aware communication: *transfer, translation* and *transformation*. Transfer is only applicable when there is substantial mutual knowledge and common ground amongst parties communicating and collaborating. It is then sufficient to make information available to the others, provided that the receiver has adequate experience with understanding the type of information in question. The boundary that such information/knowledge has to cross is considered a *syntactic* boundary. Across boundaries where there is only partly overlap in conceptions or logics, then an appropriate translation to comparable concepts or situations is necessary. The boundary is then *semantic*. The information provider will then need to

perform an act of perspective-taking on behalf of the receiver (Boland and Tenkasi 1995), and/or the receiver an act of perspective making. In situations where there is little or nothing in common between communicating parties, then a transformation is necessary in order to achieve the degrees of mutual understandings necessary for each party to proceed with their collaborative activity. Transformations correspond to the 'true' boundary object when they are used as collaborative mechanisms where each party relates only to their own local understanding of the object, without needing to relate to how the other party sees or uses the object. Carlile terms this a *pragmatic* boundary, where pragmatic solutions to communication, interaction and cooperation must be found. The creation and use of boundary objects is a way to pragmatically establish a common ground for collaboration and communication, yet with different but intermeshing sets of common ground.

Boundary objects work out well when practices remain within the known or routine. However, Carlile illustrates how a concept's or artefact's function as BO breaks down when its application is taken beyond its original area of relevance. The former way of transforming fails to communicate 'correctly' when circumstances are altered. In dynamic contexts such breakdowns may cause significant extra work in order to renegotiate the circumstances of collaboration through boundary objects, their meanings and relative use. Such breakdowns have been seen also in research on the effects of ICT systems where integration of IS across various pragmatic community borders are central. See for instance Ciborra (2000; 2001).

Articulation – plural efforts of bringing together and coordinating

Though the theorizations of CoP may give the impression that organized action is easy and comes as a matter of course, the interventions of various technologies into organizational action has revealed, in for instance CSCW and CMC research, that effortless collaboration requires more conscientious effort towards articulation than often acknowledged. All cooperation and collaboration relies on some kind of coordination and articulation efforts, but some of them are tacit and unacknowledged from a more overall perspective. Articulation seeks to connect tasks-tasks, people-tasks and people-people. When there is less common ground among co-operators, the task of articulation becomes more complex in that both social and logical matters seem to need ongoing attention. Both are in need of maintenance as circumstances change – and the social part is held to be especially ephemeral and labile.

In CoPs, the role and identity of members is seen as a trajectory, which comes about through practice and social learning. Tsoukas calls this self-organizing (Tsoukas 2001). The implicit organization underlying everyday activities and taken-for-granted aspects of social reality is an insight of ethnomethodology (Garfinkel 1984). Collectives and practices carry out social coordination with spontaneous adjustments of behaviour, and create patterns of behaviour that we usually fail to notice. Organizing, as in division of labour and the concerted performance of tasks relies also on formal organizing, but *"is effective to the extent that individuals, through processes of socialization have learned to behave in ways expected of them"* (Tsoukas 2001, p.7). *[I]t is a haphazardly evolved arrangement that presumes that* [those present] ***already know*** *what is going on and accordingly adjust their behaviours. .. A contingent empirical manifestation of a*

phenomena" (Tsoukas 2001, p.8), that signifies enduring patterns of co-ordination between actors, which allocate roles and mandate.

A local and contingent version of self-organizing is performed by the reflexive creation of distributed agency, effected through in-/qualculation, as discussed in Ch.3.2. Another challenge arises when social relations and organizing need to be created and maintained across communities and organizations. The inherent asymmetries created by organizing efforts are discussed briefly in Ch.6.3.

4.3 TIES ACROSS

The following explores what some organizational and IS literature has found concerning the place and role of social ties in business arrangements. The chapter closes with the assertion that mechanisms of trust have at least some duration, and may support and perhaps alleviate some of the ephemeral.

4.3.1 Weak ties or close relationships that build social capital

On an organizational level, relationships embedded in business interactions have been identified as being key to repeat business and economic advantage (Schultze and Orlikowski 2004). They are established through interpersonal interaction and maintained through intense attention and frequent contact, – engendering a social embeddedness of business exchange (Granovetter 1985; Uzzi 1997). By following up with an increase in the number of interpersonal connections and further elements of routinization and structuration, these connections may develop into long-standing cooperative business dyads of complementary firms, as long as they are mutually beneficial (Larson 1992).

Larson claims that the social dimension is central to explaining control and coordination in network exchange structures of high-growth entrepreneurial firms, by highlighting the importance of reputation, trust, reciprocity, and mutual interdependence. He suggests the business relationships progress through three phases towards becoming an entrepreneurial dyad: *i) Preconditions for Exchange* (personal relations, prior relations and firm reputations which produce: reduced uncertainty, expectations and obligations, enhanced early cooperation); *ii) Conditions to Build* (mutual economic advantage, trial period, one firm as initiator which produces: engagement with rules & procedures, clear expectations, reciprocity and trust); *iii) Integration & Control* (operational integration, strategic integration, social control). Governance in phase three was characterized by the subtle control between interdependent and self-regulated players engaged in and committed to mutual gains. The social control takes place as a self-control guided by morality, combined with feedback evidence of trusted behaviour.

According to institutional theory, social patterns, such as histories of interaction which create mutual expectations, may *"take on a rule-like status"* (Meyer and Rowan 1977, p.341) in (Larson 1992, p.98). These relationships are characterized by a trust that is established through the combination of *capability* and *relations* which are translated respectively into *incentives* and *an incremental increasing trust of give and take* that is *gradually structuralised*. Relationships and trust implies a different kind of governance

in business interactions than *i)* rational actor theories of market, *ii)* hierarchy, or *iii)* their hybrids (Adler 2001; Schultze and Orlikowski 2004). The rational actor theories of networks balanced by transaction costs have been the favoured understandings (Williamson 1981; Powell 1990), both as governance strategy or explanation of empirical evidence on business exchange structures (Coase 1952), and in value-added-chains (Porter and Millar 1985).

The social embeddedness of interpersonal relationships, embedded relations, are often contrasted with more impersonal and instrumental arm's length relationships (Uzzi 1997; Schultze and Orlikowski 2004). Arm's length relations, also called weak ties, typically imply business dealings of a rational and transaction cost kind, relying on the formal trust of contracts with exchange of non-redundant, but codified and (semi-)public information, and subsequently less economically advantageous than embedded and close ones (Granovetter 1985; Hansen 1999; Schultze and Orlikowski 2004). A variety of research has endeavoured both to analyze and/or predict how the use of electronic varieties of communication and interaction might influence the characteristics of business governance and organization interaction, both at a macro and micro level. While some find that interactions and relations are improved to become closer ones through ICT use, at least indirectly through improved predictability, others find increasing distance and less trust, or more formal varieties of trust (Anderson and Anderson 2002). Electronic markets introduce elements of formal, system based trust which enable a shift from hierarchy towards more market/price based governance (Malone, Yates et al. 1987). These two represent respectively what has been termed *the integration effect* and *the electronic brokerage effect* of IS (Schultze and Orlikowski 2004, p.88).

More recent research on business exchange and IS, is more nuanced. Bensaou (Bensaou 1997), based on an empirical analysis of 447 Japanese and US firm relationship, finds information systems may reduce the traditional physical, spatial and temporal limitations to effective cooperation. However, he also finds that relational cooperation is a more robust cooperation predictor than the technical integration effects, and can act as an uncertainty absorption mechanism. Kraut et al. (1999) suggest that electronic networks introduce danger of reduced quality and efficiency, unless balanced and supplemented with personal linkages. Schultze and Orlikowski (2004), uncover that tensions were introduced into relations by internet-self serve technologies requiring considerable effort in order to retain a relationship, causing expense to the social capital previously earned by a broker. The self-serve technology implied both reduced amounts of interpersonal interaction as well as shifts in labour efforts between client and broker. Finally even the ownership of valuable information was questioned, when clients themselves collected the data from a website, further reducing feelings of reciprocity owed to the broker. The authors suggest that the new technology reduced the brokers' ability to generate social capital versus the prospective clients, and the new technology introduced tensions into the former relationships. Close relationships, as opposed to arm's length ones, typically allow the accumulation of social capital, – a kind of deposited trust, for future use as an exchange value, within a relationship. Social capital may be understood roughly, as goodwill that is engendered by the fabric of social

relations (Coleman 1988). According to Adler & Kwon (2002) trust is a central element in social capital.

Service interactions are explored by Gutek (1995), who separates them into service relationships and service encounters. *Service relationships* are characterized by tight linkages and repeated service engagements, where both the provider and the supplier expect to interact in the future. 'The shadow of the future' (Axelrod 1984) cited in (Schultze and Orlikowski 2004), introduces a mutual obligation to cooperate on the basis of a social contract of reciprocity, where social capital is generated between individuals representing firms. In the *service encounter* on the other hand, interactions have a nature that does not imply that the same pair of individuals are involved in prospective repeat encounters (Gutek 1995). Calling an airline ticket call centre for instance, may be experienced as an encounter with little connection and obligations beyond the present encounter. Such an arm's length relationship is impersonal, and does not preclude opportunistic or self-interested behaviour as it generates little or no social capital. Some research on interactive service work focuses on the efforts of providers in such interactions, to introduce and enhance the relational qualities of the interaction (Hochschild 1983; Leidner 1993; Hampson and Junor 2005; Richardson and Howcroft 2006). In what Korczynski (2003) calls the customer oriented bureaucracy of call centres, the consumer is viewed as a long-term relationship rather than a series of discrete singular purchases. Great emphasis is placed on constructing good relationships with customers through strict routinization and monitoring of dialogue and response in order to gain a consistency across conversations implying predictability and a measure of trust for the consumer. Later work by Richardson and Howcroft (2006) describes how employees strive to balance their own implementation of the system's strategy and directives towards building trust against their personal and team-collective experiences and notions of their work objectives and its context which are often contradictory, such as when they interact with rude or indifferent clients.

In terms of boundary spanning interactions taking place in negotiations, Friedman and Podolny (Friedman 1992) find in a mixed method and longitudinal study of labour negotiations, that several types of roles and relations emerge when several individuals are involved. In bargaining teams' negotiations, they find that some individuals broker ties toward their opponents ("representatives"), while others broker ties from their opponents ("gatekeepers"). Some broker *task-oriented ties (*measured by flows of advice, **often one way** rather than reciprocal*)*, while others broker *socio-emotional ties* (measured by **reciprocal** flows of trust) (Friedman 1992, p.28). See Figure 4.4. The trust and advice roles were prominent throughout the study, while the representative and gatekeeper roles grew more distinct as negotiations drew towards their deadline. In order to avoid role conflict in negotiations, in terms of having to fill both asymmetrical and symmetrical roles, as well as representative and gatekeeper roles, the authors suggest that negotiations should

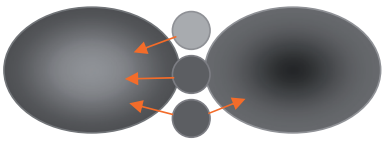

Figure 4.4 Boundary spanning – both symmetrical and asymmetrical roles. *Brokers take various roles: gatekeepers, representatives, or reciprocal trust-builders.*

be performed by multi-person groups where different individuals take differing roles, allowing for fruitful negotiations.

4.3.2 Reflective trust

Adler (Adler 2001) proposes that trust may fruitfully be understood as a coordination mechanism of a third ideal-typical mode of organizing. The first two are respectively the recognized market/price mode (as in capitalist economic organizing) and the hierarchy/authority mode. The third is community/trust. The basic argument being that the need for organizing of knowledge and knowledge-intensive work show new trends and need of new concepts. Organizations need to organize with respect to knowledge in a way that allows its creation and dissemination. Neither of the other two organizing modes is well suited for knowledge intensive work.

Hierarchy/authority allows for allocation of knowledge, but as it is poorly suited for organizing its creation, knowledge gets treated as a scarce resource. The market/price mode on the other hand is suited for creating incentives for knowledge production, but dissemination through market mechanisms is far from optimal, including the difficulty involved in governance of rights to its access and application (Miller 1992). Trust within a community is the mode of organizing that allows for both knowledge creation and knowledge dissemination. Knowledge is a substance that grows rather than diminishes with use (Adler 2001, p.217) and which requires trust as a mechanism of coordination. *"[The organizing] [m]odes typically appear in different proportions in different institutions. For example interfirm relations in real markets embody and rely on varying degrees of trust and hierarchical authority, even if the primary mechanism is price. Similarly, real firms internal operations typically rely to some extent on both trust and price signals, even if their primary coordination mechanism is authority*" (ibid., p.216).

Based on a thorough review of organizational literature on trust, Adler identifies the following dimensions and components of trust. The *sources* that lead to trust are: *familiarity* through repeated interaction, *calculation* based on interests, and *social norms* that create predictability and trustworthiness. Mechanisms that generate trust are: *direct interpersonal contact*, *reputation*, and *understanding* of institutional context. The objects that we trust in are: *individuals, systems, and collectivities /communities*. And these objects have features which are the bases of trust: *consistency/contractual, competence, benevolence/loyalty/concern/goodwill, fiduciary trust, honesty/integrity, and openness* (p.218). With this framework of trust, Adler aims to encompass claims from various research discourses on trust that advocate for aspects of trust concerning: the emotional /affective, blind vs. calculated, values/attitudes and identity, moods, vulnerability and distrust (Coleman 1990; Bigley and Pearce 1998), evolution from conditional to unconditional, and its need of maintenance (Jones and George 1998).

There are however also difficulties with trust. It is never a stable and dominant mechanism. Betrayal of trust may be more profitable or it might domineer a community into stagnation. Finally, several authors claim that a capitalist market corrodes normative trust. Adler argues that there is a trend in which a new kind of normative trust is present. This is a reflective trust, as opposed to traditional blind (and affective) trust.

This reflective trust gains authority from the 'rational' (from (Weber 1947) to (Eccles 1985), but studied (Sabel 1992) and tentative (Barnes 1981) and less on familiarity (tradition & charisma (Weber 1947)) or calculation. In effect this reflective trust is derived from open dialogue among peers. This relates to Habermas (Habermas 1990) and the legitimacy derived from 'the ideal speech situation' (Adler 2001, p.227).

The articulation of engagement is based on connection and reflective trust

The distinctions of various kinds of relations, and the efforts needed to establish trust and relations, serve to call attention to the complexity of articulation work in complex work setups. Collaboration requires coordination across organizations and groups (Færgemann, Schilder-Knudsen et al. 2005; Cabitza, Marcello et al. 2006), across interests and meanings (Schmidt and Bannon 1992; Carlile 2004), across time (Strauss 1985), and across space/location (Bardram and Bossen 2005), across infrequent interaction (Larson 1992; Adler 2001; Korczynski 2003; Schultze and Orlikowski 2004; Richardson and Howcroft 2006), and across the support/influence/imperfection/disruption of systems (Gasser 1986; Korczynski 2003; Moser and Law 2006). But also, the articulation and re-articulation of connection (Schultze and Orlikowski 2004; Nardi 2005), of both symmetrical and asymmetrical relations, with the roles of their participants as task-oriented advice givers or socio-emotional tie builders attending to establishing and maintaining social orders, both in negotiations as well as in other kinds of cooperation (Friedman 1992).

What comes across in all these examples is the role of history and time, of experiences and recognition, of longitudinal sensemaking of relations as there are phases to the evolvement of beneficial relations both for business and personal interaction. While business relations are well served by including social embeddedness in terms of personal relations, predictability and good reputations, the effort towards personal closeness to particular individuals may be relieved by introducing an increasing number of what amounts to plural and heterogeneous socio-technical relations. In effect combinations of multiple personal links along with rules of engagement, structures and technologies that ensure and support predictability are needed. As the relationships evolve into business dyads, they do however become more impersonal, more institutionalized, rely on renewed confirmation of morality and goals of mutuality, as the question of benefit becomes more pronounced in terms of the effort towards maintenance (Larson 1992). Trust is built into the relationship due to predictability effected by structures that have, over time, been seen to work (Meyer and Rowan 1977). Efforts of connection serve to sustain, supplement and maintain relations, and possibly also motivate revisions of institutional systems that support trust and continued interaction.

However the seeds of these trusting circumstances rely on an initial hospitality (Ciborra 2002) and a basic trust (Giddens 1991) that allow for the dawning connections which foster relations and more reflective kinds of trust. – And, this trust relies on compliance to the notions of competence and rationality held by those involved (Adler 2001). Inversely, if there may be doubt or disagreements as to the actual benefit of collaboration, then particular attention towards building trust and personal relations is

warranted by service providers – in terms of both committed interaction and shared rationality.

4.3.3 Equifinal Meaning – Just Enough Common Ground

The ISO 9000 family of standards holds that quality management relies on an iterative and systematic process concerning objectives, activity and evaluation that holds the client in mind. This approach relies however, on the premise that competent fluent production is already in motion, that this production take places in a fairly consensual setting, and that improvement rather than creation or radical change is the issue at stake.

The issue of how much needs to be shared in order for some action to take place in contradictory settings has also been discussed organization research where several stances have been made. Some claim that a developing shared perception within a community does not necessitate that these are actually wholly acknowledged and adopted by every individual within the collective. They need only some common ground of shared perceptions and intentions which may guide their collaborative activities (Searle 1995; Suthers 2006). In other words individuals may defer to the collective and collaborate in a suitable manner even if they agree only in part. A novice on a trajectory of learning is an example. Also specialists who restrict their responsibility for any collective action to a limited field of expertise may participate by deferring to the authority of others on certain issues.

Two other perspectives are discussed by Donnellon et.al. (Donnellon, Gray et al. 1986) : i) The CoP analogue perspective is attributed to VanMaanen (1979): organizations are systems of shared meanings where *"organization members act in a coordinated fashion as a result of sharing a common set of meanings or interpretations of their joint experience."* This is countered by ii) a second perspective of Weick (1969,1979): *"only minimal shared understanding is necessary as sense is made retrospectively, given the common understanding that the exchange will continue."* Based on empirical evidence from role-play they suggest a middle ground that: *"the basis for organized action in the absence of shared meanings is a socially shared repertoire of communication mechanisms. That is, certain communication forms may develop and sustain interpretations of group experience which, if not similar, at least allow members to coordinate their actions."* (Donnellon, Gray et al. 1986, p.43).

They term this a situation of *equifinal meaning* where there is just enough shared meaning to tip the scales towards organizational action (Donnellon, Gray et al. 1986). See Figure 4.5.

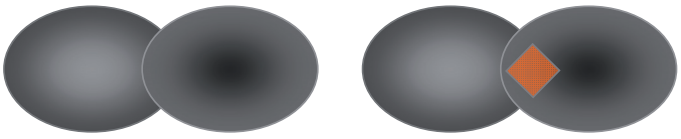

Figure 4.5 Communities with divergent interests may cooperate: *when they share equifinal meanings – enough for common action; perhaps profitably supported also by a BO.*

The telling phrase is: *divergent interests find common action*. The establishment of this equifinal meaning is in their case attributed to discussions involving the use of: metaphors, logical arguments, affect modulation and linguistic indirection. Their case does not give evidence to suggest how lasting such equifinal meanings might be. However, its basis is *a quality of communication* that allows the parties to identify and agree on feasible *common actions*.

If this action is to be part of lasting relation, it follows that some amount of trust in its continuation must also figure within this equifinality. An assignation, at least temporarily, of agency and trust as in the reflexive agency performed through efforts of in-qualculation (Callon and Law 2005). Weick et.al. suggest that sensemaking is central to organizing *(Weick, Sutcliffe et al. 2005). "From the perspective of sensemaking, who we think we are (identity) as organizational actors shapes what we enact and how we interpret, which affects what outsiders think we are (image) and how they treat us, which stabilizes or destabilizes our identity"* (Weick, Sutcliffe et al. 2005, p.416).

4.4 EQUIFINAL GROUND WITH MUTUAL TRUST

This chapter has explored how ***shared understanding at an equifinal level*** may be achieved.

Firstly, in settings where interests might be contradictory, the collective sense made by those involved must produce enough trust in both the rationality and the legitimate capability of the actors (to be) involved in the proposed action – a level of equifinality must be reached. A shared equifinal meaning is one with enough common meaning to allow, to motivate and to carry through, common action. In the short term, corresponding to a service encounter, a local and time limited reflective trust will suffice. The rationality brought to bear must hold, other actors, and their role for the time being, is mutually acknowledged. In long term interaction and collaboration, corresponding to service relationships, both rationality and a mutual acknowledgement of actors' roles within the interaction must be both shared and maintained. I choose to call this ***equifinal ground.***

The actors, at least those with the position to disrupt the continuation of a business relationship need assurances that support and maintain their trust and motivation in the common endeavour. While such trust is reflective and hospitable, if mutual gains are assured from the relationship, and may be supported by institutionalization, the needed maintenance of social connection (attention, affinity, commitment) is present where interests differ.

5 PERSEVERANCE

About this chapter

A quality of professional service provision, and in particular the knowledge work of decision making, is that the performer needs to interact with people who will probably try to make them see matters their way. Auditors, for instance, may well find themselves caught between opposing views on how they should perform their certification work, which interpretations to propose and decisions to reach – even when they are set to uphold a standard. On the other hand, the deliberations so far have deemed certification auditing to be a collective enterprise that relies on the involved parties (Ch.3.), client and certification body, to arrive at equifinal meanings (Ch.4.). A balance needs to be reached between global concerns of the standard and the various local ones of both clients and auditor. The auditor needs to persevere and stay true – to her calling?

Since it is the equifinal position of enough shared knowledge and meaning that allows further cooperative action in controversial settings, a vital issue for collaboration is not only that of reaching, but also of maintaining an equifinal level of agreement. What's more, avoiding too much concurrence may also be a concern. It is thought that ongoing articulation work will secure a momentum towards harmony between diverse parties. Sharing and learning together will produce homogenization of knowledges and objectives. And too little harmony means distancing and loss of momentum. But, can there be too much harmony? Might there be a point where the original purpose or quality of production is lost, if opinions and motivation become too similar? How do we maintain a balance between too much and too little sharing and connection in order to achieve the predictable and recognizable performances that persevere in face of the influences of diverse interests?

This question may appear silly in terms of practical cooperation and workflows. How can more understanding be counterproductive? CoP theory, as does much research on computer supported work, sees mutual knowledges, shared understandings of objectives as conducive to better interaction, communication and awareness both within groups and professions, but also across, as it allows mutual accommodation for fluent work. Yet, there are organizational setups or governance measures that rely on professionals to limit their adoptions of the other party's opinions and interests when they cooperate. They need to stay professional and 'single minded' in their actions, in spite of the influence of others. For knowledge work where meanings and understandings are central resources of productive activities, disparate views and knowledges are often a desired outset for a competitive process of balancing. Third party setups of control and auditing as well as consulting activities are relevant examples.

Mainly, it is the literature related to communities of practice (CoP) that has explored the circumstances of creating and maintaining functioning cooperative practices, both within and across organizations. Practicing within a community entails learning, but also the shaping of a belonging identity which in turn shapes future action. CoP's answer to the challenges of maintaining practices is to build and strengthen both formal

and informal communities, possibly several of them. Apart from balancing by strengthening relevant parties/communities, this literature does not address the possibility of too much commonality and concurrence of understandings. To explore the prospects of stabilizing some aspects of multi-interest production this chapter takes a second look at CoP before delving into both social and technical challenges and remedies for securing certain qualities of professional practice. We start with the social processes/mechanisms, those of our own making and those of others, which push at and shape understandings and meanings, hence shapes our ***identity, with objectives and motivation for action***. This is followed by a look at how ***abstract and technical remedies may bolster*** us and make us less susceptible to stray from desired action, such as ideas and concepts, procedures, standards and technologies, although these too hold their own ambiguities. Finally, the notion of Common Information Spaces (CIS) is presented, with some parameters, which suggests a framework for analyzing the practical circumstances of collaborative practice in terms of sustaining articulation of meanings - or perhaps avoiding it. May the CIS framework enable us to cater for separation of meanings for a position of equifinal rather than common meanings? Of keeping separate roles with belonging meanings that are not contaminated?

Questions to be explored in this chapter are: **How may identity be shaped so that it will guide action in a consistent way? When social identity is not enough, how may the abstract and material support it? How may the socio-material context of service work be analysed? Is it possible to secure perseverance?**

5.1 PRACTICES OF IDENTITY WORK

We seek the conditions for perseverance as in the capability and motivation to perform competently in difficult and controversial circumstances. A persistent and consistent capability that shows up at all times, now and in the future, when performing elsewhere, alone or with colleagues, and in contradictory or stressful settings. This relies on the performer's conviction of both being right, and of having assessed the situation correctly – or at least correctly enough. This brings into focus the knowledge and resources at hand, but also the social and individual aspects of meanings, commitment and identification for work performances. *"The identity of the individual workers, and their identification with particular occupational and professional groups, is affected by, and affects, the nature of the work they carry out, and how they conceptualize themselves and their work role"* (Walsham, p. 65).

To explore how an individual may come to hold the ability to perform predictably and truly in novel circumstances, possibly in unpopular ways to some, we will first look again at what the practice focused theories of work and learning say about the individual. As processes of homogenization take place, the individual's conceptions of him or herself as a practitioner, with relations to others within a working community, is being negotiated into an experience of the self. This puts the individual somewhere on a trajectory of learning from novice-hood towards expertise with full membership. An identity, at least as a (professional) practitioner, is in the making. Yet, differences in experience and participation define differences in the memberships of individuals, of who has shared in which body of the community's histories. *The daily engagement .. in*

their CoP, creates relations among them that constitute 'who one is' in the office, who knows what, who is good at what, who is cool, who is funny, who is friendly, who is central, who is peripheral" (Wenger 1998, p.150). And so, the community is not homogeneous, constituted by mind like members, possibly not even when change or new influences have been consistently lacking. Lave and Wenger note, that competent participation does not necessarily imply that the individual will be able to uproot her or himself to move and practice competently elsewhere (Lave and Wenger 1991, p.52-53). So, based on participation only, the individual is not necessarily consistently coherent in their abilities across space or time.

Whereas CoP theory's conceptions of the emerging identity seems to be one that relies on the circumstances that chanced to naturally come into being, other literature points to more conscious and wilful influences addressed at shaping the individuals abilities, meanings and commitments. On the one hand - a will directed by the individual self actively choosing who to be and how to practice, based on essential ideals (Fenwick 2007), or morality or social responsibility (Castells 1997, 2004; Bauman 2001), or an assembly of the self driven by aesthetic satisfaction of desire (Bauman 2001) or conversely adapting to match the market's demands of flexibility (Sennet 1998), emerging from the more or less consciously chosen presentations of self (Goffman 1959) or simply a self based on social identification with others (Ashforth and Mael 1989). On the other hand the identity is actively influenced by others, as product of the work ethic (Weber 1930), through mechanisms of identity regulation (Alvesson and Willmott 2002) or emotional displays (Hochschild 1983). Finally a less contrived but accumulated commitment due to a desire to relive feelings from previous experience (Damasio 1994; Meredith, May et al. 2000). However these various approaches are not mutually exclusive and come together in a larger picture where externally imposed identity regulation and personal identity work continuously negotiates a self identity, including a mutual influence on action.

5.1.1 Neutral outlooks in CoP identities

A negotiated experience of the self emerges through participation. In fact *"..learning and a sense of identity are inseparable: they are aspects of the same phenomenon"* (Lave and Wenger 1991, p.115). "*Briefly a theory of social practice emphasizes .. the inherently socially negotiated character of* [both] *meaning and the interested, concerned character of the thought and action of persons-in-activity" (Lave and Wenger 1991, p.50).* As organizational learning takes place in a context with development of relationships and shared meanings, inside and between communities, both the individual selves and informal communities are created and sustained. Such informal communities may overlap, be part of, or even cross the boundaries of formal ones. And the CoPs are kept together by sustained interaction based on: shared practices, and members' identification with the community through a commonly shared goal (Wenger, McDermott et al. 2002, p.113).

Connection between communities is explained to derive from individuals who in varying degrees are members of several communities, both formal and informal. By operating as *brokers* of expertise, individuals can introduce elements of one practice into another, enabling understanding and nurturing motivations for various practices,

including the uses of boundary objects (Wenger 1998, p.105). There is also *collective brokering* in three types of boundary practice: 1) on the border of/between two practices; 2) where two constituencies in part overlap and 3) by the opening of the periphery of a practice – for instance the case of the newcomer that needs access by *"providing peripheral experiences.. or.. to people who are not on a trajectory to become full members"* (Wenger 1998, p.117).

So what does it take to become and continue to be a broker, as in one who practices his occupation in a foreign setting? Does the broker in fact become part of the foreign community after a while? In a CoP, *identity construction* is mutually influenced by *modes of belonging*: *engagement* as in taking part in practice, *imagination* as seeing relations through time and space by extrapolating beyond personal experiences and *alignment* as in coordinating our activities to broader global issues. Conversely, various ways of belonging through the *three modes of identity-construction* shape the character of learning and the variety of inter-subjectivity that each individual is subjected to and mutually acts upon. Individuals in CoPs do not necessarily follow identical trajectories, just as they also might easily follow similar ones, depending on a community's social and reificatory milieu. What then, is it in this milieu that might produce different trajectories?

CoP theory does acknowledge that more than participation and the social milieu affect identity construction and practices. However, CoP theory does not discuss further how issues of varied interests, conflicts and politics may affect the social or reificatory milieu, or vice versa (Contu and Willmott 2003). The individual is apparently secure in her role, identity and practice when expertise has been reached, to either practice 'at home' – or possibly as a broker within or towards other communities. While CoP theory, with a view to practice based learning, sees four components in learning: *community, practice, identity and meaning*, these are assumed to align in a suitable fashion amongst different individuals and communities. Possible controversies will let themselves be negotiated when different communities need to deal with each other, either through brokers or straightforwardly downplayed and cloaked, black boxed - within suitable boundary objects.

5.1.2 Personally Shaping the Self

To balance the idea of the overwhelming homogenizing influence of interaction, some research finds evidence that the individual does have a say in creating their own meanings and identity. Some incrementally through choices made over time, others more consciously shaping themselves by directing both their activities and the presentation of themselves in specific directions.

Learning Subjectivity – Building and Presenting the Self

One approach suggests that the individual builds identity by anchoring to certain knowledges or values, rather than belonging and shared goals. Fenwick (Fenwick 2007) claims that the one can learn subjectivity, and counters the *".. poststructural renderings*, [where] *the 'subject' is shown to be discursively constituted, malleable, positioned at the intersection of libidinal forces and sociocultural practices (Davies, Sumara et al. 2000; Hey 2002). There is no central authentic 'self' who goes forth with*

agency and intentionality to author a life of meaning and accomplishment; there are no transcendental centres of consciousness, competence, or freedom. This [is a] *poststructural denial of the unitary 'sovereign' subject .."* (Fenwick 2007, p.21). The counterargument, based on Foucault, that: *" .. freedom is an exercise on or practice of the self that can be used to control others and govern oneself by taking up available practices in various ways"* (Fenwick 2007, p.22), is backed up by practical examples.

Based on empirical evidence, home teachers, private nurses and consultants for hire, are characterized as *boundaryless* workers who do not belong to any one organization – and hence only cross borders into other organizations or towards other individuals. These workers actively choose their career paths and successively build their identities. As they consciously choose their direction of alignments, negotiate their own relationships, which jobs to pursue and qualifications to market, their next activities, they adjust themselves according to where they want to go. Although there might be limitations in the range to choose from, the locus of discretion is their own. Rather than community based epistemologies, Fenwick empirically finds that for these boundaryless workers, the self is anchored to for instance certain knowledges – like being a good nurse - being of value.

Subjectivity is described as a learning trajectory of active resignifying processes that shape the boundaries of careers and identities. *"Always, subjectivity is produced by power and acted upon by power. And usually, the subject exercises power, sometimes to resist the very power that is shaping it, but always from within the socio-psychic forces and resources that constitute it"(Fenwick 2006, p.27)*. The boundaryless subject pulls and pushes at boundaries of others - to find a temporary place and identity. It is a consistent negotiation for belonging but also of distancing. However this is also a difficult position. A position of uncertainty of what the future might bring. "*The longer they are at it, the more comfortable they seem with the fluidity of their knowledge and position, a fluidity that seems to free them from career discourses of upward mobility (Fenwick 2006, p.34),* which constitute the conventional career moves within organizations.

Fenwick finds that some subjects do not belong to particular and identifiable communities but rather to some more abstract notion which identifies, motivates and defines value. Similarly, but less idealistic, Bauman (2001), with a European outlook, sees the postmodern identity as *a project of assembly of the self based on goals of aesthetic satisfaction of desire.* Satisfaction is gained through consumption and experience, as in 'living through', (Bauman 2001, p.322). Even work may be seen as consumption, and particularly in the form of a vocation it provides fulfilment of desire and satisfaction. A vocation holds a role of expertise, a position to be desired by others, and thus holds an aesthetic quality. Both successful consumption and collection of work experiences contribute towards an expert status as part of the identity construction. But work as something to consume, also rubs out the distinction between the private time or life and work time and life. And so the work identity and the private identity merge. As there is no stable direction for new desires in the consumer society, the ongoing self-assembly processes will not stabilize into a life-project unless morals guide the individual (Bauman 2001, p.179).

This rather pessimistic view suggests that a role and identity is not self-evident and must be conscientiously maintained, as inconsistent and perhaps tempting desires produced by ones surroundings may contradict and destroy a steady course for a self-assembly process. While Bauman sees the identity assembly process as a result of a consumer society where short sighted and short lived choices are promoted and made feasible, Sennet (1998) counters this by claiming that it is working life, based on studies in capitalist USA, that demands a workforce of *flexible humans*. In face of work conditions of indifference, downright degrading or structural, cultural hindrances an attitude of *preservation of the self* (maintain de soi) is favoured, as opposed to 'a will to engagement' based on a *faithfulness to the self* (constance a soi) (Sennet 1998, p.180-1). A position derived from Martineau, Levinas and Heidegger (Heidegger 1967). Faithfulness to the self implies some notion of social responsibility and commitment to larger issues which Sennet finds to be difficult given society's demands on workers.

The Individual Identifies Him-/Herself - Social Identity Theory

Moving from the perspective of the individuals more or less consciously choosing and picking their way through life, possibly guided by broader issues of moral or social responsibilities, the identity is seen as more complex in organization related research. The concept Organizational Identification has been a recognized topic within research on organizational behaviour, thoroughly elaborated by Ashforth & Mael (1989), who begin by separating between a personal identity and a social identity. The theory of social identity (SIT) offers a social psychological perspective mainly developed by Tajfel and Turner (Turner 1975; Tajfel 1978; Turner 1982; Turner 1984; Tajfel and Turner 1985; Turner 1985). The social identity is described as being shaped through a process which starts off with an individual's own classification of a social environment, in which the individual subsequently places and identifies herself with chosen groups to a personally defined degree. The categories are defined by prototypical characteristics abstracted from members such as gender, education, role, place in hierarchy, task responsibilities, religion, hobbies, interests etc. The more salient that these characteristics appear, compared to other groups, the more attractive and stronger is the following identification. The cognitive segmentation of the environment into categories and social orders enables a systematic definition of others as well as ones own relative association to the various categories. In *adopting an identification*, one also identifies oneself with the things that may happen to this group, taking the group's experiences as personal. The authors however make a clear distinction between the adoption of an identity as in belonging to groups as distinct entities, and the possible personal adoption of meanings, behaviour and commitments that are common to the group - or the meanings and behaviours of other particular individuals that may belong to the group. The internalization of meanings and values, commitments and loyalties (affect) of the groups one identifies oneself with need not be adopted by the individual. This issue has, according to the authors, been confused in some research (Ashforth and Mael 1989, p.23). The individual may well both distance himself from demeaning identifications of low status, as well from offensive behaviours or policies practiced by other individual members, or even the group itself. Nevertheless, the identification itself may remain intact and behaviours may be internalized, even to the extent of stereotyping.

So, an organizational socialization process with internalization of values and meanings may take two different paths. Usually, internalization of meanings etc. is an antecedent of the identification which follows socialization; i.e. socialization => (identification =>) internalization. Individuals may however internalize a culture directly, without identifying themselves with the group itself (hence the brackets around identification). The authors suggest that there is a link between socialization and the self-concept, where developing a sense of *who one is* complements a developing sense of *where one is*. Situational definitions and self-definitions both emerge through *symbolic interaction.* Social identification explains growing interest in symbolic management (Pfeffer 1981), charismatic leaders, and brands, logos etc. Salient individuals within the group may have such an impact on group perceptions that organizations may seek to routinize administrative structures to encompass rites and ceremonies that relate to these charismatic individuals. "*Van Maanen (Van Maanen 1978) distinguished* [two types of internalization processes :] *investiture processes that ratify the newcomer's incoming identity* [as merging into the group identity] *and divestiture processes that supplant the incoming identity with a new organizationally situated identity* [such as in totalitarian environments like the military]*"* (Ashforth and Mael 1989, p.28). Internalization processes are shaped by the surroundings responses to the individual's performances as they learn and practice the norms and behaviours inherent to the group. Hence the respective mutual effect on the identity and meaning of the individual and the chosen group is not given, in spite of the identification.

Social identity theory describes the social identification as an aspect of identity that the individual decides for themselves in terms of belonging or not, irrespective of what the surroundings might say or do on the matter of their belonging. When the choice is made, the 'where on is', that is the context, will shape the social part of the identity. Its malleability is due to its separation from the personal identity. In fact *"Turner (Turner 1982, p.21) claimed that social identity is the cognitive mechanism which makes group behaviour possible"* (Ashforth and Mael 1989, p.26), in that it provides a flexible ambiguity to identification, despite what might take place within the group or in the name of the group. Groups under threat also tend to come strengthened and more strictly demarcated out of ordeals. *"..perhaps the greatest contribution that SIT makes to the literature on organizational behaviour is the recognition that a psychological group is far more than an extension of interpersonal relationships*" (Turner 1985) cited in (Ashforth and Mael 1989, p.26).

Impression Management shapes the self

Even though SIT sees the individual as choosing its own identifications this is obviously affected by the individual's sense of *who one is meant to be here*, in face of both ordeals and members reactions. Also, choosing ones identifications amongst available options does not mean, or preclude, that these have been evaluated against broader issues such as: is this really the kind of person I want to be? For Goffman, the Self is constituted by a multitude of selves, roles or characters – sustained and constituted by the social systems of its members (Goffman 1967). An individual practices *impression management* through drama, rituals and games. Through the surrounding's responses, the self is negotiated and status defined. *The individuals perceptions and actions must match the social systems opinion of her role and place,* or she will receive responses

that effect "cooling the mark out" i.e. a renegotiation of role/status to an acceptable status. Between the cracks of multiple selves, Goffman claims the presence of a personal identity. The ego on the other hand is the socially negotiated multitude of selves, of which combinations to be presented is socially determined in each case. The degree of integration of these selves into a coherent one, beyond issues of negotiations, depends on the social systems.

Impression management not only affects the identity available to others, but also has a constitutive effect for the self-identity. *"Serious action is a serious ride, and rides of this kind are all but arranged out of everyday life. As suggested, every individual engages in consequential acts, but most of these are not problematic, and when they are (as when career decisions are made that affect one's life) the determination and settlement of these bets will often come after decades, and by then will be obscured by payoffs from many of his other gambles. Action, on the other hand, brings chance-taking and resolution into the same heated moment of experience, the events of action inundate the momentary now with their implications for the life that follows"* ((Goffman 1967, p.261) in (Lemert and Branaman 1997)).

Ultimately, shaping and bolstering the identity is a complex matter where the scope and direction of self-determination results from ongoing negotiations with the circumstances the individual enters into. However, the surroundings not only influence by its responses, they also actively try to regulate the identity of both members and other actors.

5.1.3 Identity Regulation

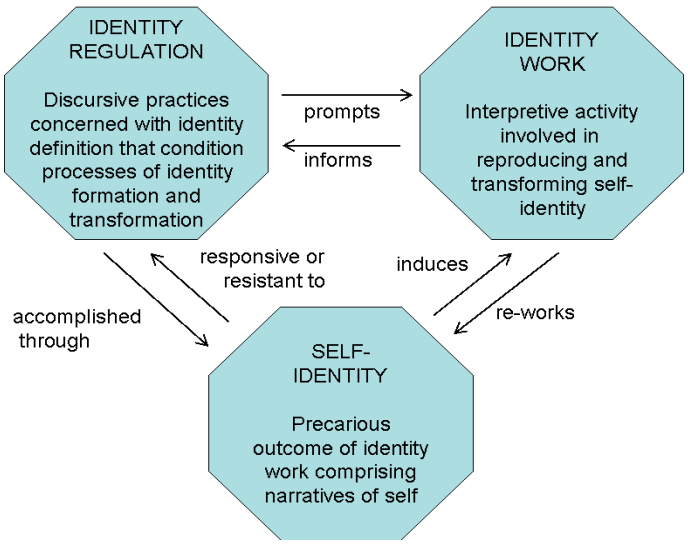

Figure 5.1 ***Identity Regulation, identity work and self regulation***
(Alvesson and Willmott 2002)

"The struggle to forge and sustain a sense of self-identity is shaped by multiple images and ideals of ways of being" (Alvesson and Willmott 2002, p.637). Alvesson and Willmott (Alvesson and Willmott 2002) separates identity construction into two main processes: *identity regulation* and *identity work* which together produce the *self-identity,* se Figure 5 *Identity Regulation, identity work and self regulation.* Identity regulations are discursive practices, involving the surrounding actors, whilst identity work is a personal interpretive activity. Identity work reproduces and transforms the self-identity, countering the identity-regulations enacted by the environment. Identity-regulation refers to the efforts of management and the organization, through discursive practices, to form the kind of employee that one perceives would serve the company's interests.

A long list of examples of regulation enactment is provided: *i) defining the person directly*, such as 'a middle manager'; *ii) defining a person by defining others,* such 'real men'; *iii) providing a specific vocabulary of motives,* such as 'we do not work here because of high salaries'; *iv) explicating morals and values,* such as the espoused value 'we are objective'; *v) knowledge and skills,* where one's explicitly identified capability defines who one is; *vi) group organization and affiliation; vii) hierarchical location; viii) establishing and clarifying a distinct set of rules of the game; ix) defining the context.* These modes of regulation puts focus upon one of four alternatives: *the employee, action orientations, social relations, or the scene.* Apart from the enlisted *managerial* one, other identity regulation patterns are *cultural-communitarian* and *quasi-autonomous* (Alvesson and Willmott 2002).

Identity-work attempts to reconcile new influences with previous conceptions of identity, meanings and values, forging a revised self-identity. To be effective the regulations must have some valence, which implies some intensity of meaning and emotionality. Most often they are not thought of as particularly imposing or unnatural, as they most often appear both familiar and understandable. But they may also be disregarded and backfire, if the individual finds them inappropriate. There may also be opportunities for micro-emancipation within identity-work in that employees do not readily accept everything their employment exposes them to. But this requires more than an intellectual effort, by involving emotional labour with questioning and perhaps remaking of previous frames of understanding, including conceptions of self, meanings and values (Fay 1987) cited in (Alvesson and Willmott 2002, p.637).

The managed heart - emotional labour aimed at experiences and commitment

While the Alvesson and Willmott mention emotional labour as a form of personal identity work, Hochschild also puts it down as a form of identity-regulation directed at others. Hochschild, in her seminal work, separates labour, as in work for wages, into three different types: *physical, mental* (knowledge ~, intellectual ~) and *emotional* (Hochschild 1983). Emotional labour is what employees perform when they are required to feel, or at least project the appearance of (display), certain emotions as they engage in job-relevant interactions. Emotional labour uses people as the raw input for production (Hochschild 1983).

Real life work processes do of course consist of combinations of labour variants. Service work is typically a kind of labour addressed at achieving a satisfied service

recipient, often together with some material and/or intellectual product. According to Leidner, inter-active service work includes *emotional work on the identity of both* the *service employee* providing the service, - and on the *client* as recipient. Particularly relevant examples of emotional labour in interactive service work are flight attendants, fast food hosts, insurance salespeople, call centres etc. (Leidner 1993; Kruml and Geddes 2000; Korczynski 2003; Richardson and Howcroft 2006). *"Emotional labourers engage in communication that results from either the expression of felt emotions or a decision to disguise or manage them"* (Fiebig and Kramer 1998) in (Kruml and Geddes 2000, p.10).

But what do emotional experiences have to do with the practical work performances, beyond moods?

Expectations ⇨ sense/meaning & emotion ⇨ commitment/conation/desire & action

McCarthy and Wright (McCarthy and Wright 2004) describe the unitary and meaningful experience as one which addresses and acknowledges sensory, intellectual and emotional stimuli, thereby enabling commitment and volition. How one comes to experience depends on how (and if) one has made sense and meaning of unfolding events, action and stimuli. *"[E]vents and objects* [may] *never clearly emerge from situations, precisely because the sense and meaning of those situations is never constructed"* (McCarthy and Wright 2004, p.88). To avoid ambiguity and arbitrariness, individuals or collectives are the meaning-makers that may create frames which will subsequently define the qualities an experience takes on for us. Through active reflection, "[*b*]*y framing our experiences and giving ourselves as fully as possibly to those experiences that we have deliberately framed, we begin to bring structure and meaning to them"* (McCarthy and Wright 2004, p.89). New and unitary experience has compositional and spatio-temporal aspects which stand out against retrospective multi-threaded sense making processes. Weick et.al. state that sensemaking is about organizing through communication and that "[s]*ensemaking is central because it is the primary site where meanings materialize that inform and constrain identity and action"* (Weick, Sutcliffe et al. 2005, p.409).

If our cognitive evaluations of the present state of things, our sensemaking, compared against our expectations detect discrepancy, this gives cause for emotion (Weick, Sutcliffe et al. 2005), feelings of affect, which are followed by volitions to act (McCarthy and Wright 2004). These expectations relate to the whole range of our understandings such as the collectively shaped frames of reference, common grounds and background capacities that enable our intercommunication and interaction (including social norms, rules of turn-taking ..), but also our own internalized conceptions of others and our own competences and capabilities – our belongings, as well as our personal meanings and values. Emotion arises from mismatch with expectations towards any of these issues. Emotions equally arise in response to discrepancies be it regarding our vocational and professional knowledges, our capable memberships (Weick, Sutcliffe et al. 2005) - or to our personal motivations and interests which might of course might potentially be non-objective.

Another understanding of the relationship of commitment and emotion is the suggestion by Meredith et.al.: Knowledge, as a reflection of a state of mind, has three dimensions: cognition, affect and conation, as the same external stimuli results in responses from all three processes. This is based on work by Huitt (Huitt 1999; Huitt and Cain 2005) on educational psychology and by Damasio (Damasio 1994) on neurological aspects of decision making. Conation refers to the connection between cognition and affect, and is often equated with volition. It is more comprehensive than motivation as it includes both planning and perseverance. According to *"Damasio, .. what memory actually stores is the disposition to re-experience the mental state of a given time, rather than the mental state itself. Not only are these dispositions a less than accurate record of a mental state, they also change over time. .. Context and meaning are derived from the relationships we can draw between the various states, both current and past"* (Meredith, May et al. 2000, p.249). Affect is proven through neurological research, to be a necessary component of knowledge, if we are to make use of it. *"Without the ability to experience affect, people are unable to make .. rational personal and social decisions. Interestingly, these 'affect-less' decision-makers suffered no impairment of decision-making ability in abstract decision situations, that is, those in which they are not personally involved. However, when it came to implementing decisions in their own lives, they were unable to settle on an appropriate course of action. The reason why this is the case is still not fully known, but the fact that this is the case is unquestionable"* (Meredith, May et al. 2000, p.252) based on (Damasio 1994).

Conation is defined as the mental process that activates and/or directs behaviour and action. Conation is a post-decisional process which *"represents deliberation, intention and striving towards goals [a commitment, and] it is critical if an individual is to engage in self-direction and self-regulation"* (Huitt 1999) in (Meredith, May et al. 2000) (p.246). And so, emotions play a significant role in our sensemaking, and consequent ability to act – and to persevere in our endeavours. However our conation, as it relies on past experiences and how we may reactivate and remember them, is subject to wear and tear and may potentially change over time. Effectively, commitment and thus perseverance, relies on the comprehensiveness and durability of our previous sensemakings. And, without acknowledging affect and emotion, the vocational identity (Bauman 2001), where the work and personal identity have merged is not possible.

5.1.4 Challenges for identity as guide to action

How does one sustain a calibrated work practice of the individual who finds herself in an unclear situation with unfamiliar arguments? Competent practices are also a question of calibration to what is normal and is usually acquired through training and practice, which subsequently has shaped a professional identity. Attempts to sway practice by unobtrusively working on someone's feelings is clearly a card both sides of an argument can and do play, but it is not necessarily a risk free approach.

From a regulation point of view the communication of emotions, emotional labour, is aimed at the emotional experiences of for instance a client (a happy client is a potential repeat client), but it has also been found to affect the emotional experiences of the performer. Emotional labour, has been claimed both to have adverse or positive effects for the employee. Hochschild, according to Kruml & Geddes, *"asserts that emotional*

labour can be good for the employee, depending on how it is enacted" (Kruml and Geddes 2000, p.12). Considerable research however addresses unfavourable consequences of emotional labour such as: burnout, stress, poor self-esteem, depression, cynicism, role alienation, self-alienation, and emotional deviance. Others though, claim favourable results such as: increased satisfaction, security, and self-esteem (Kruml and Geddes 2000, p.12-13).

Kruml and Geddes (Kruml and Geddes 2000) explore through a double survey of questionnaires and statistical treatment, possible dimensions of emotional labour. They suggest two separate dimensions: *emotional dissonance* and *emotional effort*. Dissonance is the difference between felt emotion and displayed emotion. Effort is involved in producing display, through pure display, surface or deep acting. They identify two types of training that might alleviate dissonance. One is training in acting, thus learning to produce the relevant feelings in one self that go with the desired display of feelings (deep acting). Secondly, training that helps the employee to understand and feel empathy, to identify with the client, also helps to reduce such dissonance. Emotional contagion, where one 'blindly' adopts customers' emotions will increase dissonance. Emotional concern, where one feels for the client's plight but does not adopt these feelings, does not statistically affect dissonance. Employment latitude, the employee's personal discretion on whether to employ emotions in the interaction, reduces dissonance, which means that standardized and overseen emotionality increases dissonance. In the case of multiple, short, impersonal encounters the amount of dissonance increases, especially where clients are negative. Longer, 'get to know' encounters do not affect dissonance, according to this study.

While traditionally professions and identity might have been seen as closely connected due to professional training and professional memberships (for instance a priest), the current proliferation professions, variety and dynamics of circumstances no longer makes the link obvious between a professional identity and how to practice, especially to outsiders. So it becomes an inside job to regulate or boost the job identity of employees in a positive way. However, the positive social mechanisms may be too slow in shaping or reinforcing identity in face of dynamic and globalized work environments. And, people work around identity regulations if they find them inappropriate to what they personally see as important. This ultimately leaves us with a need to hedge our bets with something more. Something more durable than the routines of practice, practical knowledge and the social identity to secure the intended activity.

Returning to the question: How may perseverance be achieved through social mechanisms in knowledge work? Several stabilizing features have been identified, but there are also challenges to these. Active reflection with comprehensive sensemaking of experiences and emotions all contribute turn experience and practice into resources for future sensemaking and organized considerate action (McCarthy and Wright 2004; Weick, Sutcliffe et al. 2005), amongst these is the example of storytelling (Brown and Duguid 1991), or ones identification as someone belonging to a particular category or ideal (Alvesson and Willmott 2002). Identity, however multifaceted or merged, grounded locally in adopted practices or ideals of a more broad global nature, is one corner of a triangle of connected issues that COP theory effectively describe as

inextricable: *social work practices ⇔ working knowledge ⇔ work identity*. What Wenger termed reifications, the tools of the trade created by practitioners, is a notion to explore further.

5.2 IM-/MATERIAL STRATEGIES FOR PERSEVERANCE

We start by taking a closer look at artefacts, the man-made ones, although natural objects may fill the same kinds of roles (Callon 1986). Grounded in the view of Latour (Latour 1987) that technology supplies durability, we seek the roles of artefacts within a context of work practices which comprise both the identified production processes and the less visible articulation processes, which together enable work and production (Berg and Timmermans 2000). The look at material artefacts is followed by an exploration of the immaterial ones, as in the abstract and symbolic, by way of introducing a theory on how ideas may travel, both within and between organizational contexts (Czarniawska and Joerges 1996). There are close ties between immaterial and material artefacts, as the immaterial thrives better in the company of materially concrete counterparts. There are however paradoxes involved in the use of any artefact, as they may display stability and exactitude, but also flexibility and hospitality, or even fuzziness and ambiguity.

The previous chapters indicated that there are ways to share knowledge for durable work practices besides writing, text and data. Examples are storytelling, (acting scenarios,) participation in action and reasoning, comprehensive reflection/sensemaking. Identity and meanings with chosen commitments and identifications serve to guide, direct end energize work. This should all contribute to resilient and competent work performance, but hold the possibility of being transitory and subject to change and drift. However, by *making boundary objects (BO),* termed reifications by Wenger (Wenger 1998), the circumstances of work-performance may become more stable. BO may be abstract or *material, symbolic* or *instrumental.* BO are examples of technologies or artefacts in use. *"The basic point, of course, is that sociotechnical ensembles - facts, artifacts, societies - are interpretatively flexible (Pinch and Bijker 1987)"* (Bijker and Law 1992). This interpretive flexibility has both positive and negative implications.

Interpretation is also question of learning. In line with the differing epistemological stances, views vary of what constitutes the results of learning, and where it resides. *"In an individual epistemology .. learning remains fundamentally a process within individual minds"* (Suthers 2006, p.317), although a social context is seen to enhance this individual learning process. In intersubjective learning theories, the interpretations that are the basis of learning and meaning making go beyond joint creation of interpretation, to consist of the interactions themselves (Ellingsen and Monteiro 2003). *"Intersubjectivity is to be understood in a participatory sense: it is a simultaneous process of mutual constitution that may involve disagreement as well as agreement about shared information (Matusov 1996) within a 'polyphonic nonharmonious concert characterized by synchronic movements, as well as by distinct, conflicting, and dissonant voices' (Smolka, De Goes et al. 1995) .. beliefs are enacted .. without necessarily being mutually accepted"* (Suthers 2006, p.317).

So far, the deliberations have focused in particular on the social sides of practice, relaying artefacts and technologies as fairly neutral and inconsequential, although practical. The following seeks to illustrate the powers of artefacts in collaboration. Starting out with material, physically present artefacts, and moving on to the immaterial artefacts that accompany the more material representations.

5.2.1 The Material

Illuminating the elusive technology

In the following some qualities of *material* artefacts will be explored. Wenger's (Wenger 1998) use of Star's & Griesemer's (Star and Griesemer 1989) concept of the boundary object that mediates understanding between communities, albeit sometimes very selective understandings, is both illuminating and useful. Various artefacts and technologies may constitute such boundary objects, along with other reifications such as narratives, rules and norms etc. The concept is a powerful one for grasping vital constituents of communication and collaboration between different communities as it illustrates how cooperation is allowed by the BO without there being a unilateral (universal) consensus on activities, purposes or priorities. BO, be they material or abstract artefacts, enable collaboration based on equifinal meanings, knowledge or intentions.

However, the deeper aspects of reifications as resources within and across communities are little expanded in CoP theory. CoP divulges some aspects of artefacts in Communities, but remains ignorant or uninterested in others. It might be that concepts of morality concerning the humane might inhibit the inclusion of non-human artefacts as actors into our discourses on the social. And so we mostly turn a blind or innocent eye to the technologies we interact with. A similar point has been made by (Prout 1996) in (Timmermans and Berg 2003, p.9): *"Work is constructed as done on and through machines, but not by them".* When we do address technology, acknowledging its presence, it tends to be in an instrumental dichotomous fashion where humans are either in total control or at its mercy. The following seeks to expand our concepts of both the artefacts and the humane, to stretch the dichotomy into a duality ascribing more than structure or mediation to artefacts. Wenger does describe such a duality, but the focus of CoP remains reliably on the social aspects of learning, whereas a more holistic perspective on collaboration is sought here.

Making technologies explicit

To show some qualities of technologies in use that may be seen as universal, Marc Berg with actor-network theory (ANT) (Latour 1987) as theoretical lens looks closely at the artefacts within work practices. Artefacts, in themselves, hold a knowledgeable capability and a transformational power on practical issues of sense-making, action, interaction and work. Artefacts know, as Mol would put it (Mol 2003). Berg (Berg 1997) takes a detailed look at a particular practice in a hospital intensive care unit. Each minute part of a work process which aims to document a hospital-patient's fluid balance is described. The balance is the sum of what fluid goes in, excepting what comes out. In observing and recording each minute detail of a particular process, the separate elements are identified. A socio-technical hybrid is delineated, that comprises everything that is needed for the activity to proceed, including several people, various

artefacts, routines and experiences. The tools' competences come to life only as part of the real life activity.

The shape of the bag with its quantity scale, holding the diffusion liquid, gives input to the nurse on what number to enter into a fluid-balance spreadsheet. The granularity of the scale defines the number's level of accuracy. The size and shape of the drinking cup and urine container also re-represents the separate liquid in-/outputs of the patients body into formal representations which can be added to the spreadsheet. The person entering the number has no need of knowledge of medical theory, diagnosis, treatment or even purpose, for performing this specific task. The only interpretation necessary to be made by the human is the reading of the quantity scale in order to enter it into the spreadsheet. *"The task of producing formal representations is delegated to the mundane artefacts which perform, in Latour's terms, 'the practical task of abstraction'"* (Berg 1997, p.144).

Berg focuses on the inter-relationships between the tools and the human workers in saying that through these inter-lockings, new competencies can be achieved and higher levels of complexity in work tasks can be achieved. People can be seen as communicating/interlocking via the tools without intimate knowledge of the other parts of the process chain. The distributed nature of the task, shared out between the artefacts and human actors, *effect a distribution of control and responsibility* across the heterogeneous ensemble. The articulation of actors-to-tasks, tasks-to-tasks and actors-to-actors is pre-designed. The separate actors do not need an overview of the complete process, which also means that they have no way of effecting global workarounds, as they have no overall purpose to direct them. The individual humans are not in control of the overall task. On the other hand, neither are the artefacts. Another shape or functionality, would in effect be a different inscription in the involved tools, and would shape the human actors' tasks differently. The human actors may introduce workarounds into the performance of their own particular tasks when unexpected contingencies arise, pertaining to either their colleagues or the artefacts. In order to secure that the task of reading and entering the numbers is actually carried out, it is perhaps helpful if at least some purpose or motivation of the task is known to the human actors, allowing them a possible motivation for workarounds or prioritising. A motivation with a wider scope, a broader outlook, than their own separate part-task. It is also worth noting that while the sum of humans and artefacts in their totality of distributed performance *effect a distribution of control and responsibility,* the opposite is also the case. Namely that by distributing control and responsibility, the same is restricted for each individual actor. A relevant question would then be – is there something present to ensure that the activity keeps going?

Another point made by Berg, is that this ensemble of humans and tools – the Actor Network, cannot bee seen as stable once the technology is in place. In line with the view of tools and humans as equal actors in producing the end result of a process, then all actors within a network are affected when changes occur in the forces influencing the network. Most work processes have aspects of drift in which work is continually redesigned to adapt to the pertinent circumstances. This drift introduces a need to continually adapt the use of, and/or functionality of the tools. A quaint analogy of this

need and practice of adapting tools is perhaps our most archaic tool of all – the hammer. A modern day hammer comes in various shapes and sizes, – adapted to each craft's particular need. The cleft in today's carpenter hammer arose from the need to remove misplaced iron nails. This functionality would be inconceivable in the times of wooden pegs. But we still call it a hammer. The hammer, in both name and use, is a BO that has different nuances of meaning as well as different shape and use, for different communities (de Laet and Mol 2000). The artefact/BO gets adjusted as circumstances, requirements or opportunities change. Otherwise, it would get discarded as useless and short-circuited out of the network. To remain in the loop, the actors need to maintain relations within the networks and adjust their behaviour accordingly.

While Berg describes the locally embedded technology, Hutchins (Hutchins 1995) is concerned with the "circulation" of cognition in collaborative work. Traditionally human cognition has been placed within the mind of the individual. A basic idea in distributed cognition is that human activity does not take place solely in the heads of people, but that the environment, both the social, physical, and including the artefactual – the manmade, provides a cognitive context from within which cognition should actually be delineated. Looking at the practice of navigating ships, Ed Hutchins (1995) develops a methodological and analytical framework for understanding how cognitive achievements can be conceptualised as a joint accomplishment of artefacts and people. In distributed cognition, according to Hollan et al. (Hollan, Hutchins et al. 2000), one expects to find a system that can dynamically configure itself, to bring subsystems into coordination, to accomplish various functions. At the core of Hutchins' argumentation lies an assumption of equality between people and artefacts in structuring practice. In this way the centre of attention in collaborative activities is the interdependence of actors, the interdependence of both people-and-artefacts as well as people-and-people. In effect, this is the same as the earlier described inter-subjectivity of knowledge, given the symmetry of both people and artefacts.

Similarly, Turnbull's (Turnbull 1993) treatment of the accomplishment of medieval cathedral building, can be read in light of collaborative work. During the 13th century, some fifty cathedrals were raised throughout Europe. They were built in a discontinuous process by different groups of masons. The challenge has been to understand how the masons could build these tall buildings without knowledge of structural mechanics. The time they took to build, as well as the geographical distances disallowed for any comprehensive personal interaction between builders. Turnbull envisions the cathedral building site as an *"experimental laboratory"* in which the key elements were *"the template, geometry, and skill"* (Turnbull 1993, p.322). The argument is that the collective work of cathedral builders was not one of the present human ingenuity alone, but also manifest in their tools. The templates represent accumulations of every design decision that had to be passed on. Since a template is easy to replicate, it could circulate both among builders at a site and among building sites across Europe. In this way, knowledge of gothic cathedral building, as manifest in the template, could circulate and spread. Also, argues Turnbull, the template has an organizing effect, having the power to organize large number of workers. Turnbull's approach is specific on the role technology plays in transferring knowledge and indirectly coordinating collective work. It should perhaps be mentioned, that a lot of cathedrals never made it, as they tumbled

to the ground. The use of a template also needs to be grasped at each individual building site and combined with the skill of masonry.

A final example. Latour claims that technology also can represent and enforce morality, meanings and culture (Latour 1992). His example describes himself getting into his car to be pestered by an alarm unless he fastens his seat belt. He tries to endure the noise and flashing lamp, but finally surrenders for the sake of peace and quiet. The car's designers and engineers have inscribed into the car, the moral principle that drivers should not venture into traffic without a fastened seat-belt. As it is, he finally escapes the inscription by having a garage technician dismantle the seat-belt sensor.

The powers and abilities of artefacts

The previous examples, although different in context and effect, take technology at face value in collaborative collective contexts. Artefacts are performing actors that know (Mol 2003), that organize and control activity, and thus affect the participating actors and their performance. Turning the analysis of Orr's (Orr 1996) ethnographic study of field service technicians and copying machines inside out (Ch.4), we might say the following. The copying machines with their various capabilities, cantankerous moods and individualities are organizing the whole set of human actors: their owners, the field technicians, the company producing the machines, etc. But this is perhaps taking this analytic approach a bit too far, into a technologically deterministic account. Reality lies somewhere between the socially deterministic and the technically deterministic – in a socio-technical heterogenic totality of interacting actors, both people and artefacts. The capabilities endowed the machines are causing the company to consider their ways of organizing their operations. The field technicians, in order to be able to cope in their interactions with the machines, feel it appropriate to develop and sustain knowledge sharing through telling stories of their interactions with the machines.

There are, at least two implications for competent collaborative work in these examples. *i)* Firstly, man made artefacts embody competence and capabilities which imply that they analytically should be seen and understood as motivated actors in the collective contexts of activity, in much the same way as any involved social actors of individuals and groups. This concurs with Actor Network Theory (ANT) as introduced by Latour (Latour 1987; Latour 2005), to be elaborated later.

Berg's argument is that knowledge and knowing is distributed among actors, and that no single actor has the complete picture of the collaborative work process. The consequence is that we can argue that knowledge on how to manipulate materials for production can be accumulated in both humans and artefacts. A medieval mason, although skilled at building brick walls and columns, is unable to raise a gothic cathedral without the template, or some corresponding representation of the machinations necessary. Conversely, a person unskilled in masonry, but aware of the template's use, is unlikely to succeed in building a gothic cathedral no matter how many templates she or he is in possession of.

CoP stresses that the interpretation and application of this distributed knowledge is activated through social interaction, within the heat of action. As Wenger puts it:

"knowing is defined only in the context of specific practices, where it arises out of the combination of a regime of competence and an experience of meaning" (Wenger 1998, p.141). Implied indirectly in this quotation is also the fact that such a regime includes the organizing of the actors into a collaborative whole that also brings into practice: both social orders, as well as conceptions of meanings, morals and values and thus also the relationships between the actors.

ii) Secondly, the externalization of knowledgeable capability into representations may take many shapes other than language and formalizations, such as text and mathematics, information and facts which we often think of as ways to accumulate and pass on knowledge. Turnbull's template translates, accumulates and transfers knowledge/knowing in a less symbolic, formal, or abstract fashion but richer in analogy and mapping (Norman 1988). It holds a material instrumentality, which is durable, scales and transfers differently and perhaps better in this case, than the formal abstractions of structural mechanics and mathematics. The demands differ on the social and adaptable elements of the networks, depending on the qualities of the other actors, including the non-human ones. Artefacts that appear intuitive thus have considerable force in their ability to affect activities. It is worth noting however, that which is perceived to be intuitive depends wholly on an actor's previous acquaintance and bodily experience, even for such a simple matters as knowing what to do with a push-button or a door handle (Svanæs 2000).

iii) Artefacts bring some form of stability into capable practices. The way the artefact embodies and accumulates knowledge, is a primary explanatory factor in Turnbull's work, as the building of gothic cathedrals was a discontinuous process. It is this discontinuity that goes unexplained by solely looking towards humans as knowledge accumulators. Durable knowledge transfer takes place in the circulation of artefacts among people and among communities. New masons may pick up the chisel and new nurses may pick up the pencil for jotting down the vessel's indicated number. In so doing, the vessel and template fill their roles with a particular capability, which also demands a complementary capability of the other actors. These artefacts effectively shape and organize the human actors' actions in terms of this particular process. The degree of stability embedded in the artefacts and in the practices of the human actors is not given a priori, but depends on patterns of complementary capabilities that are distributed across several of the actors comprised of both social and technical entities. Some constellations are more durable than others, for certain purposes.

A socio-technical, heterogeneous perspective

The socio-technical collective approach of ANT, allows for a way of discussing competent practice without having to delineate knowing into different kinds of knowledge like tacit, explicit, conscious or unconscious etc. Rather, ANT suggests that inquiry should focus on following the various actors and how they relate to each other, over time. Also, it is hardly possible to properly separate the social from the technical since they intermesh, as in for instance the communication technologies in use. What is the contribution from the various actors in an e-mail conversation? How is the message influenced by the technology, and how is the behaviour of the humans shaped by the technology? That which can be assigned to the human's own adjustment of behaviour

depends on a whole variety of factors that lie in the present, the past and an expected future. The separation of the social from the technical is difficult, just like it is impossible to extract the propositional knowledge from other kinds of knowledge, to produce transparent mobility of capability by transporting isolated actors. The socio-technical perspective also implies that collective practices, comprising actors with identities, relationships and trust, must be understood as comprised of both social and technical actors, - and that the intersubjective meaning that Suthers (Suthers 2006) points at as a suitable research topic also for Computer Supported Collaborative Learning (CSCL), must include the artefacts as subjects. The consequence of such a perspective is that artefacts too, are subject to and of both relationships and trust, often mostly attested to the domain of human bodies.

5.2.2 Immaterial artefacts – ideas, symbols, abstractions

Organizational change sown by ideas

Based on an observation of the fact that many organizations introduce the same changes at about the same time, Czarniawska and Joerges describe the travelling of ideas. How is it that the same idea may take root at very different sites? Does it depend on qualities of the idea itself, or is it a question of natural diffusion, or perhaps an adaptation to environmental circumstances? Countering these notions, the authors propose that immaterial ideas may travel as the outcome of processes of translation. Such translations allow ideas to move across time-space, and catch on, - where and when *'their time-space has come'* (Czarniawska and Joerges 1996).

Ideas = images => objects / actions

Ideas, based on work of Mitchell (Mitchell 1986), may be defined as and communicated as, images in the form of pictures or sounds (words can be one or the other). Such images can then be materialized by turning them into objects or actions. The easiest way to objectify an idea is to turn it into a *"linguistic artefact by a repetitive use in an unchanged form, as is the case of labels, metaphors, and platitudes"* (Czarniawska and Joerges 1990, p.32). *"Their materialization causes change: unknown objects appear, known objects change their appearance, practices become transformed. .. The application of ideas takes place through acts of communication."* (Czarniawska and Joerges 1996, p.20).

Cyclic translations for use adoption and institutionalization

Ideas gain the stability necessary for them to travel through consecutive cycles of disembedding and re-embedding, accompanied by translations to different media. This allows them to travel to new places, to be picked up and adopted to new local circumstances. Much in the same way as fashions or trends. Fashions appear to advocate the new, but yet they would not gain recognition and followers if there was nothing somehow familiar for the adopters to recognize. So ideas, like fashions, gain credence and followers as long as they make sense in terms of previous notions as well as having the characteristics of being different and useful. *"Mary Douglas, for instance, says that, '[to] acquire legitimacy, every kind of institution needs a formula that founds its rightness in reason and in nature' (Douglas 1986, p.45)". ..[T]hose ideas which can be presented as natural (for example, by showing that they can be materialized into*

tangible machines), lend themselves to be institutionalized." (Czarniawska and Joerges 1996, p.25). They argue that fashion complements the phenomena of institutionalization and is an inseparable part of its 'iron cage'. *"Fashion, then, transpires as a highly paradoxical process. Its constitutive paradoxes: creation and imitation, variation and uniformity, distance and interest, novelty and conservation, unity and segregation, conformity and deviation, change and status quo, revolution and evolution are only variations of the basic duality of communal life: the collective construction of individuality and the individual construction of collectivity."*(ibid. p.35).

Translations for accommodation and credibility

The translation of an idea into some material object that embodies it, will give the accompanying idea added credibility as well as presence, and thus applicability. *"[M]aterialized ideas go down like avalanches, with almost no resistance, especially if they acquire the form of complicated machinery"*(ibid, p.19). The proposed chain of translations can be summed up to start out as an *idea* in a *localized time/space* followed by translations to *-> image -> object -> action -> institution* - > into a new *image* in a different time-space location (ibid., p.46). This image represents the idea in a new scenario. It is an *'.. idea whose time/space has come'* (ibid., p.44), which resonates with a local technological frames (Bijker 1987), and gains the local confidence of actors as suitable for their needs. This appears similar to the garbage can theory (Cohen and March 1972) which claims that available solutions are adopted to solve new problems (i.e. the joke that, if you have a hammer available, then most tasks seem to require a hammer). As opposed to a possible interpretation of the garbage-can concept, the authors suggest the adoption of ideas to be based on reflective and local sense-making processes, rather than an adoption of something inadvertently found discarded in a bin. The point made, is that the consecutive translations allow the original idea a greater affordance and weight. It increases in credibility, reach and scope as it gains redundancy when translating and multiplying into various media/shapes. Re-enforced by objects, followed by actions, practiced into institutions which attain their own black-boxed images that represent the idea. However, this idea may be similar in name, symbol, or metaphor as the original, but its consecutive translations encompass both transformation and transport. The object-like character of an idea (text, picture, prototype ..) makes it mobile *'and yet it can be read in differing ways'* (Czarniawska and Joerges 1996, p.23). *".. by labelling actions in certain ways, desired associations are created to master-ideas .. such as modernity and community. .. Another way of turning ideas into things is design; putting images into a graphic form.(ibid., p.32). "The power of master-ideas is that they are taken for granted, unproblematic and used for all possible purposes"* (ibid., p.37).

Actor Network Theory draws together the notions of agency, illustrated here, held by the manmade artefacts – immaterial and material, and joins it with the agency of social actors as we know them. Chapter 6 *Predictability* elaborates on the notion of the actor according to ANT.

5.3 CIRCUMSTANCES OF MEANING CREATION FOR ACTION - COMMON INFORMATION SPACES (CIS)

Common Information Spaces (CIS) represents a different kind of socio-technical approach than that of ANT. While ANT puts focus on the symmetry in explanatory power of the social and the technical, on order-building, and networks of allied actors for negotiating outcomes, it is very generic in terms of the types of outcomes it seeks to explain, or how translations and inscriptions are made. CIS from the Computer Supported Cooperative Work (CSCW) research field, on the other hand, seeks to explain, primarily one kind of outcome - namely the circumstances for negotiating intersubjective meaning as influenced by the subjects context, including artefacts and ICTs. The concept of Common Information Spaces (CIS) illuminates the setting, and thereby the necessary articulation work and technologies involved in order to negotiate common understandings for work. Bossen (Bossen 2002) suggested a number of parameters of a CIS to guide such an analysis of the premises for this articulation. These are presented in Chapter 10 *Lonely Decisions*.

5.3.1 Analyzing CSCW Setups with CIS

In attempting to look at the whole setup of collaborative devices within a specific organization, Bannon & Bødker (Bannon and Bødker 1997), based on (Schmidt and Bannon 1992), suggest an approach termed Common Information Spaces (CIS). The concept has been debated for some time (Schmidt and Bannon 1992; Bannon and Bødker 1997; Bannon 2000; Randall 2000; Reddy, Dourish et al. 2001; Rolland, Hepsø et al. 2006) and has been further elaborated by Bossen (Bossen 2002) who suggests seven analytic parameters in order to enable a description of specific work settings. The parameters are: 1) *degree of distribution*, 2) *the multiplicity of webs of significance*, 3) *the level of required articulation work*, 4) *the multiplicity and intensity of means of communication*, 5) *the web of artefacts* (termed material 'mechanisms of interaction in (Schmidt and Bannon 1992), but 'coordination mechanisms' in (Schmidt and Simone 1996) and (Bossen 2002)), 6) *immaterial mechanisms of interaction*, and 7) *the need for precision and promptness of interpretation*.

Bannon & Schmidt (1997) propose CIS as a key supplemental concept to the works of Strauss (Strauss 1985) on actions/interactions in social worlds, and the importance of *articulation work*, Suchman's work (Suchman 1987) on *situated action*, Flores and Winograd (Winograd and Flores 1986/1987) on *language as action*, and the work of Schmidt and Simone (Schmidt and Simone 1996) on *coordination mechanisms* which have become important frameworks for discussing key CSCW issues. They pose that the construction, use and maintenance of CIS among people performing cooperative work is a topic of central importance in CSCW.

The main idea of CIS

The main idea of CIS is of *putting information in common*, as there is need of some form of communication or information sharing in any type of cooperative work situation. The 'information space' where this information is shared includes not only the information itself, but also its interpretations by the cooperative ensemble of various actors, as the information's representation in the form of text, speech etc. will hold

different meanings for any individual (Berger and Luckmann 1966). The CIS concept thus attempts to package both the information and its variety of representations and meanings within a space or arena, into a labelled object that allows for bracketing many of its inherent problematic features, at least for a while. Establishing a common name allows for acknowledging the duality of the concept – that information and its meanings are not self evident. Having a name allows for the reification, existence and identity of an entity.

Having established CIS as an abstract object, they go on to name some important aspects relating to CIS: They come in many forms e.g. constituted by people that are co-present or distributed across time and space; Various actors may have need of private or bounded spaces for political, privacy or related reasons; CIS have a dialectical nature as they may be more or less open versus closed to interpretation, like boundary objects (Bowker and Star 1999). In their open form they are malleable to changing use and interpretations for instance within a community. Their closed nature allows them to be shared and used in individual ways across contexts, time and Communities of Practice (CoPs). Single carriers of information share this dialectical nature of CIS, but do not comprise CIS themselves (Bossen 2002, p.177), as they do not delineate a space. Enabling for some sharing or awareness of interpretations is thus an aspect of CIS. Bossen (Bossen 2002, p.177) from (Bannon and Bødker 1997) states that: *" Construction CIS demands the work of coordinating interpretations, a new kind of articulation work".*

This articulation work may take place both within and across organizational boundaries. Randall (Randall 2000) describes how information may at least be used within or across three organizational boundaries: within groups of common work purpose, within an organizational context and thirdly between organizations. Færgemann et.al. (Færgemann, Schilder-Knudsen et al. 2005) argue that articulation work is present within and across all these organizational boundaries, complicating the managing of articulation. With increased globalization and networking in business settings (Sahay 2003; Krishna 2004), increasing complexity in articulation is introduced for employees. In order for information to be interpreted by distributed actors, Bannon & Bødker propose packaging of aspects of context and rationale with information, such as author, context and the agenda in order to enable a dissemination of its production (Bannon and Bødker 1997).

Comment to CIS and Parameters

An important limitation to Bossen's treatment to note is that several of his parameters derive from his empirical case where coordination of work tasks are a primary issue of the articulation work he describes. The framework might require some adjustments for other types of articulation work and other collaborative settings.

CIS will be used as a framework to analyze the context of calibrated service work in Chapter 10 *Lonely decisions*. A central issue will be how the CIS concept works in controversial settings where various actors in a multi-dimensional CIS not only need to sort out what to share and how to interpret it into meanings, they also need to sort out controversies of meaning.

5.4 SENSEMAKING BASED ON TRAINING, REFLECTION AND EXTRAPOLATION WITH IM-/MATERIAL SUPPORT

This chapter has explored how ***both the social and technical supports distributed knowledge work*** through comprehensive identity work.

Firstly, action is closely connected to identity, meaning and motivation. And our identity is shaped by both ourselves as well as our surroundings - through the feedback we get, the desires we live out, the circumstances of our experiences and the sense made out of them, the arguments we are convinced by, the purposes we choose to be guided by, or the communities we identify ourselves with – to name some. Others' conceptions of what a professional role entails may be powerful input to the shaping of a professional identity.

Secondly, also the individual, with personal and professional identities, is susceptible to institutionalising features – both immaterial and material ones that create boundaries and bring structure to tasks, objectives and meanings. Vocabularies with rationales and metaconcepts, accompanied by material objects such as templates, rules and standards, will influence and shape the performance of tasks, arguments and dialogues, processes of reflection and meaning making – and the identity - as seen relevant to the individual's role and purpose in a given context. *"All relations should be seen as both social and technical. .. This, .. is the postulate of heterogeneity - a postulate suggesting that both social determinism and its mirror image, technological determinism, are flawed. .. Indeed what we call the social is bound together as much by the technical as by the social. Where there was purity, now there is hetereogeneity. Social classes, occupational groups, organizations, professions - all are held in place by intimately linked social and technical means"* (Bijker and Law 1992, p.290). With the concept of Common information Spaces (CIS), with suitable parameters, the available resources for calibration and meaning making may be spelled out.

Finally, the resulting action in dynamic and controversial settings, the ability to persevere and hold fast to a chosen identity, negotiate and extrapolate its extension into unchartered territory, will rely on the sense made out of previous experience and input – and the actors to take part in it. With the necessary *heterogeneous resources, including the social and relevant practices of making sense out of them*, the ability to recognize and make new sense and separate between different purposes and interests, relevant calibration is supported - in theory. In complex settings this is a matter for empirical investigation.

6 PREDICTABILITY

About this chapter

It is vital for service work that it is performed in a way that matches central actors' expectations of professionalism. Central is of course the client, but also colleagues, employer and the professional community. To stay in business, the service needs to be perceived as competent, informed and up to date on the latest trends in the sector, on management and technologies, demonstrating market understanding, be relevant for business, in short - professional. Equally, if a colleague were to step in, their performance and interpretations need to match too. This challenge of making similar qualculations is particularly important for auditors of standards since standards have an image of being clear cut, and any interpretation should apparently arrive at the selfsame conclusion. Accordingly, in order to fill the professional role it is necessary to meet others' expectations in ways that make sense not only locally, but also in a relevant way across time, space and culture. What strategies do companies and employees use on a grand scale to ensure such predictability?

In the quest for predictability and control in all kinds of production, a major strategy, which actually covers a variety of approaches originating from various levels, is standardization. It can target different aspects of production: technical functionality, terminology, performance levels and procedures (Timmermans and Berg 2003), while it comes in many shapes and guises. The obvious ones are the internationally ratified *formal* standards, also the *de facto* industry standards shaped by leading industrial actors, and other formal rules and regulations. But real life standardization is also about the more *inconspicuous structures* that shape production and performance, such as: explicit routines, guidelines, the formal organization with roles which assigns tasks and responsibilities. Perhaps even less apparent is the standardization effected by competent practices such as: habits, production processes, established norms, the practiced systemization amounting to an informal organization (Tsoukas 2001), and - the information systems which indirectly shape by who and how the various bits of production is performed (Berg 1997).

The effects and challenges of local and practical standardization efforts are similar to the more global or formal ones. In sum, multiple standards, heterogeneous systems of structuring, organizing and technology, are used in organizational practices with the aim to steer production into predictability. Standardization is also an identified strategy for globalized trade (Ch.2.1.3) and the steady increase in international standards, also in areas that do not easily lend themselves to measurement and square cut calculations, demonstrates that this strategy has wide support. Another argument is that standards embody knowledge and makes it available to others, again in support of global markets and competition. However, when we implement and enforce standards on a large scale, especially via computers and information systems, their reach and various effects appear to lie on the unpredictable side as well. Side-effects turn up in unexpected places (Hanseth, Jacucci et al. 2006), and - one standard's order is another's disorder (Timmermans and Berg 2000).

So far, with *a local perspective*, we have looked at theory dealing with the circumstances of professional decision making in controversial settings. Chapter 3 focused on the context sensitive and shared sensemaking involving all the present actors, which aimed to build shared understandings and motivation, with a mutual trust and acknowledged legitimacy. Chapter 4 delved further into processes of sharing for achieving common understandings and found that when interests differ it suffices to forge an equifinal meaning, a level of shared understanding that allows both common and individual activities to move on. Still with the individual in mind, Chapter 5 questioned whether the operational circumstances of the individual employee would enable the employee to balance opposing interests and stay true to role and overall objective – over time. We now aim further afield in the interest of maintaining a coherent professionalism (or the appearance thereof) across instances, clients, colleagues, offices, countries, and even the competition. *But herein lies a paradox, how can local sensemaking, even those based on a standard, be credibly both sensitive to local contingencies (ie. contextual rationality), and at the same time be in accordance with each and all evaluation practices on a global wide scale?* Can you standardize judgement and evaluation, that is can you ***standardize the forging of equifinal meaning*** - let alone standardize the use of a standard?

This chapter explores theoretical insights from attempts to standardize knowledge work, originating from diverse strands of research: Social studies of technology (STS), economic theory, use of information systems (IS) and the integrated systems: information infrastructures (II) that aim for cross context use. As standardization is about the integration of the social and the technical systems, an outline of Actor network Theory (ANT) is given with the aim to dissect some of the main lessons of the presented standardization literature: a variety of side effects.

Questions to be explored in this chapter are: **What is standardization? Is it different depending on who you are? How does it affect knowledge work? Is standardization a plausible approach for predictable performances when balancing of interests is at stake?**

6.1 STANDARDIZING WORK

6.1.1 What do they want?

In business, quality and control through systemisation, as in predictable outcomes of efficient production, has been the mantra of production management at least since the days of Adam Smith (*The wealth of nations*, 1776). Smith's telling example of standardizing the mechanical production of pins secured both increased uniformity of pins, and at reduced cost. This was achieved by focusing on division of processes into separate operations, combined with a division of labour into standardized tasks which required specialized, but limited, competence and responsibility. In effect, the knowledge required to produce standardized pins was distributed across a number of separate actors, including the predefined production process. An approach which, at the time, served admirably to support the management of both employees and production.

Amongst colleagues however, the motivation for standardization is another, as predictable action allows for a mutual accommodation and optimization of one's own and other's work, delivering gain for both personal and common good (as in colleagues and employer). In this case, quality and control holds slightly different meaning, and could be devised in a different manner. Examples of measures taken based on local needs are found in the efforts to support awareness clues for practical and social coordination in collaboration (Suchman 1995; Bødker and Christiansen 2006), as discussed in Ch. 4.2.

Yet again another constellation, in service interactions there are three parties more or less directly involved, whose interests only partly align. Here, for in stance studies of fast food outlets and call centres, one finds that both employees and clients are targets of management's standardization attempts (Leidner 1993; Korczynski 2003). Apart from the practical matter of being able to deliver on time according to contract, there is a social aspect, the need to support trust and motivation in any kind of human interaction. A typical approach is to script the provider-client interaction as a central contributor to trust is the sense made out of the recognizable and predictable. Trust, and motivation, is especially important if the interaction is meant to be ongoing rather than an encounter, as was discussed in Ch.4.3.

For companies, the current intensification of globalization processes is generating new challenges as well as opportunities. A key challenge in a global economy is to achieve a balance between scalability and efficiency in customer services, while simultaneously improving the quality of those services (Devinney et al. 2000, Bartlett and Ghoshal 1998). The recent diffusion of Internet-based technologies, inter-organizational networks, and technological infrastructure standards has made it more relevant and alluring to use advanced information technologies as a primary vehicle for striking this balance (Ciborra et al. 2000). Technologies like for example customer relationship management (CRM) systems and Internet-based portals are frequently envisioned to ensure the same quality of service to both the provider and its particular customers, irrespective of their geographical locations or particularities (Soh, Kien et al. 2000). Likewise, integrated information systems like enterprise resource planning (ERP) systems, workflow systems and supply chain management (SCM) systems typically promise to "harmonize" and secure information flows and compatible ways of working both within, but also across organizations.

Critiques, grounded in practice based research, point out that information does not readily flow across organizational or other borders in a predictable manner (Moser and Law 2006), as once abstracted and disembedded from one location or time it requires reembedding in to new circumstances (Giddens 1991; Grudin 2002). Information and knowledge requires perspective making and – perspective taking by informants and receivers to be useful across contexts and cultures (Boland and Tenkasi 1995; Walsham 2001). For this purpose a variety of transferrals, translations and transformations is required in order to possibly cross respectively the syntactic, semantic or pragmatic boundaries between communities and professions (Carlile 2004), as discussed in Ch.4.2.

While the interests to be supported, the systems created, and the critiques given all differ in tune to the complex variety of circumstances that standardization efforts present, it is only fair to say that, although difficult and fraught with side-effects and shortcomings, standardization is also a success in our late modern society - at least for many. The achievements, perhaps also the failures, of our globalized society rely on standards and infrastructures.

Research into the use and effects of standardization in large, the large scale integrated information systems, especially those efforts, both formal and informal, that are in place and working, diffused, sees the overall effect of diffused standardizations as infrastructures - information infrastructures (Hanseth and Monteiro 1998; Hanseth 2000). They are infrastructural as they shape work practices both in its practical physical performance, but also the necessary common equifinal understandings that allows production to proceed, thus forming the underlying foundations that enable work, collaboration and the shaping of additional technologies and artefacts. They are taken for granted and fairly invisible, except when they (partially) break down (Bowker and Star 1999), and disorder breaks loose. They are labelled informational due to their abstract character, contingent on shared or equifinal meanings, embedded in organized practices and embodied in information systems. *Information Infrastructures (II)* are large scale socio-technical systems (Ruhleder 1995; Star and Ruhleder 1996; Bowker and Star 1999), encompassing multiple formal and informal standards. And like the infrastructures themselves, the efforts that go into their support and maintenance – the efforts that keep up and running, also go largely unnoticed by the many.

Suitable information infrastructure is the goal of any business or activity that aims for further reach than here and now, and especially if the goal is global operations. Studies and literature on the creation and implementation of information systems, of II, of integration of IS, of effecting standardization which means integrating a standard into a socio-technical system, might inform us with insights to the dynamics of integration – its opportunities and challenges**.** And, as shown all along in the previous chapters on activity in controversial settings – standardization too, runs into the need of being able to *balance between legitimately different concerns.* It is not just about, creating the right standards. Standardization is inherently difficult to manage and control. Hanseth et.al. suggests that standardization, in complex settings where interconnections run wide, are reflexive processes which produce unpredictable self-reinforcing dynamics as side-effects propagate and turn up in unexpected places (Hanseth, Jacucci et al. 2006).

Standards have subsequently been labelled and characterized in very different ways: formal or informal, as mechanisms of arbitration, economic coordination mechanisms (Yates and Murphy 2007), in practice showing characteristics of ambiguity and flexibility (Bowker and Star 1999), and drift (Ciborra 2000), but also of network externalities, rigidity, inertia and lock-in (Grindley 1995), being abstract and top down (Davenport 1998), or being emergent and bottom up (Timmermans 1999), in need of cultivation (Aanestad 2002), in need of conscientious design involving the whole organization (Choo 1996), as co-constructed and real only as they are used (Ellingsen, Monteiro et al. 2007), as local instantiations that add up to universality or as adaptations that build building on existing practices (Timmermans and Berg 1997), emergent and

enacted (Timmermans and Berg 2000; Ellingsen and Monteiro 2003). Other studies find that standardization brought about extra work of balancing between global and local concerns (Rolland and Monteiro 2002), effecting workarounds by tinkering (Ciborra 1992), or an empowering of clients that introduced tension into client-provider relations (Schultze 2003). With these somewhat incongruous descriptions of standards' ecology – inception, life and demise, it seems standardization as a strategy for predictable production may be summed up with Mol's terms: *multiple* and *fluid* (de Laet and Mol 2000; Mol 2003), by being something different in each local context, and yet at the same time, still about standardization and uniformity in various ways. Multiplicity is about the coexistence at a single moment of different worlds (epistemes) (Law and Mol 2002, p.8).

6.1.2 What is a standard?

Standardization might be a slightly disturbing concept, but also one that brings hope. Images of rigidity, the boring lifelessness of formality and narrow-minded bureaucracy are brought forth - and the struggle of fitting something into a shape where it will not go easily. On the other hand, standards promise release from doubt, priorities to be made or the need to figure out how things ought to be – just follow the standard's rules. This display of duality is perhaps an important aspect of standards?

According to the dictionary, standard, both noun and adjective, often refers to: a level - , or a required or agreed level of quality or attainment. It is thought to derive from Germanic via Old French *estendre* 'to extend' - originally a flag raised on a pole as a rallying point for soldiers (OED 2005). Essentially, the word standard is a broad term that covers a variety of approaches. One distinction is formal versus informal standards. Chapter 2 gave a brief history of formal international standardization, today most prominently represented by ISO, The International Standardization Organization. ISO is part of a large network of institutional actors and institutionalised formal practices such as the empirical case of this thesis: certification auditing. Formal standardization, although it started early with for instance local weights and measures to enable trade, got proper momentum with the need of technical standards for networked technologies – ie. the railroads, electricity etc., later to cover a wide spectre, including more evaluative issues like quality management and social corporate responsibility.

Informal standards on the other hand, such as the systemization, ordering or organizing of both concepts and activities, derive from established custom, habits, practices, norms, cultures, as the results of decisions and choice, or the *side-effects* of agreements made with a different focus – and even assumptions. They are often embedded, and fairly invisible, within systems and materials such as the practical or formal organization of work – as in a shared notion of who does what and how, in boundary objects - such as a form to be filled out by individual actors in a given way as delineated by a CoP, or even the functionality of an information system – which with a give purpose indirectly lays out the appropriate formats and orders of tasks. To be considered a standard, the order in question must cover several local communities (Bowker and Star 1999).

Standards and standardization are terms that have been defined in different ways, depending on perspective. Bowker and Star (Bowker and Star 1999), in their

examination of classifications, define a standard as a set of agreed-upon rules or a common reference point for the production of (textual or material) objects. Schmidt and Werle, who explore the crafting of technical standards for communication technologies, say standards are deployed in order to make possibly heterogeneous practices and technologies compatible across time and space. This may secure both integration and collaboration, but also interchange and replacement (Schmidt and Werle 1998). Looking at specifications and technical protocols in scientific and industrial operations, Slaton and Abbate find that: *"Standards emerge from, and direct in powerful ways, divisions of manual and intellectual labour. In the process, they bring and eliminate risk, credit, and blame for different participants in the modern productive sector"* (Slaton and Abbate 2001p. 95-96). Even the demarcations of scientific frameworks emerge from the mundane activities of complex socio-technical actor networks (Latour 1987; Star and Griesemer 1989; Haraway 1991; Latour 1999).

Timmermans and Berg (Timmermans and Berg 2003) distinguish between four ideal types of standards. The first category of standards is referred to as ***i)*** *design standards*, which define structural specifications, amongst them technical standards. The second category of standards relate to ***ii)*** *terminological standards*. This category refers to standards that define terms used for coding and classification. Thirdly, there are ***iii)*** *performance standards* that often specify requirements for the outcome of a task or service such as QoS (Quality of Service) levels often defined in ICT contracts. A fourth category of standards concerns ***iv)*** *procedural standards* that prescribe a sequence of tasks to be conducted under specific conditions.

The above typology illustrates, as disembedded (Giddens 1991) abstractions which describe the collective and aggregate effects of standards on work practices, a top-down view, a management or global view of what standardization is about. The implementation of standardization that aims for control and dissemination of knowledge across sites, interchange and modularity, the so called *top-down approach,* which risks becoming static and inappropriate for local circumstances.

Another approach to standardization is the one that starts out as informal and locally emergent organizing. Tsoukas describes self-organizing as practices which display *".. enduring patterns of coordination between actors*" (Tsoukas 2001, p.9). While Tsoukas writes of social entities that create their own coordinative patterns of behaviour, the same process is in play in the local production of im-/material stabilizing mechanisms as described in Ch.5. This is a *bottom-up approach* that draws on user participation (Timmermans 1999).

Invariably, when it comes to the practical use or implementation of standards, it seems most efforts require more than originally thought or intended: the new IS needs revisions and iterations. It needs additional features. The technical platform needs renewal, or more training or other types of instruction. In order to put the standard, be it abstract or material, to use – alignments into a socio-technical network must be effected as typically theorized in social studies of technology (Bijker and Law 1992), or economic literature on diffusion strategies, with phases of introduction (Rogers 1995) which are affected by network externalities (Grindley 1995).

The following relates some insights gained from practice based studies of standardization efforts through IS.

6.1.3 Standards in use

While much IS and management research on technology mediated network relations and customer interaction has been geared towards the corporate and inter-organizational levels, e.g. (Kraut, Steinfield et al. 1999) (Malone, Yates et al. 1987; Bensaou 1997; Pavlou, Housel et al. 2005), recent IS research adopting a more practice-oriented perspective has uncovered both inherent tensions, and unintended consequences in the deployment of such technologies (Tsoukas 1996; Schultze and Boland 2000; Schultze and Orlikowski 2004; Hanseth, Jacucci et al. 2006). In general, such tensions as well as the side-effects of using large-scale IS, are often related to problems connected to the dissemination of global, corporate-wide work routines, "best practices" or guidelines, and management policies to the local context-specific situations (Rolland and Monteiro 2002; Sahay 2003). This challenge has been termed 'glocalization'(Robertson 1992; Robertson 1995; Walsham 2001) and is related to the reflexivity of modern society (Giddens 1991) wherein the disembedding mechanisms of time-space distanciation, especially in large-scale contexts, require effort to achieve local re-embedding. The time-space distanciation mechanisms are particularly prominent when new electronic technologies are put use as they enable greater distances between collaborating partners both in terms of geography, time, number of organizational entities to involved, and cultures (Giddens 1991). Visions of the rise of a Network Society (Castells 1996, 2000) is however modified by claims of local variations. The affected power-knowledge relationships, or social orders, may be difficult or impossible to trace (Munro 2000; Walsham 2001).

The issue of glocalization, which translates to the more general issue of **socio-technical standardization**, becomes particularly challenging for service work where the specificity of the context comes to the fore in the shape of a present or future client. Where in-house **standardization efforts** mainly interfere with the relationships within organizations, between managers and employees, s**ervice work includes a third party – the client, or service-recipient**. *" The patterns of shared and opposed preferences among the three parties to the interactions are crucial determinants of the outcomes, including the degree to which workers and service-recipients resist organizational attempts to standardize their behaviour"* (Leidner 1993, p.8; Alavi, Kayworth et al. 2006).

Drawing from cross-disciplinary research in Science and Technology Studies (STS), the problem of technology mediated customer services and interaction may be conceptualized as a problem of socio-technical standardization (O'Connell 1993; Timmermans and Berg 1997; Alder 1998; Bowker and Star 1999). Although being quite different in terms of addressing numerous of issues within medicine, technology development and standardization in general, a common fundamental assumption brought forward in this literature is that **universal solutions always need to be negotiated in the local practices of use.** Universality in terms of standardized work processes that are embedded in e.g. CRM-systems or Internet-based technologies for

mediating customer relations may be perceived as a local universality when in use. Furthermore, local universality "*always rests on real-time work and emerges from localized processes of negotiations and pre-existing institutional, infrastructural, and material relations"* (Timmermans and Berg 1997, p.275).

Based on a longitudinal case study of a global IS in a ship classification company, Rolland and Monteiro (Rolland and Monteiro 2002) show that increased standardization of services is not impossible, but has certain cost in terms of extra articulation work that require a certain level of local flexibility and user skills. They claim that there is a need to balance management initiatives towards standardizing of business practices against the practical and immediate needs of local employees dealing with their tasks. The **specificities of each client situation must be balanced against the standardizing effects of new IS** on local practices in a pragmatic manner. In a similar vein, in a discussion on distributed supervisory control systems and the need for resilience, Woods and Shattuck note that: "*Distant supervisors have a broader scope and a better understanding of the overarching goals and constraints for the larger distributed system. The local actors have privileged access to the monitored process and what is actually happening 'on the ground' within their field of view and narrower scope"* (Woods and Shattuck 2000, p.242).

As an example of standardizing service provision, also discussed in ch.4.3, Schultze and Orlikwoski show that Internet-based self-serve technologies (Schultze and Orlikowski 2004) introduce unexpected changes in the interplay between clients and insurance brokers. The feelings of necessary reciprocity in mutual interaction ((Putnam 1993) in Adler (2002, p. 25)) dramatically change when **relationships are partly disconnected through the introduction of the Internet technology**. The information that prospective clients used to receive from the broker – carefully tailored for the client, was put on a website – including certain calculating facilities. The client now had to, or could, do all the work of tailoring, sorting, calculating information for herself. This of course spared the broker some time, which could now be spent on giving more time to the interesting clients, engaging more agents, and doing a better job that should secure more sales. However, instead sales seem to go down, and the agents were mad if the webpage for some reason was out of action, or delayed in updating info. Instead of being seen as an extra service that built social capital, it certainly was not free of cost to provide, agents perceived it as a matter course, which left them to do a lot of extra work. The authors ascribe this attitude and the falling sales, to a loss in social capital on the part of the brokers. The agents no longer felt that that they owed the broker a sale, and would just as easily take their business elsewhere. The sales pitch had for many clients become so impersonal and debt free that their obligations to buy, or give something in return, were reduced. The agents were empowered by their access to information (Foucault 1926 - 1984) but also had to perform the articulation work of processing the information themselves. Both these aspects induce changes to the roles and relations of the different parties – as in who puts in efforts for which gain (Grudin 1989), while Schultze et.al. uses the analytical approach of social capital: a concept of goodwill of a non-monetary kind that includes expectations of returns, and which bridges time in that accumulation and spending does not follow specific timelines (Adler and Kwon 2002). Effectively a displacement and rearrangement of relations takes place when **client users**

are empowered through the web-systems, or other stable information sources such as specifications are made available (David 1995; Slaton and Abbate 2001).

In the context of Health care Information Systems, Ellingsen et.al. (Ellingsen, Monteiro et al. 2007) show that the introduction of IS-based structured nursing documentation, caused nurses both to expand of the classifications on nursing interventions in the system by adding additional info, reorganizing categories to fit their needs of visibility and focus. While putting the standard to use, they adapted it as well as bringing it to life, co-constructing its use and meaning amongst them selves. The standard and its IS instantiation being co-actors of the effort.

Strategies of introduction

The establishment of infrastructures, perhaps unless they build on previous ones and practical politics, will be met with resistance. They result from negotiations amongst multiple actors, implying convergence to similar methods and technologies. A successful infrastructure is characterised by practices and technologies that have been adapted to one another, and continue to do so – which implies allowing for continuous workarounds and negotiations of adaptation. There has been much focus on how to effect renewals of II, or how to gain acceptance for competing infrastructures of new paradigms. A complete change of 'world orders', as in ways of doing and understanding within organizations, especially global ones, is a continuing issue for both business management, governance bodies as well as political movements. A theory of the ecology of infrastructures is a theory of these matters. Strategies range from top down (Schmidt and Werle 1998), to bottom-up through user participation (Timmermans 1999),

These two approaches are distinct from each other to the extent that objectives of the two are different from each other, effectively the size and diversity of the practices involved. With large scale production, division of labour, new ways of collaborating with increasing global reach, coordinating and articulation of work and competence is reaching new levels of complexity too (Law and Mol 2002). In this setting, global top-down standardization is particularly enticing, but also especially challenging as diversity is considerable. Other research points to intermediate approaches – such as *middle out* (Coiera 2009), *bootstrapping* by building on and connecting promising existent systemizations across the involved communities (Hanseth and Aanestad 2003) or by *allowing for a balancing of global and local concerns* (Rolland and Monteiro 2002), by adapting or revising the standards – or making the implementation as *loose* and subject to judgement as opposed to *tight* and strict (Perrow 1999). Others cultivate by sowing and nurturing or cultivating (Timmermans and Berg 1997; Aanestad 2002), exploit the lock-in phenomenon by building on existing procedures, making standardization emergent and enacted (Timmermans and Berg 2000; Ellingsen and Monteiro 2003), co-constructed (Ellingsen, Monteiro et al. 2007). Reflexive processes result in revisions and adaptations which might succeed with time (Hanseth, Jacucci et al. 2006), while political persuasion (Backhouse, Hsu et al. 2006) or attracted affiliation (Braa, Hanseth et al. 2007) might succeed.

Whereas the issue of standardization has been explored less frequently in traditional IS research, it has attracted considerable attention in Science and Technology studies (e.g.O'Connell 1993; Timmermans and Berg 1997; Williams 1997; Alder 1998; Bowker and Star 1999). In particular, this stream of research focuses on how standards and universal solutions are not simply developed in technical terms, but rather achieved through heterogeneous networks of practices and artefacts. Standards are not merely self-contained technical artefacts (i.e. specifications or tools), but rely upon institutional arrangements, competent practices, and other previously established standards in order to work. Furthermore, the local context in terms of various actors' situated practices, is not necessarily in conflict with the establishment of 'global' standards, but rather they mutually constitute each other (Timmermans and Berg 1997). Based on this, common use of a particular standard and standardization of actions over time and space, are often not the effect of any one centralized actor. On the contrary, *"[A]chieving universality should be seen as distributed activity"* (Timmermans and Berg 1997, p.275). These insights of how standards are achieved potentially shed light on the dynamics of information infrastructures.

Backhouse et.al. demonstrate aspects of **political persuasion** in combination with experience of the standard as **practical in use** (Backhouse, Hsu et al. 2006) as influential for standard adoption. In a similar dynamic is illustrated by Markus et. al.(Markus, Steinfeld et al. 2006) where **dilemmas of collective action** amongst a variety of actors need resolving to move the standardization effort forward. On the issue of introducing totally new infrastructures and technology, Braa et.al. (Braa, Hanseth et al. 2007) suggest attractive features with an adaptable attitude, along with versatile and flexible utility as vital characteristics for a boundary object system to start the snowball rolling. This allows the **growing attractor object** to become a competing infrastructure through gaining a spectre of adherent users.

Global software development (Sahay 2003) is increasingly taking place in global software alliances (GSA) of diverse small and large companies through outsourcing contracts. This is described by Sahay to bring about an **increasing scope of standardization as one thing leads to another**. These collaborating companies with their knowledge intensive activities do not necessarily have common interests that may motivate standardization for economies of scale since they occupy different markets. Small companies might want to stress their local connection as their own specific advantage in the global marketplace, in contrast to the alignment of interests seen in local subsidiaries of multi-national companies. The multiplicity of actors in such alliances necessarily implies a complexity of dynamic contexts. The attempt to **standardize collaboration in such a context has been compared to trying to hit a moving target** (Hanseth and Braa 2001). Based on longitudinal case studies of GSA collaboration between US and Indian companies, Sahay identifies that the nature of standardization broadens from the traditional scope of technical interoperability to include standardization or universalization of both physical aspects and management practices and processes. Unlike manufacturing with a mode where production and consumption are separate in time and space, or service work where they coincide, software development is a kind of activity where the production and consumption reflect both these modes. "*The interest in standards extends beyond the technical*

concerns if individual systems or the protocols to include the relationship in its totality, including standards for technical and physical artefacts, software development processes, and other formal and informal management practices" (Sahay 2003, p. 8), that represent the expert processes that characterize contemporary 'knowledge societies'(Knorr-Cetina 1999). The universalization evolved from physical infrastructure: such as office layout and project badges to wear; technical infrastructure: computers, phone lines and tools; technical processes: software development methodologies, processes for quality assurance and documentation and finally; management processes: procedure and practices for personnel appraisal, productivity measurements, management hierarchies etc. Tensions are introduced by their implementation. The approach could be called **broad-spectrum** standardization**.**

6.1.4 Dynamics of large scale standardization

The strand of research dealing with large IS, their design and adoption into use, has coined the term Information Infrastructures (II) (Star and Bowker 1995; Star and Ruhleder 1996; Hanseth and Monteiro 1997). An infrastructure being the basis on which everything else builds, upon which applications and uses may be added or replaced. It includes not only the technical ICTs but also our use of language and culture, the common lexicons and categorizations, the various boundary objects with which we make sense of both systems and contexts.

The effects and circumstances of standards and II in use do not present themselves as a clear picture. The difference in local conditions in each exact situation of use presents different priorities and consequences for present and appropriate future technologies, artefacts and organization. A central aspect is that everything is *interconnected* in large actor-networks, which has its consequences. While aiming for predictability, II display *network externalities* (Grindley 1992; Grindley 1995)*, positive or negative* in the form of *lock-ins*, where future choice is hemmed in by previously made choices in the form of a previously *installed base* or *standards.* They are only possible to change through *incremental changes,* because their implications and connections run wide, and changing one element influences an untraceable amount of relationships, both human and technical. Changes will inevitably have repercussions as they will produce *unintended side-effects,* somewhere. Changes will affect user groups with differing interests in various ways, and the scope implies that one cannot foresee how or where. Berg and Timmermans describe this as order creating its own disorder, as any order is created out of previous orders. With a new order there is always something that gets sorted away, which does not fit, which constitutes the belonging disorder (2000). The concept qualculation (see chapt.2) acknowledges this disorder along with order (Callon and Law 2005).

Another result of the interconnectedness is that standards and infrastructures drift, along with the people, organizations, meanings, values and circumstances which change or drift with time. Effectively, the standards and infrastructures, the orders that were aimed at controlling the circumstances, themselves drift over both time and space. All in all, Ciborra et.al. (Ciborra 2000) has termed the sum of these aspects as *drift*. In sum, information infrastructures (II) always display *dynamics of drift*, because large complex systems do not exist in a stable environment or context.

An influential stream of research on IT standardization has been informed by economical theory on networks and hence the effects of positive externalities (e.g. (David 1985; Grindley 1995; Shapiro and Varian 1999; Hanseth 2000). Externalities imply that all technological innovations, more or less, face the problem of compatibility with the existing an installed base, such as stocks of capital goods, skills, and know-how (Antonelli 1992). A well known example of this dynamic is the QWERTY design on typewriter and computer keyboards which have become a widespread de-facto standard, and thus also increasingly hard to change as the standard also has been adopted in new technologies such as PDA's and mobile phones (David 1985). This explains why standards and infrastructures tend to develop *inertia* once they are adopted. While the theory of externalities explains the dynamics of standards in terms of their design and interface aspects, this theory does not take into account the procedural and social aspects of corporate IT standards. As when the standards become deeply embedded in the contingencies of local work practices through users' appropriation and tinkering. As one thing leads to another, then the standards themselves as used in practice and thus perceived are influenced and shaped by the local context. As shown in a corporate-wide case study by Hanseth and Braa (Hanseth and Braa 2001) on an IT infrastructure standard implemented in Norsk Hydro, self-reinforcing dynamics appear that also explain the increasing inertia of standards. Mutual transformations take place between the corporate-wide IT infrastructure standard and the corporations implicated work practices. The authors' analysis does not however explore the particular social and procedural aspects of this infrastructure.

According to Monteiro and Hanseth (Hanseth and Monteiro 1998), Information Infrastructures are socio-technical integrations which include both Information Systems and social arrangements. They represent the institutionalized aspects of our frames of reference that figure in sensemaking. They form the basis for sensemaking within a culture, and depending on the scope of the infrastructures they also figure across cultures. The defining feature of an infrastructure is that it has become diffused to the extent that we neither notice nor ponder its existence. The work required to keep an infrastructure in order mostly goes unnoticed and therefore possibly unacknowledged. Infrastructures represent what humankind has created that seems to work out, at least for those to whom it appears invisible. If or when it breaks down, we are woefully faced with our dependence and former indifference. The characteristics of Infrastructures are that they are: embedded, transparent, have wide reach and scope, their use and understanding are learned in CoPs, they are the embodiment of standards, they exist on top of an installed base, they are fixed and implemented incrementally – and visible when they brake down (Bowker and Star 1999).

Implications for II

The dynamics of II as described here, infer an impenetrable complexity in any major information system effort. With such a perspective, there would be little use of wilfully trying to change anything. But change is initiated, and the results are both intended and unintended ones. Some efforts work out better than others. For IS design and use – the challenge is to understand aspects of what works out, and what does not – despite the inherent problems of drift, externalities, side-effects, lock-in and inertia. Tight or loose coupling (Perrow 1999) between interacting elements is one overarching principle that

may guide designs of integration in order to balance rigidity, which is accompanied by propagation, against flexibility that allows for choice and containment. Whether side-effects stay within the system itself, are displaced to the outside of a systems' boundaries, and if reaching the outside, whether they propagate further depends on loose-/tightness of such couplings. Balancing efforts and gains, between different user groups may also guide the prioritising of functionality (Grudin 1989; Rolland and Monteiro 2002). Adhering to locally emerging social order, people's competence and values is essential for gaining acceptance and use (Pentland 1992; Schultze and Orlikowski 2004; McGrath 2006). Timmermans and Berg suggest that successful standards, new procedures and systems need to acknowledge lock-in and build incrementally on existing orders of the day (Timmermans and Berg 1997), as they illustrate with the introduction of a new CPR procedure in hospitals which actually represent an evolvement of former procedures.

II as an understanding of large scale integration and standardization processes has its roots in Actor Network Theory (ANT). ANT draws together the notions of agency held by the manmade artefacts – standards in their various forms, and joins it with the agency of social actors, large or small. A closer look at the central tenets of ANT is useful for exploring the basic principles of systemizations as diverse interests play out as standardization efforts, both creation and diffusion, but also to unravel the local efforts that deal with the side-effects of socio-technical standardization efforts.

6.2 ACTOR NETWORK THEORY (ANT)

The role of artefacts in distribution of knowledge and durability of activities was discussed in Ch. 5.2, including ANT's principle of symmetry of social and technical actors. However, ANT may also be used as an analytical tool in order to follow the actors, downstream as Latour prescribes (Latour 2005), in their efforts to achieve alignment of interests.

"Actor Network Theory views society as a completely interwoven socio-technical web" (Hanseth and Monteiro 1997, p.2) and is based on the works of Callon (Callon 1986; 1991) and Latour (Latour 1987) The theory has ties to semiotics which is the study of order-building (Akrich and Latour 1992, p.259) and includes both human and non-human entities such as artefacts and signs. The non-human entities may be the artefacts people make and use as well as abstractions, words, symbols and ideas, strategies and methods, standards etc. In attributing analytical symmetry to all these entities, technology, amongst others, gets promoted to the status of actor. ANT allows for a more detailed look at technology and the role it plays in the hands of the social entities that make it, appropriate it, and inscribe motivations and abilities into it, and through it, into the socio-technical networks they inhabit. Conversely, all these activities, which deceptively appear to be social, are really socio-technical as all the actors mutually shape both interests and action – essentially the agency of each in a dynamic way as activity alters the constellations of the network. This socio-technical view contrasts with most other social theories which view technology as having merely enabling or restricting qualities and thus secondary to the social actors. The promotion of technology's status and power is an analytical tool which helps to make visible the

influence of the non-human entities in the socio-technical webs of processes, activities, interpretations and understandings. The social actors use technology to their own or others end, be it conscious or not, depending on how the socio-technical actor network gets aligned. Figure 6.1 and 6.2 illustrate the concept of socio-technical actor networks.

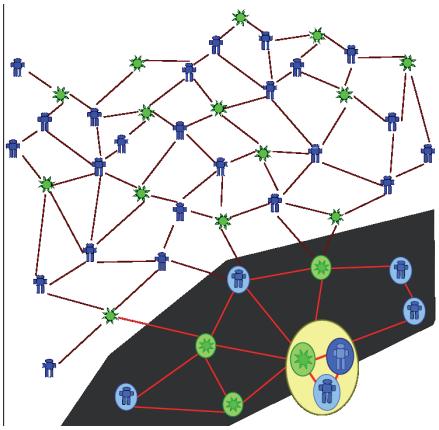

Figure 6.1 Actor Network. *Macro-level: The social, political, legal, economic and technological context of wider society. Meso-level: The organisation's set-up, resources and ways of working. Micro-level: The people, the technologies and the front-line, as-it-happens detail.*

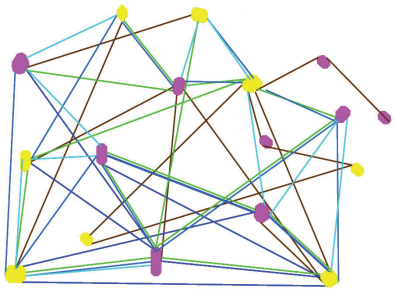

Figure 6.2 Multiple overlapping networks. *Multiple interdependent tasks & processes. Impossible to align everything.*

Both illustrations are copied from Greenhalgs presentation at HelsIT 2010 in Trondheim (Greenhalgh 2010).

The basic concepts as described by Walsham & Sahay (Walsham and Sahay 1999, p.42) are:

- ***Actor or actant:*** Both human and nonhuman actors such as technological artefacts.
- ***Actor-Network****:* Heterogeneous network of aligned interests, including people, organizations and standards.
- ***Enrolment and Translation:*** creating a body of allies, human and non-human, through a process of translating their interests to be aligned with the actor-network.
- ***Delegates and Inscription****:* Delegates are actors who "stand in and speak for" particular viewpoints that have been inscribed in them, e.g. software as frozen organizational discourse.
- ***Irreversibility:*** The degree to which it is subsequently impossible to go back to a point where alternative possibilities exist.
- ***Black box:*** a frozen network element, often with properties of irreversibility
- ***Immutable mobile:*** Network element with strong properties of irreversibility and effects that transcend time and place, e.g. software standards

Central to ANT is the enrolment of actors to courses of action, that come about by introducing technical actors into the network, which then influence the alignment of

interests in the network. Inscriptions can be weak or strong – and the effects of alignments may differ for various actors. Strong inscriptions result in irreversibility. In picturing an IS as an actor, one may attribute it humanlike abilities, limitations and intentions as a result of the inscriptions, which in turn influence action, and alignment of the other actors into the network. The affordance of the technology will be relative to and determined by each separate actor's understanding of the other actors and the degree of irreversibility in the network. In other words ANT enables us to take the idea of 'social construction' for real by turning it into a 'socio-technical actor construction' of understanding and epistemology. ANT allows an understanding of the role of different actors without prescribing as to which aspects of technologies and standards should or could be considered as interests. As such it simplifies some aspects of an analysis of events that unfold.

Stable networks, durability in ANT

"Successful networks of aligned interests are created through the enrolment of a sufficient body of allies and the translation of their interests so that they are willing to participate in particular ways of thinking and acting that maintain the network" (Walsham and Sahay 1999, p.42).

ANT is also a theory of the creation of orders; of creating boundaries between insides and outsides; those actors that are aligned and belong, as well as which actors do not belong. When boundaries are made, the rules for interaction and crossing the boundaries need to be defined. And the boundaries and their spaces for negotiation need to be policed. This policing is delegated to socio-technical structures. So while articulation work for collaborative activities need to include ordering, labelling and the connecting between actors – then obduracy depends on delegations of policing the interaction of connections and their negotiation spaces. *"Let us start with the observation that much of the time people try to devise arrangements that will outlast their immediate attention. That is, they try to find ways of ensuring that things will stay in one place once those who initiated them have gone away and started to do something else. They also -- and this amounts to the same thing --try to find ways of doing things simply (Callon and Latour 1981)"*(Bijker and Law 1992, p.294).

The practices of standardization, of for that matter of certification according to standards, and the side-effects of such activities, may profitably be described and understood by way of ANT.

6.3 SIDE-EFFECTS

In particular, practice based studies of work and IS use, has divulged clear examples that standardization attempts inherently produce side-effects in addition to the planned objectives. Of the most obvious are: ambiguity, workarounds and asymmetry – which each address different aspects of work and collaboration.

6.3.1 Ambiguity

Ambiguity concerns our understandings and our ability to share knowledge and understandings with others, both on an individual level and organizational level – across

function (Carlile 2004), unit, culture - space and time. Opportunities, difficulties and the degrees of sharing needed, have been discussed in Ch.4 *Sharing,* and the following chapters. In summation: *"[A]s Brown and Duguid observed, knowledge in organizations 'is as divided as the labour that produced it. Moreover, what separates divided knowledge is not only its explicit content but the implicit shared practices and knowhow that helped produce it''* (Brown and Duguid 1998, p.99) in (Pawlowski 2004, p.649). Giddens has termed this effect *time-space distanciation* as information or knowledge, once abstracted and disembedded from one location and time, requires reembedding into its new context, with the aid of implicit shared practices and knowhow (Giddens 1991; Walsham 2001).

Reembedding practices are inherently unpredictable, and they require extra work. For the purpose of reaching equifinal meanings between diverse parties, such as client and provider or between distributed colleagues, standardization attempts to make both explicit and implicit knowledge more explicit. Given the dynamics of local circumstances however, some part of the implicit knowhow needed will always be implicit and different across contexts. Standardization essentially assumes a global wide presence of the implicit knowhow necessary to successfully 'decode' the explicit knowledge laid out in a standard.

In ANT terms, standards are manmade artefacts which have knowledge inscribed in them. They are meant to serve as obligatory points of passage, as delegates with viewpoint that direct users' activity. They have characteristics of black boxes, as the circumstances and the rationality for the qualities inscribed in them are not discernable to future users. They are meant to be immutable mobiles[4](Law and Mol 2001), boundary objects, that *allow or force* local practices to align with the overall interests of the actor network. In submitting to their use, the actor has aligned with, and become part of, the actor network.

6.3.2 Workarounds

However, due to the differences of circumstances across time-space, the differences in implicit knowledges and understanding, indeed in legitimate interests, actors invariably use IS, and other standards differently. Perhaps *differently than intended, or perhaps no more differently than making it equal enough* – equifinally equal. One way that differences in use show up, is as workarounds (Gasser 1986), systematic ways of improving, correcting or compensating for lacking functionality. Workarounds are users' adaptation of their systems and tools when they have inappropriate features, the tinkering (Ciborra 1992) and bricolage (Ciborra 1996) that allows them to perform the work they intend to, in an efficient manner.
Workarounds concern actors' motivated actions towards performing their work, but also of organizing and improving the circumstances of own their activities. Workarounds represent actors' efforts towards aligning the actor network to their own ends, by introducing new actors into the network by way systematic ways of using other actors,

[4] Latour's immutable label of this concept has been contested as contradictory, as its use is specifically not immutable but fluid and contingent, in line with the boundary object concept. Law and Mol (2001) suggests that immutable refers to its qualities in Euclidian space as opposed to network space where it is ambiguous and flexible.

such as technologies. The ability to perform workarounds relies on that the network has not become irreversible, stable and black-boxed. It relies on ambiguity and flexibility.

6.3.3 Asymmetry

Asymmetry concerns the distribution of agency amongst actors. Notions of appropriate distribution of discretionary power amongst expected users are inherent in the mindsets of those that shape the strategies of organizing as well as the design of systems (Robey and Markus 1984; Hanseth and Monteiro 1997). And so, systems often achieve, or maintain, standardization indirectly by limiting the options of their users.

In the context of evidence-based medicine, Timmermans et.al. (2003, p.26) underscore that procedural standards *"[are] simultaneously the most difficult to achieve and the most contested ... [procedural] standards raise issues about human autonomy, flexibility, creativity, collaboration, rationality, and objectivity. In short, they reflect important cultural assumptions about how people live and work together".* These assumptions, as inscribed into systems, indirectly empower various actors, and disenfranchise others by for instance specifying who has access to which information, who may perform certain tasks – or who may perform workarounds, or flexible creative interpretations in situations of ambiguity. *" .. [S]tandards themselves are a means of capturing labour - whether physical techniques or 'knowledge' work - and they provide a medium for redistributing the responsibility for work among groups of workers, between industry sectors, or between producers and consumers"* (Slaton and Abbate 2001, p.96).

The relationship between discretion and artefacts, or reifications is supported by later use of CoP theory. Building on the notion of legitimate peripheral participation, Hildreth et.al. (Hildreth, Kimble et al. 2000) extend the term legitimacy from the vocabulary of CoP (Lave and Wenger 1991) into *legitimation*, which is the distribution of agency across and between members of a community. *"Legitimation is the dimension of CoPs that is concerned with power and authority relations in the group"* (Hildreth, Kimble et al. 2000, p.28), and *"note that peripherality 'must be connected to issues of legitimacy of the social organisation and control over its resources if it is to gain its full analytical potential'."* (Lave and Wenger 1991 in Hildreth, Kimble et al. 2000, p.29).

In a similar vein, other literature describes how members' conceptions of individuals' capability and authority within the organization is mutually performed and shaped by the socio-technical networks. The call handlers at a software 'hot-line' helpdesk enacted a social order in an organization through organising moves. These *organizing moves* were enacted by their problem solving, which created patterns in terms of who got to answer the different types of problems presented by the callers (1992). Schultze, in her study on in-sourced ICT maintenance, describes how documenting every activity to remove possible reproach was a major part of the technicians work (Schultze 2000; Schultze and Boland 2000). The work milieu of these hired technicians, ostensibly non-value-adding to the hiring company – hence their outsourcing strategy, exasperates the technicians' need to protect them selves. The logs they write subsequently provide the hiring company with a way to scrutinize them, but simultaneously, it provides the technicians with ways to remove blame, to document the kind of work they are doing

and to defend their value and rate of compensation. However, their writing practices for accountability, also effects a perpetuation of their status in the social order of the service setup, and with it the labelling of their work as non-value adding to the hiring organization (Schultze and Boland 2000). The authors argue that there are tensions between the hiring organization's decontextualized and disembedded abstract version of their practice – i.e. what is value adding – and the reality displayed by the practicalities of their daily activities.

These examples display abilities inscribed within the whole arrangement of technologies, formal organization, conceptualizations of status inscribed in the business arrangement and its description, conceptions of who is considered capable and reliable, which adds up to socio-technical networks that contribute to produce a situated and emergent organizing of work, of responsibilities and latitude, of discretions and demands. However, within the means at their demand, the insourced technicians attempt to align the network in their own favour by using the available technology to document extensively their own worth. The authors suggest however that the system's accountability has an equivocal and dual nature in that it also ascribes them the role 'those who have to account for their work' which in comparison to their hiring colleagues still separates them from the organization for which they strive.

In ANT terms, the following two quotes of Bijker and Law (1992) describe how organization is produced in actor networks – the creation of boundaries between communities, of who belongs and who does not:

> We want to suggest that many, perhaps most, strategies for delegating and policing involve two fundamental moves. First, *a distinction is made between inside and outside* and a set of exchanges between the two is defined and regulated (which amounts to the same thing). And, second, those who are outside find themselves compelled to participate in those exchanges: what is produced by the inside, and so the inside itself, becomes what Callon calls an *obligatory point of passage* (Bijker and Law 1992, p.294).
>
> Distinguishing the inside from the outside: 1) *physical exclusion* , 2) scaling up and down by *shifts of materials and media* (e.g. 'Thus ... modelling work .. operates on objects that are more docile than people. Drawings, algebraic expressions, and a handful of coloured pebbles are more malleable than real dikes .. Such technologies, which generate echelons of depictions and descriptions of ever-increasing simplicity, homogeneity, and docility, are crucial to many strategies for distinguishing between the inside and the outside.' 3) *organizational arrangements* which may be of a legal or quasi-legal basis. .. 'In addition many metaphorical barriers between inside and outside are inscribed in legal, organizational, discursive, or professional arrangements (Bijker and Law 1992, p.296).

The above demonstrates that the creation of boundaries – and thus the creation of order amongst socio-technical actors, i.e. standardization, results from a broad-spectrum approach involving a variety of actors that balance and support each other – ranging from technical means, concepts and meta-ideas, to social arrangements. These add up to a socio-technical strategy which needs to be reasonably sensitive to its context in its

attempt to align the networks of action. The concept of the fluid and multiple object/actor being a case in point (de Laet and Mol 2000; Law and Singleton 2000; Mol 2003).

Standardization across contexts involves a number of actors, some more stringent and tight whilst others are more flexible and ambiguous in their agency. A multiple approach makes borders between contexts semi-permeable rather than closed or impassable. This allows for creation of equifinal meanings which allow activity to move on and possibly to adapt in dynamic circumstances.

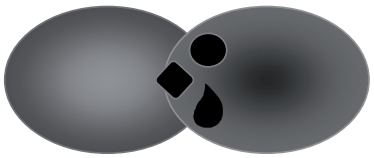

Figure6.3 Broad-spectrum standardization. *Both social and technical actors with partly fluid qualities act for equifinal meaning and appropriately organized action*

6.4 BROAD-SPECTRUM& FLUID STANDARDIZATION

This chapter has explored strategies of *standardization in aid of globally predictable outcomes* of service work.

Firstly, standardization is an age old strategy for predictable practices of production. Our society's predilection for ICT as a means to organize every aspect of human activity is in effect standardization, along with numerous other both social and technical measures with various intentions. Standardization aims to sort out differences in complex circumstances, preferably without raising alarm. It lies in its very nature that some interests get priority over others, wittingly or not. The plurality of interests at stake will seldom sort themselves into neat categories where none are demoted. Standardization will therefore affect different actors in different ways, with their inscribed means to distribute agency. Additionally, in complex and dynamic circumstances, effects, and side-effects, will over time change and drift due to the inherent reflexivity of the interested parties in the socio-technical network.

Secondly, as knowledge work deals with understandings and meaning, ranging from the relatively mechanistic to considerate practices that need to sort or bridge ambiguities, of of perspective-taking and –making, it is affected by standardization in different ways, depending on the context. Typically identified consequences are side-effects requiring extra work and propagation of these to unexpected places. Further unravelling remains an empirical question.

Thirdly, long range predictability through standardization is a complex undertaking of appropriate balancing of a number of dualities, amongst them: flexibility against rigidity, tight versus loose, lock-in and predictability versus latitude to work around or add. At the same time, the prevalence of formal standards indicates that, at least for some purposes, it is working out, while it takes considerable effort and time to achieve somewhat coherent practices. Flexibility in frameworks of both technological and social organization seems to be a way to go when complexity reigns (Law and Mol 2002). The

exploration of how suitable flexibility might be achieved is also an empirical matter for exploration. The considerable institutionalised practices of certification and accreditation in place to support and maintain for instance ISO9000 *Quality Systems Management* family of standards is a case in point - to be elaborated on in the remainder of this thesis.

The next part of this thesis

This concludes the theoretical exploration. The following chapter will describe research method and data collection, whilst the next four chapters will analyse the empirical material, roughly corresponding to each of the past four theory chapters. An overview of how the various chapters relate to each other is given i Figure1.1 in Ch.1 *Introduction*

7 QUALITATIVE INTERPRETIVE CASE STUDY

With research questions that aim to explore how activities are performed and how they unfold as those who work relate to and use various technologies, I have chosen an empirical qualitative approach based on an interpretive case study. According to Yin (Yin 1994), a case study is defined as *"an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident"* (Yin 1994, p.13). A qualitative interpretive research approach, as opposed to traditional quantitative research inspired by positivism, is suggested as best suited when studying the interaction between technology, people and organisations and also trying to catch the social aspects of these relationships (Klein and Myers 1999). In information systems, interpretive research is *"aimed at producing an understanding of the context of the information system and the process whereby the information system influences and is influenced by its context"* (Walsham 1993).

I base my observations and understandings on a view of our epistemology as constructed. This implies that human understanding is constructed in our minds based on our interaction with the world around us. This world is not neutral, in that both people themselves as well as their socio-technical circumstances (artefacts, systems and institutions, semiotics) affect our sense-making, motivations and actions (Latour 1987; Akrich and Latour 1992). Neither technological determinism, which sees people as governed by and subordinate to the technical circumstances, nor social constructionism, which sees social life as the sole creators of meaning and epistemology, gives a good understanding of technology's place in societies. Something in between, where both people and systems mutually affect each other, is more appropriate (Hanseth and Monteiro 1998, p.2). With this endeavour I aim to address both the technologies as well as the social, as (Orlikowski and Iacono 2001) call for. This is in line also with a critical realist world view (Case 1999).

By following people at work, taking part in and observing their activities I hope to gain insights beyond or beneath the formalised or conscious renditions of what, how and why people perform as they do. The formalised versions of a certain activity seldom include the practical details of how the results come about and what influences them. Situated practice is different from plans of work or action (Suchman 1983; 1987). Similarly, actors may not always be consciously aware of, see the significance of, or have the words to describe fluently, the whole spectre of reasons for their own actions (Polanyi 1966; Nonaka and Takeuchi 1995; McCarthy and Wright 2004). I am also inspired by Zuboff's words, who studied the automation of industrial work: *"I want to understand the dialectical interchange between human responsiveness (feeling, perceiving, behaving) and what philosophers call the "life-world" or "the life-field" (Zuboff 1988, p.423)*. This epistemological perspective is based on phenomenology (Mead 1934; Merleau-Ponty 1963; Gendlin 1964). Displays of feelings and emotions are like exclamation marks made by informants in field observations in that they often signify surprise or some other departure from the expected or desired outcome of affairs as informants' sensemaking takes place. Thereby clues to their sensemaking are disclosed.

7.1 DATA COLLECTION

This study looks at actual practice as it unfolds over a three year period. This is an ethnographically inspired, interpretive case study aimed at providing a qualitative description for a rich and deeper understanding of the roles and relationships that IS (Walsham 1995), and other systematic features may fill or be part of in work settings. How are these roles and relationships affected when circumstances change? Aspects of both work and decision-making in controversial settings were explored as the use of IS and other resources are present and changing.

While the awaited new IS that I had meant to follow sort of dissipated out of reach during my window of fieldwork, to be replaced by less advanced technology but more reorganization and new process content, the opportunity arose to focus on the core of their work. I found that while IS changes were potentially disturbing, their reliance on IS during the audit itself was nevertheless limited. Audits and classification, being age old practices of the company, had found its main shape before information technology was an option, grounded on conceptions and practices of third party assessment without the benefit of computers – or their disturbing side effects as angels in disguise.

The Certification part of the W is a major part of the worldwide 6100 employees. In my case country, there are about 50 employees, dispersed over 5 office locations doing the QMS certifications, amongst other standards. The offices also accommodate colleagues – consultants and auditors working with other standards, as well as back-office staff. Three of these offices are very small, making my presence as an observer a part of their context of work. To account for this aspect, my observations are mainly given in a confessional style (Van Maanen 1988; Schultze 2000), in which I include myself as part of the narration. This serves to show my role and presence in the situations being observed and the interpretations made.

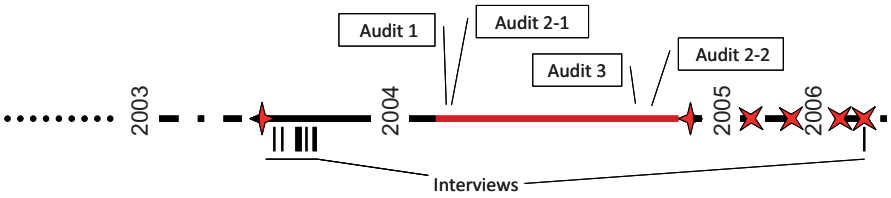

Figure 7.1 ***Timeline of fieldwork,*** *mid 2003- late 2006. Observations mainly took place in the red section (10 months 2004)*

This in-depth case study began mid 2003 with observations and interviews. Late 2004, the in depth fieldwork came to abrupt halt, due to the cessation of a larger research project to which I was loosely attached. This project, originally involving six global companies, had intended to explore knowledge work practices in Scandinavia and abroad. Although I half a year later received permission to continue my research in W, and use the data I had already gathered, it proved hard to pick up again the close interaction where I had left off. I made four visits to W following this. The auditors

have kindly allowed me to take part in many of their internal meetings and lunches, including two internal courses for the auditors. They have all been very conscientious in including me in their community when I was there, in helping me to understand and observe their work. They have answered my questions freely, but always making sure that client confidentiality would be respected. Also they have asked my opinion on matters they felt I would have information on.

On the other hand, my limited funds and the wide geographical area they work in (often requiring air-travel) limited the frequency of these observations on my part. Also, my participation in audits required that the client gave their permission beforehand. I suppose that of the four audits I came to visit, they were clients that the auditors felt fairly comfortable taking me along to see. See Figure 7.1 *Timeline of fieldwork*, where the red section illustrates the in-depth field work.

A range of data gathering methods have been applied within W, but also online, e-mail, phone and taking part in events related to W's activities. The logged total time spent in their, or their clients presence is: 9 days & 8 half-days & 36,5 hrs: of which 24 & 2/3 hours audio recorded. Some of the recordings have been transcribed, but mainly they have been a source for re-listening at several points during my interpretative analysis.

7.1.1 Observations

I have joined four separate Periodical Audits (PAs) of clients, taking notes, resulting in a total of 35 hours in the field observation of certification practice - the onsite audit visit – see Table 7.1 *Observations*.

OBSERVATION (9 days; 8 half-days; 8,5 hrs - of which 280 min recorded)

		time			
		day	hrs	min	comment
Periodical audit - observation					***4 days***
A1	09.03.2004	1 day			
A2-1	17.03.2004	1 day			
A3	29.09.2004	1 day			
A2-2	21.10.2004	1 day			
Meetings and courses					***5 days & 6 hrs***
office meeting	13.02.2004		2 hrs		+1 hrs extra
Ω inhouse auditor training workshop workshop	20.02.2004	1 day			
inhouse Friday & talk	12.03.2004		2 hrs		+1 hrs extra
public W ISO 9001:2000 course	20.04.2004	1 day			
national team meeting	23.04.2004	1 day			
template revision	09.08.2004	1 day		280	min. recorded
ABC inhouse course	27.09.2004	1 day			
Observation in office					***8 halfdays & 2,5 hrs***
office stay - head office	17.09.2004	1/2 day			
office stay	15.10.2004	1/2 day			
office stay, play secretary	22.10.2004	1/2 day			
office stay, play secretary	25.10.2004	1/2 day			
office stay, play secretary	28.10.2004	1/2 day			
office stay, play secretary	01.11.2004	1/2 day			
office stay	08.11.2004	1/2 day			
office stay	09.05.2005		1,5		
office stay	16.05.2005	1/2 day			
office stay	dec 2005		1		

Table 7.1 Fieldwork –Observations

I have also spent time in their local office when they are in, which is intermittently, observing in-house work including the *preparations* for and the *closing process* of the audits, and their interaction with other colleagues, time spent on the phone etc. In the beginning I made appointments to join them. The autumn of 2004 I was assigned a desk, to enable longer stays, as well as my own email account. I would join them for Friday afternoon coffee breaks, and some lunches on a more ad hoc basis – in order to keep up the acquaintance. The stays in the office allowed me to chat with some of the other staff as well – receptionist, local IT representative/super-user/auditor, other auditors and consultants, providing insight to the W office-context and local/ongoing IT implementations and projects.

An important aspect of getting to know the auditor's and their own reasoning on their practices has been the participation in in-house meetings and courses. Participating on the 'same' terms as clients or auditors, allowed me a part, of sorts, in the activity taking place. It allowed me to think through practical and actual issues as they arose, and to take part in the conversations about them. I also got to try out the new templates by 'playing' secretary for the auditor on a first draft and first revision after discussion, on the last audit I participated in.

7.1.2 Interviews and talks

I have conducted 9 semi-structured interviews after making appointments, of auditors and colleagues. In addition, 12 informal interviews/talks, at opportune moments, including one client outside an actual audit – see Table 7.2 *Interviews and talks*. In these interviews, I took notes in my green hardcover notebook – similar to the kind the auditors used themselves.

INTERVIEWS AND INFORMAL TALKS (28 hrs - of which 600 min recorded)

		time			
		day	hrs	min	comment
Interviews			***11,5 hrs***	***442***	***min. recorded***
auditor a	07.08.2003		1	32	min. recorded
auditor b	18.08.2003		1,5	101	min. recorded
planner a	17.09.2003		1		
marketing	17.09.2003		1		
invoicing	17.09.2003		1		
auditor c tries out ABC templates	04.10.2004		1,5	76	min. recorded
systems certification mgr Country A	13.10.2004		1,5	65	min. recorded
IT/auditor in training	13.10.2004		1,5	72	min. recorded
auditor d on ABC	22.06.2006		1,5	96	min. recorded
Informal talks			***16,5 hrs:***	***158***	***min. recorded***
talk before A1	08.03.2004		1,5	77	min. recorded
talk after A1	02.04.2004		1	56	min. recorded
talk after A2	02.04.2004		0,5	25	min. recorded
informal conversation auditors b, c, ..	11.06.2004		4		
lunch	25.06.2004		1		
visit auditor b	16.09.2004		1		
technical info on Ω	28.09.2004		1		
planner a	28.09.2004		1		
systems manager/auditor e	28.09.2004		1		
office stay, talk auditor b,c	09.05.2005		2		
interview with a W client - a kindergarten	dec. 2005		1		
office visit	18.04.2006		1,5		

Table 7.2 Fieldwork –Interviews and talks

In total – 28 hrs on interviews, of which 10 hrs were audio recorded. The semi-structured interviews would start with me asking them to tell me a little about their background, how long they had worked in W and what their formal role was. Then I would ask them about their tasks, who they usually collaborated with, and what IS systems they were using. Finally what they knew of any coming changes to their ways of working and systems – and their expectations. During 1-1,5 hours there was ample time to explore by asking them to elaborate on what struck me as interesting at the time. My main objective was to understand their work, as if I were to be part of their organization.

After a round of formal interviews – most of them audio taped, later meetings and talks were informal in character. Catching up, what are you working on, what's happening, what do you think about this and that? Can I join you for an audit, or a meeting? I also stopped taping these informal sessions as it felt disturbing to the situation. I would take notes as I sat there, or afterwards.

7.1.3 Events

Alternative sources of information have been my participation in events related to certification auditing but not being related to a specific audit of client relationship. I first participated in a public course on the standard in question – actually on W's request – See Table 7.3. A condition for my observation of audit visits. The course was given by a partly retired W auditor, providing a day spent not only learning the rationale of certification but, doing so together with some of their clients – and a very experienced auditor. Later, with the new ABC perspective on the certification audit I was able to take the online tutorial, after taking part in the same course as the rest of them, passing with an 80% score. The course was a big gathering as it included also the independent technical experts that W would hire to assist on special audits. It was interesting to hear their comments, doubts, expectations and assumed challenges, on how ABC would work. They thought it a good idea, but several were hesitant in terms of the speed of implementation.

Alternative insights were gained, as mentioned above, when I used the new templates to make a first draft of the report from an audit I had participated in. The auditor found it useful, as she was very busy, to have me 'break them in' and give her tips on the practical sides of their functionality. While I got to wonder on what to write where and how, and discuss it afterwards – it provided some common ground between us. Sadly, my half-year absence began shortly afterwards.

EVENTS

Participated in public Course on ISO9001:2000 held by W	20.04.2004
Passed auditors' mandatory webbased tutorial on ABC with 80% score	11.10.2004
Acted as 'secretary' on the new templates for reporting the 4th audit (A2-2)	Oct .2004
Dropped in occasionally on Friday afternoon coffeebreaks	march 2004 - dec. 2004
4 Research community workshops (NTNU/SINTEF global knowledge work research)	sep. 2003 - nov. 2004

Table 7.3 Fieldwork –Events

The participation in in-house courses – some listed under observations in Table 7.1, on the 'same' terms as clients or auditors, allowed me in part, of sorts, in the activity taking

place. It allowed me to think through practical and actual issues as they arose, and to take part in the conversations about them. Joining them for lunch or coffee gave me opportunity to catch up, and discuss my interpretations in an informal way.

My participation in workshops within a research community looking into global knowledge work, also gave me input to possible research topics from related arenas, and relevant literature.

7.1.4 Information sources

While observation, talking and participation have been important, the material sources of information provide structure and grounding to understanding the practicalities of certification auditing and its administration. Gradually gaining access to files and systems allowed for a dialogical process of sensemaking. With insights and experience, information on the intranet made more sense. See Table 7.4 *Information sources*.

INFORMATION SOURCES
Based on Templates in CDB: Agenda, report & NC findings for 2 audits
New templates in ABC, 9 word documents, 1 excel sheet
User manual and guidelines for ABC
Minutes from 2 dept.meetings spring 2004
Presentations from a Europe-wide annual W QMS certification convention
Documentation: W Public Course on ISO9001:2000
Handbook - Norsk Standard short version of ISO9000 series
Access to the local CDB (client database) with templates and client documents
Access to W Intranet (news, reports, links to process information, general information)
W webpage
ISO webpage
IAF webpage

Table 7.4 Fieldwork – Information Sources

Following the audits I took part in, I had copies of the agenda and the subsequent reports and NC-forms. Later I had copies of some of the meeting minutes of department meetings which I was not invited to join. When in their office I had access to their intranet and the document/client filing system, document templates and calendar. Table 7.5 gives a list of the new ABC templates – at the time.

1.	Table of content - list of ABC templates	
2.	Short client letter, introducing ABC	*(for 'existing' clients)*
3.	Long client letter, introducing ABC	*(for 'new' clients)*
4.	Letter, preparing for planning meeting and document review	*(IA or RA)*
5.	Periodic Audit Program	*(defines complete cycle of 3 IA/RA & 3n PAs)*
6.	Audit Program	*(agenda for the onsite audit visit)*
7.	Planning meeting and Document Review Report	*(IA or RA)*
8.	Audit Report	*(report and conclusion of the audit visit)*
9.	Document Review Report	*(IA of RA)*
10.	List of Findings – excel	*(includes administration and log)*

Table 7.5 ABC Templates. *The Initial Audit (IA) starts a 3-year audit cycle, followed by 1-2 Periodical Audits (PAs) per year. The next 2 years start with a Recertification Audit (RA).*

After my fieldwork was completed, background information has been gathered on the internet. The web pages of central institutions such as ISO and the IAF have provided additional information on the wider context of their practices, and how both W and ISO present themselves to the public.

The new ABC templates, Table 7.5 – with comments in brackets, illustrate how an audit cycle proceeds, is planned and administrated. These new templates remove the need of the former NC-forms, and they do not include economy or contracting. For more on audit practicalities – see Chapter 2.3 and 2.4 and the analysis in Part III - Chapters 8-11

7.1.5 Documenting

During all observations I have taken notes in my "green book". What is happening, who says what etc. These notes of go on the left page. On the right page I leave space for jotting down my own or other's comments. Often the participants make jokes or side-remarks that may illuminate or add to the situation. The participant's reactions to what was said and done are noted when I thought them interesting as well as the thoughts or ideas that came to mind. I audio recorded personal interviews, as well as taking notes – giving me the opportunity to transcribe interesting parts of the sessions.

A few times I felt it opportune to turn off the recorder when things were getting personal. Often, additional interesting discussions would arise after officially closing the interview, or travelling together. In meetings, especially with their clients present, I felt it would be inappropriate to "commandeer" the situation by recording it. I limited myself to my notebook and my presence, and seeing as stenography is not among my accomplishments, these notes do not give a complete rendition of events. They are what I was able to catch, filtered of course by what I thought relevant at the time, and adjusted by the interviewees' response when I asked them later to clarify.

This monograph will be also be scrutinized by my informants before publication. I purposely entered "the field" with a fairly limited conception of theories to guide my observations. These have developed underway and have consequently directed my observations more as time has passed. This did result, I believe, in that my informants up to now have been somewhat mystified as to what I was actually hoping to see and learn, beyond how and what ICTs they use to support their work, and what their work is about.

In this thesis, for anonymity purposes, I have in my empirical material consistently referred to all the auditors as 'she' and 'her'. As my informants were both male and female, and I feel that gender has no bearing on my understandings and analysis – I consequently chose the minority gender to represent the W auditors.

7.1.6 Case timeline

The illustration in Figure 7.2 *Field work and case evolution*, places various events in time, which will be described and analysed in chapters 8-12. I have included events which I did not observe myself, as they started, the earliest I do not have a timeframe on, but they are all pertinent to the case and analysis.

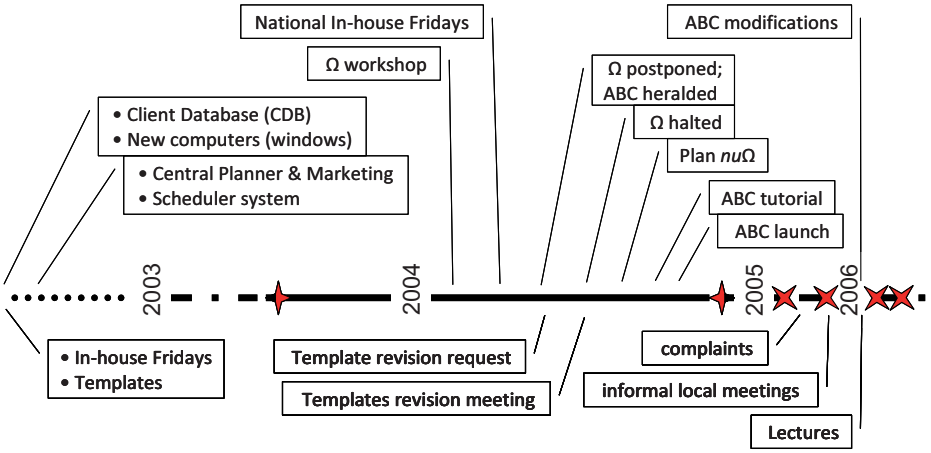

Figure 7.2 ***Case evolution.*** *W-initiatives above, employee initiatives below the time axis.*

7.2 REFLECTION ON THE PROCESS

Klein and Myers suggest a set of principles to guide the conduction and evaluation of interpretive field studies. These principles are based on the philosophical perspective of hermeneutics and the concept of the *hermeneutic circle* as described by Gadamer (1976). Several approaches for gathering data should be considered, partly ad hoc. For understanding technology use through understanding work practices, field work would mainly be following the objects of study in meetings and observations, doing interviews and workshops, perhaps supplemented with surveys, for relevant issues and topics that may emerge. As suggested by Pollock et.al. (Pollock and Williams 2008), especially when large scale phenomena are under study (across time and/or space), an approach termed 'biography of artefacts' suggests following or sampling the activities of a range of actors involved with the artefact. User forums are mentioned as a fruitful site.

The hermeneutic circle implies an iterative approach to reflection with seven different aspects of interpretation, as well as coming back to each of them in a cyclic fashion for revising and enhancing understanding. In viewing the process as a circle with revision as opposed to a linear waterfall-process, there is also an implied freedom to pick by choice the order of application of the different principles. In the following I will apply the principles to reflect on my own research process.

The fundamental principle of the Hermeneutic Circle

The length of this research project, with ongoing fieldwork from mid 2003 through 2004, and follow up in 2005 to mid 2006, has given me the opportunity to think through my material in several iterations. In the period 2007 to mid 2010 I was more or less full time employed in other work and research. These other activities have, for better and for worse, made me have longer time-outs where the material was basically lying there. Picking it up again periodically allowed me to see afresh as I had to go through it all in

order to pick up the threads. While I in 2006 decided to have 4 chapters of analysis, their theoretical grounding has been adjusted over time. The other projects, some of a more practical nature, allowed me to recognize a variety of theoretical issues in less abstract form, which in turn has provided nuance and confidence to some of my understandings, while other have become less prominent.

Secondly, the time lapse has allowed a mental distancing from my original objective – the effects and uses of a workflow system in practice. Rather than a study of effects on practice my interest turned to seeking a better understanding the auditors' practice on its own terms and finding ways to describe it. An attempt to describe this particular kind of interactive knowledge based service work seeking to contribute to theory on IS support of knowledge work in general, and hence what kinds of functionality IS should cater. This influenced the choice of literature explored in this thesis and caused the main research question to be rephrased to specifically indicate service work as opposed to organizational use of IS.

The values of an iterative and revision-oriented approach have become very clear to me during this research process, as new or different insights has changed the context of the other six principles several times over.

The principle of Contextualization

The social and historical setting of both the object of study – the corporation W, the phenomena under study – the work practice of certification auditing, and my own background and changing experience during this research has allowed a deeper understanding of the relevance of the wider context to the understanding of this case. Chapter 2 *The Case W* gives a description of the institutional context, with a historical outline, of the work practices under study. This seemed to me initially as more of a backdrop and a quaintly interesting as a story of evolution. The evolution of formal standardization – as a necessary precursor to a current business. What has become more apparent with time is the importance of the institutionalised standing of standardization as meta-idea and system of governance for the authority lent to the certification auditor's identity – and business. Their belonging to something larger than themselves, larger than life, and work here and now – as discussed in Chapter 10 *Lonely decisions*. The same argument goes to the idea of scientific rationality, and what it is in terms of QMS. It is the overarching validating element when conclusions to the audit are drawn - as discussed in Chapter 8 *Who decides what?* Finally it illustrates the degrees of institutionalisation involved in upholding an information infrastructure, which the institutions of formal standardization also are an example of.

I had some indication of what certification practices and QMS audits were about before I entered the field. In my previous work as an engineer, I had participated in in-house revisions of a similar nature on my own projects – the other side of the table if you will. W is a well known and prestigious Scandinavian company, with a long history of international standing, which of course coloured both observations and interpretations. I held them in high regard as professional in their work, and I still do. In addition, the engineering background education of the auditors' was similar to my own, providing ability for recognition of practical approach, but also perhaps presumption. As I had

also been on the other side of the table, albeit not with W, I could also relate to the clients being audited. This made their work practices initially seem rather matter of course – and it was difficult to see patterns or structure in what was taking place beyond it being recognizable and natural. Having been through a variety of theory, and several iterations of interpretations, I now recognize the infrastructural character of community common understandings that engineering work and standardization mutually relies on and supports. A common construction grounded in a trust in numbers (Porter 1995) and an common notion of what constitutes rational action. These are important aspects in the interpretation of this case, and the relevance to be drawn from it.

The principle of Interaction between the Researchers and the Subjects

With the intention to understand the practicalities of work, my observations and interviews were central source of initial understanding. My understandings are to a large degree shaped by my informants' renditions, how they understood their work and talked about their work. But that is also the purpose of practice based research – to enter into their life-world to the degree possible. This relates to the parts of their practices that they talked about and had reflected on. Additional perspectives were sought by observing different auditor with different clients and one client-auditor pair twice. By reading their documents and news, browsing documents and forms in the client database, calendars, web-news, talking to other people and roles, I gathered other kinds of input which their practices in perspectives. Things they did not mention, or which never came up. In time, in talking and telling me about what had been going on lately, they would indirectly describe aspects of their work, of its context inside the corporation and in terms of the market and different clients, of colleagues, and their own accreditation.

My own analysis in terms of how their own work was standardised is not something I discussed with them. This relies on the literature I have read since, my accumulated interpretations after numerous rounds of talking, discussing and writing. This construction took place based on the research community of which I am part and my previous work experiences as a consultant, also on hire by clients.

My fieldwork was not originally planned with emotions in mind, although I had idea that display of emotions might be indicative of breakdowns and issues for theoretical deliberation. Writing in a confessional style does however attempt to include aspects of emotions in my renditions. Emotions display that activity or rationality now has departed from the expected and indirectly display at least that something is now different, and possibly also what is actually expected – i.e. what is considered to be normal. My interpretation of such situations, and discovering what it is that is supposedly normal are in my case necessarily partial. They have not been specifically tested – for instance I did not ask a client representative why he was angry – I took his own words in midst of the situation at face value. The relevance and validity of my interpretations therefore rely on the coherence and plausibility of my renditions of the empirical material throughout this thesis.

The principle of Abstraction and Generalization

It took me a long time to be able to abstract and generalize on the empirical data, beyond the relatively obvious, the very recognizable, familiar and practical activities. The auditors were looking at practice too, and for practical proof of quality management. They were negotiating what it should mean for the client - was it satisfactory, what could be better, what was not good enough and what should they do about it. I did not have the auditors' experience on how to categorise and rate the findings as the auditors did, but beyond the logical I did not attempt to calibrate or define a scale of severity for myself beyond recognizing that it must be an issue for them. As described in Chapter 10 Lonely decisions, my last interview in 2006 gave me some evidence of this. After following the first audit I wrote a resume, outlining a short story. After two audits, I started writing out an exemplar. This has been rewritten several times, for various articles – finally using happenings from all four, in Chapter 8 Who decides what?

The negotiations taking place were naturally the first things I recognized, but the dimension of the civil hospitality, did not dawn on me until I had written and re-written the exemplar of the audit several times. Piece by piece a larger picture emerged. At first I saw they were civil, like people normally are. Over several audits, patterns emerged. And I witnessed the opposite event taking place – conflict and anger. I much later realised there were phases to the audit visit. One auditor commenting on one of the first drafts, mentioned that I had gathered quite lot, based on the few audits I had joined. Having read the book The audit Society – Rituals of verification (Power 1997) I looked for rituals. As the certification audit takes place in a cyclic fashion I found elements of ritual in them, especially in the way that everything sort of starts all over again at the next audit. The negotiations of the previous audit seemed to be more or less black-boxed into the conclusion – to be left behind while the next one in many ways started afresh. This perception was probably coloured for me by the fact that each client was new to me, for three audits. The fourth was however the second client half a year later, but – there were several new people representing the client. So each audit is partly detached from the previous one as the building of shared meanings on QMS for this client at this point in time needs to be not only a continuous project of affirmation and repetition, it also needs to restart as new individuals enter into the QMS audits. So there are ritualistic elements to their performance, and probably in the bigger picture when choosing business partners, depending on how institutionalised the business in question is. But, my evidence suggests that the auditors themselves seek to avoid reducing their work to a ritual. While seeking to improve their circumstances of their work, as discussed in chapter 9 & 11, they counteract the new routines and IS on the issues that seem unreasonable or meaningless. Following the system in unreasonable ways might support claims of ritualistic performance and commodification.

The negotiation concept also fit with ANT theory, as I tried to identify concepts from ANT theory within my early data – before the ABC certification brand was introduced. I recognized the certificate as a boundary object – an immutable mobile. And I saw each audit conclusion as a boundary object (Star and Griesemer 1989), although I felt it was a fleeting one – resembling a fiery one (Law and Singleton 2000) or a fluid one (de Laet and Mol 2000) – but, as someone commented at a research workshop – so what? What's

interesting about the status of the audit conclusion changing over time? I also recognized the local performance of a standard as standardization in practice (Timmermans and Berg 1997) in the auditors promotion of ISO9000. But again - so what? It was after completing the fieldwork phase that someone, at another research workshop - after asking me to give a summary of my case, said: "I hear a story of social ordering" - which unleashed the exploration of different theories that allowed me to put the others into perspective, relatively to one another. That was my real dawning of the importance of the separateness of interests in multi interest collaboration. It had been there for quite a while, but I had not been able to put it into words. Power – no, but maybe authority – no, too wide reaching – perhaps social ordering and emergent organizing – but it still takes focus in the wrong direction in terms of my research questions. With that came exploration of agency and qualculation, of identity and identity work, and nuance to the importance of knowledge sharing and standardization strategies. Eventually – the trigger of this theoretical exploration – social end emergent organizing has been toned down to remain as effected asymmetry – in line with its subtle but mainly unvoiced and unnoticed presence in multi interest activity.
The final interpretations presented here, come from new insight and literature that suddenly gave new meaning, other research cases I have taken part in bringing different and more tangible examples of theory – such as coordination and articulation in its variety of objectives.

The principle of Dialogical Reasoning

As described above, my theoretical exploration has become more nuanced over several iterations. The interplay derived by applying these to the empirical data, in turn also shaped the theoretical focus – and the interpretations. Starting with fairly rough assumptions about what the field data showed and would show, these have been adjusted and nuanced as new data slightly contradicted previous interpretations. Finding appropriate concepts and theory to add to the basic assumptions sent me in several theoretical directions. Each adjusting the previous. For instance – the auditors are presumably controlling their clients. But observations reveal that they largely rely on the client to reveal the evidence to base this control on. So, there is an element of control but the client needs to be a reliable partner in the act. So, the client needs to be made into a partner, into someone that credibly aims to achieve the very same objective as the auditor is there to check up on. But the client will probably never have identical interests with the auditor. The term equifinal, a late arrival in my perusal of literature – proved to me a fruitful concept for phrasing and delineating my understanding of the case as it emerged.
In relation to the final chapter, the more abstract understanding of the patterns in their work practices – how they are standardised and to what degree, is a recent insight. Again in writing out in detail, assembling into tables to be able to present the data in a more accessible way, new insight emerged. While still just talking and writing about events in an orderly fashion the pattern was just a pattern. With the table, the characteristics of the pattern itself emerged.

The principle of Multiple Interpretations

There is no one truth. By iterating, patterns and recognition in terms of concepts and understandings have emerged for me. The basic interpretation I have made, that of the

auditor being under scrutiny too – is based on how the auditors I have observed have acted, and their own descriptions of their work, over several interviews. It is apparently an understanding that suits them well, with an identity regulating effect. It shapes how they behave and bring themselves across to others. However, as related in Ch. 8.3.2, they do also contradict this themselves in several ways. They are clear on being in charge – and they make sure that they stay in charge – to the degree necessary. They hold back on authority. Does this fact disrupt my overall interpretation of this case and their work performances? I believe not. It is exactly this balancing of authority against instilling trust and motivation that allows certification auditing to be profession and a service that clients are willing to pay for – within the boundaries of my empirical case, in a Scandinavian country. No doubt the balance is different in other countries and cultures. W too, is making their bet that a non-confrontational approach is a plausible and generic way to achieve a global wide market. This is what their IS, with concomitant practices and regulations, needs to support.

Colleagues have voiced alternatives, which were different in focus, but not really contradictory. I find my interpretations corroborated to a degree that I have confidence in.

The principle of Suspicion

I do not propose that my participation in the field or my interviews give a complete picture. They are my understandings, filtered by and constructed through my background as a consulting engineer, understandings of situations, processes, intentions and feelings. Redirected and adjusted with time, along the course of interviews and talks, courses and tests, audits and other information gathering in document archives, certification IS-tools and W's company Intranet. Another aspect of my data-gathering is my signing of a confidentiality agreement, regarding W's business situation as well as that of their clients. For this reason, the company name and my informants have alias names, though I have tried to retain what I believe to be contextually relevant for the case, such as geographical region and line of business.

My interpretations will necessarily be biased by my previous work experiences, in that my sensemaking does rely on them in addition to my reading of the literature, and the feedback received from research colleagues. My basic interpretation and assumption – is that the certification audit cannot be profitably understood as a power exercise immune to the local context - if one seeks to understand what drives and supports service work (ref. my Research questions in ch.1.3). My understanding of the importance of establishing and keeping trust, motivation and equifinal understandings in this case has been acknowledged and corroborated by my interviews and observations all along the fieldwork. Neither from my research community have I, although alternative stories have been suggested, felt that my actual frameworks for recognition have been challenged. Rather there have been discussions as to what kind stories it interesting to bring forward in reference to which areas of area of research the data make useful input to.

Are descriptions of certification auditing, as a specific type of service work but also related to control, possible to generalize from – or is it too particular and special? I

believe it is as it displays a generic feature of collaboration, that of contradictory interests, which tends to be downplayed or forgotten when organizations seek to support collaboration with technology. This may be a possible hypothesis for future research.

One avenue I did not explore, in fear of bias through disturbing my relations to my informants, is discussed below.

When you look at it, the work practices of W's certification auditors are incredibly organized and systematic. And, they have been at it for a while, building on the experience and traditions of an organization which has been operating for close to a century and a half. I regret now that I first never actually thought, or later dared, to ask my standardization certification auditor informants the question: *"Do you think of the work you perform yourself as standardized?"*

Firstly, because at the outset I did not think it was relevant. Being unrehearsed in the standardization literature I did not actually think of a systematic approach to knowledge based work as standardization. I had experienced that computer systems could be frustrating if they were poorly designed and put to inappropriate use. An issue attributed to management being both unfamiliar with the real practicalities of their employees' work or that they could not afford otherwise. Standardization on the other hand was something rigid and technical, like the military or assembly-line work. It is the kind of activity where you are expected to follow orders and not to think, the kind of work that you steer away from with higher education. And, it is an image of work, employees and production which is politically inappropriate in Scandinavia.

Wholesale domestication of ICT into all levels of society has revealed however that the systemization of work, also so called knowledge based work, can be made very rigid and standardized with this kind of technology, possibly more by accident than by wilful design. The urgency of success and control over global production in a market based economy exasperates the desire to design rigidly in order to reduce divergence and to speed up the implementation of new products or other kinds of reorganization. It is also easier, thus cheaper, at least during the early phases of design and construction, to make systems that cater for a limited number of variations or disrupting exceptions. In other words, the short term interests of both management, who order and pay, and the constructors who also want to limit the effort spent for a limited fee, comes together as a limitation in the design phase effort. Ignorance of the consequences of such approaches is of course also a factor for all parties, including future users.

The potential of artefacts to produce asymmetries, to powerfully shape the activities and latitude of those that have to use them, is now apparent – especially when they are systems, far reaching, interconnected, integrated and meant to be used across opposing interests, unidentified ones or even for the purpose of reducing or removing such conflicts.

Secondly - later, I did not ask them whether their work felt standardized, as I did not want to disturb their activities, or their interaction with me or thoughts of me and my questions as a researcher, with my possible interpretations, less they act differently. Nor

did I want them disturbed by the idea that they were being, or making themselves, standardized.
Systemizing activities in ways that would have a positive impact on their own and colleagues work are to be expected, given that they are asking their clients, in the spirit of standards, to be systematic in their production. Standards, being what they are working to uphold, are ever present anyway. And that has been a difficulty for my interpretative analysis and the efforts to describe it: How to mentally separate the certification auditor's work product, the activity of certifying according to a standard, from the circumstances of its production, as in the standardization of the auditors' own work processes.

The next part of this thesis

The case and relevant theory for analyzing the empirical material has now been presented. The next part moves on to analyze W's practices of certification auditing across four different chapters. Figure 7.3 ***Treatment of research questions*** illustrates how each research question is addressed - mainly in one chapter each (black), but indirectly also in the others (grey).

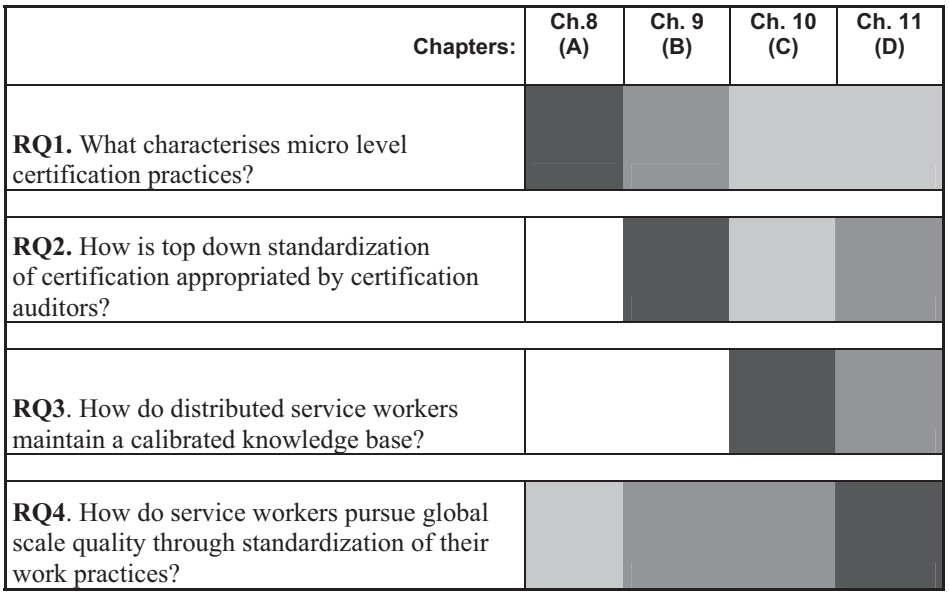

Figure 7.3 Treatment of research questions in analysis chapters.

PART III

ANALYSIS

PART III - ANALYSIS

8 WHO DECIDES WHAT - AT THE AUDIT VISIT?

About this chapter

In theory, the certification audit is an exercise of checking status against a set of criteria, given by the standard. Rational arguments are brought to bear on the facts of the situation. The evaluation and reporting of some of these criteria could probably be more or less automated. Some organizational research has critiqued this as a simplistic model, calling for an understanding of organizational decision making as contextual rationality (Weick 1995). Chapter 3 *Decision making* developed an expanded model of context and situation sensitive decision making. What *context and situation sensitive* means in real life is the empirical question for this chapter.

The focal activity of certification auditors is the audit visit at the client's premises. This is the event that their work practices as auditors revolve around. The visit brings almost everything to a head, in confrontational face-to-face interaction. There is of course a significant amount of both preparatory and supplementary work related to this onsite visit. But those parts take place in the fairly asynchronous and semidetached fashion that the in-between interaction of paper by post, e-mails, phone calls and perhaps meetings add up to. The activities of the auditors' co-workers at the office also attend to achieving an overall smooth audit process, but the onsite audit visit itself remains centre stage. These usually take place once a year within a client's periodical certification scheme.

Being audited has an aura of being controlled. Somebody is coming in to check how you are running your business. The fact that it is an outsider doing it - a so called third party of neutral expertise, giving judgement according to a formal standard, makes it a controlling activity. A judgement that will be public, - if you let it. At least that is most often its purpose. And afterwards, the fact that you have been audited and found in order is a quality label and a symbolic portrayal of assurance. You spend money on it, and it provides, hopefully, a label defining your company's status as belonging and accountable. Belonging to the same international business cosmos of sensemaking as other certificate holders, and thus a business partner - with practices, to be trusted and desired.

Snapshots From an exemplar of the Periodical Audit onsite visit

This first analysis takes a closer look at what takes place when the parties meet, by presenting empirical evidence of how the auditors of W perform certification audits**. I**n this case, audits of certification on compliance according to the ISO 9000 standard family on Quality Management Systems (QMS). More specifically we shall look at how certification according to the ISO 9001:2000 standard is carried out by some Scandinavian auditors from global W. Chapter 2.4.3 has an overall outline of the typical certification scheme and process. Based on snapshots from an exemplar of today's practices of QMS certification, the progress of the audit visit is illustrated and analysed

through three phases: the setting of the stage, the auditing performance and the summation of the decision.

Research Question 1:
What characterises micro level certification practices?

The exemplar is constructed from observations of four different periodical audits as carried out by three different Audit Team Leaders (ATL) in 2004-2005. At one of these audits, an assisting technical expert (also an auditor) was present together with the ATL, although this distinction is not made in the following. The presentation is supplemented with the responses of auditors from various interviews.

8.1 SETTING THE STAGE

The certification audit visit is an interactive context which seeks to acknowledge the autonomy and legitimacy of each party, while making judgement. In fact, it looks more like a dialogue than control.

8.1.1 A friendly atmosphere

Arriving on-site
The Audit team leader (ATL) picks me up on her way to today's audit. It is a short drive to the new offices of the client. As we enter, we are greeted just inside the door by the manager (CEO), who proudly starts us off on a tour of their new offices. Acquaintances meet with a smile and shaking of hands, as we stop by one office or office desk after the other, of the 10 employees. Most of the employees are present today, available for the audit. This ATL has been their QMS auditor for several years now, and the present workforce is also familiar to her. She asks the manager: *"How are you doing? .. Nice new offices here, – and you've got just a short walk to get home!"* They know what part of town the other lives in, where they have their weekend house, and how they both often spend their holidays. A meeting of peers. The auditor also asks of news of a previous employee with a serious infirmity.

With our coffee mugs, we congregate in CEO's office with the management, for the first item on the day's agenda: the 'opening meeting' in W terminology. The QMA (Quality Manager) from the mother company is here for the day. 'PeddleChem' is a subsidiary of a Scandinavian owned company with branches and production units in Norway, Sweden as well as the Baltic. The firm specializes in supplying chemicals to smaller businesses. Poor times all over the Scandinavian market have led to a continuous restructuring of the business over the last years.

ATL asks: *"Are there any changes you would like in the agenda? We can switch things around if there are any obstacles."* The tools of the trade ready at hand: the little book: – the shortversion of the standard, hardcover notebook and some sheets of paper with various document templates on them, ready to fill in. Some auditors bring their laptop computer to these sessions, but this ATL prefers the well proven and familiar paper forms. She finds them handy. Picking up a sheet, which has been partly filled out and

sent beforehand by email, she presents today's agenda with its time slots. Any inconveniences due to the client's business are sorted with a slight rearrangement. Someone will fill in for an employee on holiday.

This is the 1.periodical audit, meaning that it is the first follow-up after the full-scale audit carried out a year ago. One whole working day is allotted to this PA1 onsite visit. The initial part of the audit is a warming up phase, a covering of fairly routine practical details. ATL sends round a list for everyone to sign their names on. This is the declaration of legal capacity, vouching that they have no legally conflicting commitments. Following this, in addition to an advance clearance, my presence as an observer with notebook is explained, and my pledge of confidentiality is assured. My background as an engineer seems to give assurance, and ease the fact of my presence. When everything is set, the auditor asks: *"So, tell me - How are things in the 'kingdom'?"*

8.1.2 A hospitable affair, throughout

The main part of the certification cycle is the audit visit which takes place at the client's premises, where both parties strive to achieve a friendly atmosphere. The auditors are visitors who are shown both hospitality and respect as befits their expertise and role as inspectors. But, at the same time the client is shown hospitality and respect by the auditors who give them the floor, and behave as visitors. It is a setting of hospitality, amicability and mutual respect. The client takes the lead when they present their version of their company and practices, the auditor deferring to their arrangements for most of the day. Giving their presentations, the client follows the pre-arranged agenda. However the auditor begins by asking them whether they wish to rearrange it.

The auditors explore what is presented by adding further questions for clarification. The client supplies the answers, but their sincerity will also be judged. Sometimes the client will need to call in other personnel than those present, in order to fully present their case both in respect to their own and the auditor's satisfaction. This satisfaction deals as much with sincerity as with rationality.

The final call may be 'postponed'

Although today, the day of the audit visit, is when it all apparently happens, there is leeway for redemption. There is a deadline, given by the standard (weeks or months depending on severity), by which non-conformities must have been addressed, if they are not too many. An impressed, realistic, or possibly magnanimous auditor selects her phrasing of findings in a way that lets the deserving client put minor discrepancies in order, by reporting back within this time limit. Another reaction from the auditor might be to use observations instead of NC's. Observations are meant as input to the ongoing efforts of QMS practices and do not incur deadlines or other sanctions.

The client remains in charge of their own practices. The auditor seldom gives specific designations on how they should design them. She asks how they think they could improve their procedure, relates different examples of how other unnamed clients have solved similar issues, and possibly relates the generic requirement of the standard.

Attending to emotion

This is a meeting of parties with their own set of interests, that may partly coincide, but also do not, just like the activities which Leidner (Leidner 1993) terms Interactive service work. Leidner found that employees in interactive service work both performed on their own initiative, and were called upon by their employers to perform, behaviour that would attempt to secure suitable emotions in the client. A happy client is a prospective repeat client, especially if the service itself is standardized and routine. Although Leidner's analysis of fast food outlets and insurance sales agents are not readily comparable to certification auditing performed by professionals, there are certainly elements of routine and standardization in certification too. Ciborra points out that hospitality is a fruitful approach to sustained interaction, whether it concerns either social or technical actors, when contention due to change is probable (Ciborra 2002).

8.1.3 A dialogue of modest expertise and sincere intent

A capable client

Before we arrived this morning, the auditor gave me a brief description of the company. She concluded with: *"This is a very capable client. They use W for their audit in order to get better."*

A show of Good Faith – within safe bounds

When the CEO is through his general background presentation, the QMA takes over to give a brief on the improvements they have done to their QMS. How they are coordinating and aligning between countries, reducing double work. Giving examples, and making references to the QMS folder that ATL is leafing through, stopping here and there. And then, she tells us about their sister companies in the Baltic, admitting that the setting there, is altogether different. *"The Baltic is not ready for full scale QMS. Their focus is on selling, they have lots of laws but little in terms of inspections. We can't practice QMS there as we do here".* But no matter, this is a diversion. 'The Baltic' are legally separate companies and not part of the scope of this audit and certificate, regardless of any QMS-wise sins or excellencies.

Challenging role - but I'm in charge

One auditor told me during an interview, when I asked: "*Is it difficult to be an auditor?"*: *"Well it is a challenge. It is demanding. It is not only them being checked – and sometimes the client may be really nervous. .. But my performance is being evaluated too. We like to say: it is almost like being on a stage. But it is still me in charge. I make the call. I worked in the consulting division previously, and I prefer this. As a consultant you were at the client's beck and call. I would never go back to that!"*

Allow them to relax

On asking whether they often revoke certifications, the answer of one auditor is: *"Seldom. We try to judge where the client is in their journey of improvement. Revoking the certificate is perhaps not the most fruitful input for improving their QMS."* Another tells me: *"Sometimes a client is very nervous when we arrive. They might tell me that*

they have slept badly the night before. We need to give them time and opportunity to relax."

Most of the audit is performed as a two-way dialogue amongst peers, where the auditor keeps track of the agenda, while the client present their production and QM activities. The auditor does not make undue show of her expertise. The focus of discussions is on the practicalities of the client organization's activities. They discuss the content and intention of the standard when uncertainties or problems arise concerning appropriate ways to deal with various practical issues. Illustrative examples of other clients' practices or publicly acknowledged stories that demonstrate reason may be drawn upon, rather than theoretical and abstract recommendations of the generic standard. Specific paragraph numbers are seldom quoted. They would probably only interest the client QMA anyway, apart from demonstrating the auditor's expertise in a symbolic manner. The auditors rather present their capability through their grasp of the client's story and business, and the appropriateness of their supplementary questions, suggestions and explanations. A dialogue that makes sense to all present in terms of their expectations is a basis for trust, which may be termed a reflective trust (Adler 2001), and an example of reputable action (Scott and Walsham 2005).

The auditor holds back on using authority, unless she deems it absolutely necessary. In this way, as much as possible, she avoids taking controversial stands, or putting herself in the frontline for testing on specific competence. But the auditor is also under evaluation. During interviews, several of the auditors say that they feel pressure towards doing good work. Wishing to contribute significant added value to the client, beyond affording the certificate itself, is part of how they see their auditor identity and legitimacy.

8.2 PERFORMING

The audit visit proceeds as a negotiation of rationalities, which are seen as generic and neutral, securing fair evaluation of both parties. A rational and reasonable consensus is sought.

8.2.1 Presenting, asking, explaining & evaluating

Discourse
The CEO steps to the whiteboard with its projection of a presentation, and proceeds to describe the new organizational chart. He explains the changes in the business scope since last time, as well as an ongoing reduction of personnel which will be effective by the end of the year. Some products and their administration have been switched around between companies and countries. The ATL reaches over for the indicated folder containing revised descriptions of the company's Quality Management System (QMS). Procedures, flowcharts and text, which have apparently been considerably revised and reduced in amount of both words and paper.

The manager is talking about how the business is doing. *"The large customers are increasingly shortcutting us and making deals directly with production plants, so the*

business is changing. To compensate we have broadened our product range by including products from other manufacturers". The auditor listens and nods, prompts the story with questions and comments, supportive and interested. When deeming it appropriate for the discussion and further exploration, she explains the concepts of the standard. Sometimes leaving the table to write a list of points or draw a figure on a flipover paper pad. When the main part of the presentation is through, she asks: *"Are you happy with the way you are doing it?"*

The auditor asks about measurable goals and strategies. ATL now concentrates on processes which the client has identified as their main ones, and proceeds to interview the sales managers of the three different product lines. One by one, we move successively to the office of each of them, before moving to the office of the accountants. The focus is on allowing and enabling the client, with its various representatives - appointed before hand, but sometimes also randomly adressed as the opportunity presents itself, to present their story. Most of the management tags along, though two of them leave for a while to deal with some other matter. The CEO tends to get eager, and sometimes takes over the rendition.

Doing, versus abstracting and documenting
The ATL seems to feel that their sales pitch is a bit haphazard, suspecting that this may be part of the reason for their decline. There is no specific monitoring and no documented market plan, at least not in a readymade form that they can present as such. Which customers should be approached, how many are lost and so on? The sales managers do not see the need. They can get all the info they want by looking at the aggregated list of customers with past and coming orders. It is only a few sheets of paper from a worksheet for each of them. ATL discusses the merits of specific market plans with identified goals, but concludes: *"I leave you to think about it, but the standard instructs that you have systematic data-gathering and analysis of your processes".*

Checking the story
The auditor refers to the standard in terms of topics, but seldom quotes the specific numbers of the paragraphs. She asks of issues that they see as a challenge. Amongst several topics is their ability to secure delivery of the correct chemicals, when employees select products in the warehouse for loading on transport vans. How is the tally kept, and which goods are stored in which places, and can they avoid mix ups between similar names and labels? She relates examples from other clients' warehouse management as input for improvement. They all agree that the warehouse itself should be included in the onsite visit of the next periodical audit, the PA2.

The focus is on processes, their clarity, viability, and visibility. And what happens when somebody is ill? Who can fill in, and will others be able to take over smoothly? Do they have the competence, and how do they stay up to speed? Is there a lot of sickness? They are asked to describe what and how they do their work – to tell their story. To show her samples of file binders of documents, software applications that they work with on their computers, systems of recording or measurements. Do they have a coherent and sensible tale of their activities and strategies? Do the stories tally with each other, as

well as with the documents they present, or data on the screen? Do they control the situation - or is the situation in control of them? It is all very amicable - and sensible.

Dissention
The last process to deal with on today's agenda concerns socalled support processes and the local adaptation of product documentation. I suspect the auditor put this among last on her agenda with purpose, expecting dissention. They present how they do it, somewhat apprehensively. It is apparently a touchy topic, and has already been discussed recently with the pollution authorities. The auditor is not convinced of their procedure's fitness. But management does not agree. They both make their stands, presenting their case without reaching any clear agreement on a suitable procedure. ATL seems to let the matter rest - for the time being, and moves on with the agenda.

Disagreement
Later, during the Closing Summation, both the CEO and QMA again pick up on the earlier dissention, - there is tension in the air. They can not see that the auditor's comment is relevant for a PA1. Their procedure has been passed by the public pollution authorities. How can it then be the business of W's audit? The auditor is restrained and diplomatic, polite, but adamant in her reply: *"Will it be problem for you to do it in this way?" "No, but we question the usefulness*", is the reply. The auditor says: *"I can see that I may be taking command here, but if this is not too much of an effort ..?"* she goes on to qualify her position: *"Remember the 'GEL' -case? - we do not want that happening to you!*" This case was common knowledge in Scandinavia at the time, some years back. A manufacturer had altered the ingredients of a substance without specifically drawing their distributing buyers' attention to this fact. Some buyers sold it on, based on outdated documentation, never noticing the changes in the paperwork. There was public scandal upon discovery, as the chemical had been used in some leaky tunnels. There was fear of ground water poisoning which would subsequently affect the drinking water in a densely populated area. *"It is very important that your routines are practiced in a way that such a thing can't happen here. The standard is quite specific in its requirements for this kind of procedure. It does not make any difference that the pollution authorities have found your current procedure sufficient. I have no choice but to put this in my report as a Non-Conformity!"*

This is the kind of issue that looks bad, not only for the company if things go wrong, but also for W as their certification body, and even certification as such. It affects the brand of W as well as the standing of ISO 9000 as a suitable mechanism for assurance and quality.

8.2.2 Logical, sensible, and scientific

While the audit has many of the characteristics of a dialogue, it is nevertheless a dialogue with a purpose, where the rational and scientific is in focus. Every question and every requirement can be given a logical and practical explanation, in addition to grounding in the standard which is emphasized when suitable. Depending on her audience, the auditor tries to keep a practical focus in terms of the business of the client in question. Good stories that explain pertinent issues are among the resources that the auditors share amongst themselves when they meet. The 'GEL-case' story, that the

auditor refers to in the above exemplar, fills such a purpose. It is a non-disputable and easily understandable example, especially applicable to this particular client. In effect, the audit becomes an arena for teaching the standard, almost in a debate-like manner. Supporting the scientific grounding, is the fact that the auditors of W are engineers, and that W has a public reputation related to the scientific of technical inspections and standards along with technical risk & security assessment. Brown and Duguid describe storytelling as a prominent and useful way of sharing insight along with its motivation and context (Brown and Duguid 1991; Orr 1996).

Sensemaking of the local and individual kind for embedding the abstract standard

Sensemaking is a contextually both contingent and responsible practice of rationality, Weick tells us (1993; Weick, Sutcliffe et al. 2005). In a twist, sensemaking both builds on and reflects on the individual's own experiences and perceptions, as well as those of the organizations they belong to - to the degree that these have been shared and collectively developed. And the sense that the participants make of every issue on the day's agenda is vital for the audit procedure to progress. Auditing QMS is very much about giving proof of the rationality of how the client's production is performed and managed, as well as the rationality of the standard's requirements. This implicates the contigencies of this partcular client, along wih the personal conceptions of those involved, and how they talk about and justify their work. While those on 'the ground' might relieve themselves of any wider responsibility beyond specific production tasks, every individual in management needs to have plausible and logical arguments for their strategies and performance. Likewise does the auditor.

The fact that the ISO 9001:2000 standard is a generic standard (ISO 2006; ISO 2006) that aims to cover any kind and size of business, also makes it practical in use. Also, its evolution from the 1994 versions to the 2000 version, has made it even more generic, as the earlier version had more focus on the presence of specific procedures and routines. ISO 9001:2000 standard has very little in terms of specific requirements[5], but seeks to admonish a way of thinking and doing QM, and implementing the QMS. There are certain strategies that must be adhered to, basically: the 8 principles which focus on conscientious management based on facts and people, including clients and suppliers. They are *'more like guidelines'* – to paraphrase pirat Barbossa on his 'of the moment' and personally adapted interpretation of the Pirates' Code (ref. movie: Pirates of the Caribbean, 2003). Each client is seen to be on a journey towards better QMS [ref. W's course documentation on ISO 9001:2000]. As such there are limited possibilities for calculating a conclusion of the audit or its separate items, in the quantitative meaning of calculation. Certain aspects must be checked and found in order, but their motivation and its organizational diffusion – as presented and seen, is just as important as their documentable and accountable 'proof' in procedures, measurements or other kinds of data.

[5] However, ISO has developed an number of additional QMS standards, belonging to the 9000-family, which address specific industries such as ISO ... for automotion, perhaps address a need for being more locally specific, and not too generic.

The diffusion of ISO 9001:2000 throughout he world, verifies its applicability and practicality, as it is according to ISO, by far the most well known of all standards. This concurs with the analysis of the development and adoption of the ISO 17799 *Informations Systems Security Standard,* of which its practicality was seen as key to its adoption (Backhouse, Hsu et al. 2006).

The auditors' work is very much a case of sensemaking. The facilitation of their own sensemaking as well as that of the client. The client's thoughts and attitude to management, their documentational routines and the actual practice must be evaluated for coherence, in all its complexity. But as sensemaking goes, – it is done with relation to frames of reference (Bijker 1987; Weick 1993). The standard and the auditor's sense of it, being an important frame. Other frames being: the auditors' experiences both as a professional auditor and from a previous engineering profession; the frame of the situated activity of this particular audit (Suchman 1987); and not least - the frames of this particular client, and the logics that present themselves during the day, as understandable and reasonable, considering the circumstances of this client and this business. These frames are very much shaped by the discourse of the day, - and feed off the discourses of previous audits.

"The application of ideas takes place through acts of communication"(Czarniawska and Joerges 1996, p.20). Czarniawska and Joerges describe how conceptions and sensemaking may be expanded beyond present understandings through acts of communication, with the aid of meta ideas and materialized ideas. They may even turn into organizational fashion. *"..[O]rganizational fashion[s] .. [are] the frames that allow ideas in the shape of abstract words, metaphors, .. to find fertile ground and grow, get adopted. .. .. materialized ideas go down like avalanches, with almost no resistance, especially if they acquire the form of complicated machinery"* (ibid, p.19). A standard, such as the ISO 9000:2000, fits the bill of both materiality and meta idea. Its widespread diffusion at this stage, indicates perhaps also that it has become an organizational fashion as well. In this respect one can not disregard the effect of the considerable efforts expended over the years in terms of the innumerable 'acts of communication' which every QMS audit around the world instantiates.

8.2.3 Sharing and expanding understandings and knowledge

Through the dialogue of the day's presentations and explorations, common conceptions are built amongst those participating. Expertise is shared, all round. The auditor expands on the standard, and on ways of interpreting it in the present circumstances. She performs the re-embedding of abstract concepts into the real life, practical issues of the client's daily operations (Giddens 1991). Either by abstracting on their practice (disembedding) and discussing it in comparison to the standard's requirements, or by way of examples in relating how other businesses manages to fill this requirement.

The repeated internalizing and externalizing of thoughts and experience (Nonaka & Takeuchi, 1995), that takes place during the the day's discourse, effects a learning process, which the auditor and her client representatives both take part in. The auditor learns the client business and processes, and what the client sees as improtant for their improvement and survival as a business. The client learns the standard and how it might

be lived up to. It is up to them to define and establish their own suitable practices. The learning has a comprehensive approach as it adressess both the practice, the language that enables them to talk about it, in addition to its justification and meaning. The specific and concrete, the intellectual and the emotional challenges are all adressed and defined through their sensemaking discussions in a manner that accomodates both the prosaic and aesthetic parts of experience (McCarthy and Wright 2004). Collective " [s]*ensemaking is central because it is the primary site where meanings materialize that inform and constrain identity and action. .. [S]ensemaking[is] .. infused with emotion and with issues of sensegiving and persuasion"* (Weick, Sutcliffe et al. 2005, p.409).

Also, the client organization is not one, homogeneous set of individuals. They have different roles and areas of expertise, and most clients will have someone specifically in charge of their QMS, a Quality Manager (QMA). Somewhere along the line, someone may feel that the auditor, or even their colleagues are pointing the finger at them. This too, makes it a tall order for an auditor to be able to facilitate shared understandings and mutual agreement, on all the topics touched upon, amongst everyone involved within the space of the day's meeting. On the other hand, it is preferable that all the client's representatives are left with a common conception of fair and equal treatment, that disagreements are contained and resolved - and that appointed non-conformities are understandable and seen to be manageable. Disagreements are put down to incomplete understandings, so persuasion and rationality are drawn upon to convince those in doubt or in opposition. QMS is discussed, by both parties, in terms of a variety of objectives such as usefulness, security & risk, reasonability. Examples of validity are presented - and perhaps also a claim of backing by trusted outsiders. While the client might make the opposite bid, by drawing attention to the fact that a previous auditor did not have any comments on this issue.

Expanding capability and understanding beyond individual scope

The audit seeks to expand the logics and understandings, which the participants started out with at the beginning of the meetings. One approach concerns the size and shape of the problems under discussion, while another is which logics are relevant to their exploration. What is a fair way to describe the whats and the hows of present practices? And what is a fair way to describe how t should be, and why? Where are the mismatches, which need to be remedied and how? These big issues are divided into smaller and more practical issues, where each is discussed on its own merits. Who follows which arguments?

With the fascinating concept pair of qualculation and in-qualculation, discussed in Ch.3.2.2, Callon and Law (Callon and Law 2005) explain a hybrid conceptualization of rationality, based on examples of decisionmaking and judgement in complex collective contexts. The concept qualculation combines the calculative (quantitative and rational) decision with the evaluative, qualified judgement (Cochoy 2002). On the other hand, its double-faced twin in-qualculation, of the types rarefaction and proliferation, effect an inability to qualculate because there is either a lack or a chaotic abundance of either logics and/or resources. The drawing of boundaries around a problem infers the kind of expertise or resources are needed to judge it. Based on each participant's difference in expertise, they will each base their support, or not, for a given issue, on different kinds

of argument and logic. There will be an array of differing reasons for siding with a conclusion or vote, distributed amongst those locally and presently involved.

In-qualculation represents another type of logic, than qualculation. In-qualculation fits an argument that might go something like this: "I don't understand this, the issue M is discussing lies outside my area of expertise, but I trust that X and Y do, as they give no indication that they do not. So I will agree with M too, given that I trust X and Y to take responsibility for this particular issue. This argument is in-qualculable for me, but it appears to be qualculable for them. And my qualculation of them, allows me to lend my support anyway. In effect, one kind of logic stands in for another, allowing an overall concensus albeit on different grounds. **A local organizing of differing capabilities is locally effected amongst the participants,** as they sort out a way to accommodate their collective tasks and separate interests. With repetitions of this kind of assignations of capability, **local and situated roles emerge within the community.** A dsitrubution of agency is performed, a potentially shortlived variety of legitimation, as found in CoPs (Wenger 1998; Hildreth, Kimble et al. 2000).

A resilient decision based on various and distributed logics

The above discussion demonstrates that by accomplishing different distributions of logic for separate issues (spanning from understanding an issue, to trusting the understanding of a delegate on the issue), a resilience to decisionmaking in collective settings is provided. A decision does not hang on one single piece of evidence or single individuals. It hangs on an array of different types of evidence, different logics – allowing for an equifinal level of shared understandings (Donnellon, Gray et al. 1986). When parties involved also represent different and partly opposing interests, such an accomodating resilience is a vital aspect of the audit visit. This is the day when the auditor has the best opportunity to influence the client and participate in defining a resilient, compound rationality for understanding QMS, its standard and certification. The more the present discourse also connects to the outside world, outside the boundaries of the present time-space, the moredurable and relevant their discourse will be for future dicussions.

8.3 CLOSURE

The audit visit constitutes an arena, a happening or a space if you will, where a multiple set of interests congregate, which potentially do not align. And dealing with the conflicts of interests inherent in choosing the amount and kind of effort to put into QMS, is exactly the audit's purpose. It is meant to evaluate and work out what QMS should mean for this business, at this point in time. The above arguments put square focus on rationality and mutual respect, and suggested that trust is a vital ingredient of the proceedings. Does trust really matter, when everything is so sensible?

Auditing practices must, and do, build some measure of mutual trust, along with motivation.When it comes to making the final decisions, the auditor has the lead, defined by formal role. The discourse of the day has presented a variety of reasons and sense. Will the auditor make a decision that will be acceptable to the client, while it is also acceptable to the auditor's conceptions of QMS as a professional and how the

client should practice it? In addition to the rationalities shared and discussed, it remains in the auditor's scope to make the final call. The auditor needs the trust of the others in order to define which interests are to rate highest, while the mutual question is silently posed: Are they legitimate?

8.3.1 Are they legitimate?

There are numerous empirical examples of the high regard put on legitimacy. May we trust this auditor to give us our money's worth in fair dealings? Is she competent enough to understand the issues we face, and translate them into appropriate QM for us? On the other hand, the auditor needs to feel sure that the performances the client presents, by displaying samples and talking about their practices, are one and the same. Valid QMS must be the real thing and not some façade for show. Her own integrity is at stake, as well as that of her employer. All those participating in the audit visit will at some level evaluate the others: - are they for real?

The following relates some examples of how the auditors talk about their work, illustrating how they seek to be legitimate. From this we can infer that also, at least some, clients put credence on legitimacy.

Making a difference, more than a certificate
Later she tells me, privately during a short coffe/smoking break, that every time she visits them, the firm is smaller than last time. This could be a symptom of less than perfect Quality Management, and she hopes to give them relevant input for better management of their business.

Sincerity may demonstrate legitimacy
- *You're supposed to give added value to the client. How do you do that?* "I believe that by thoroughly paying attention to this particular client's issues and challenges, and giving relevant feedback in terms of where they are on their journey towards better QMS, then that objective is address"[auditor, spring 2004]. Thinking out the best way to communicate a finding, to illuminate what the auditor perceives to be lacking in the clients practices requires a certain amount of tact. The auditors I followed seemed genuine in their wish to help the client to do better as opposed to a show down of faults.

Demonstrating knowledge of the standard and practical solutions.
- *Does it happen that you don't find anything to put your finger on?* Several auditors answer: No. Not really, you always find something – at least a noteworthy effort – sometimes it just takes longer to find. There is always something to get better at, or to watch out for. We like, in this country, to give remarks in terms of observations. That is, we don't always give findings the status of Non-Conformities. NCs require closing within specific dates. Not everything has those characteristics. It's more of a regular thing, things they need to pay attention to on a regular basis. In these cases, observations are a better way to report to the client. We pay lot of attention to the fact that the QMS should match what they actually do. Superflous procedures must be removed. You don't need a procedure to describe how a letter should be written, but you do need routines for how documents are to be treated. Who gets copies, how are they stored etc. We try to encourage them to do things in a simple way – "Just write

what you do, no more, no less." If the QMS becomes too elaborate, people just ignore it and it becomes just a binder of paperwork that has no influence on the running of the business. That is bad.

Professional, rational & impartial
- *Do you always agree with the standard?* Well sometimes I am concerened with the phrasing, especially of the local language translation. Just the other day I was doing an audit of a mechanical workshop, part of large Scandinavian company, that recently had their main office revise the QMS for the whole company – for all to adopt. I was concerned with the safety issues of their welding operations. Having worked in this kind of industry I have intimate knowledge and experience with the practical sides to this. Storage of gas, handling of the bottles etc. I was not satisfied with their new procedures and it turned out they had come from their main office. I know the standard (not the QMS standard, but another industry related one) has definate requirements for these kinds of procedures to be made locally, to secure their local grounding and adaptation to their own particular context. It has to be part of their daily work. When it comes from head office it becomes too generic, and in this case that is dangerous. The client did not agree – they demanded that I quote the standard to document my claims. I checked when I got back to the office, and found to my surprise, that the phrasing in the standard was possible to interpret in both ways, my way and their way. I still made it a non-conformity though, based on my professional competence and the standard's phrasing. I think it was formulated differently in the previous version, but I have not checked that.

Tempers and emotions become evident as shortcomings in the practices themselves or the reasons and meanings behind practices are questioned. Personal or collective identities are potentially under assessment or challenge for both auditors and client representatives. Feelings of vulnerability potentially threaten the trust amongst them. Keeping work role and related logics apart on the one hand, not letting the logics affect personal identity and meaning is difficult if possible at all when their professional legitimacy is on the line.

In effect, both the performances of the actors, as well as the resources they draw upon to substantiate their claims, must stand to reason in an ongoing scrutiny of sensemaking. Supportive resources range from the immaterial to the material. If individual performances do not make sense, or the arguments made do not make sense – then the delegation of decisional power and trust may be withdrawn.

8.3.2 The decision and its terms

Classification of findings – aligned constructed sensemaking
The auditor and I leave the room for a 15 minute private preparation for the Closing Summation. They often reserve upto an hour in private for this exercise, but she feels this is sufficient for the issues at hand. She goes through her notes for the day – she has marked her potential NC's (non-conformities) and observations (comments). She ponders their severity. Which are more important? This one is superfluous, addressing the same issue. How explicit is the standard? She has to decide which to focus on, which are trivial or covered by more general findings. She must categorize them as Non

Conformities of level 1 or 2, or merely observations. The number and character of remarks must reflect the general condition, where this client is found to be on *"their journey towards continuous improvement of their QMS*." The client is required to address the findings, by taking and reporting what they consider appropriate action within a set date, for the auditor's pending approval. With too many NCs, the certificate is in danger of being revoked.

She asks me what I think. Was there anything I had noticed in particular? I am at a loss. I have been present and listening the whole day, taking my notes, jotting *s in my notebook by the expected issues, when I have noticed discussions or where discrepancies were explicitly stated. Comparing my notes with her, I find many of the same issues, but I have no idea of how to place them, to classify and order them. Which are more or less serious? What to make a point of and what to ignore? I am not part of the auditors' acquired social construction, their calibrated knowhow of absorbed living practiced understanding and opinion on how the art of auditing is to be practiced when it comes to the details. What matters and what not? How and what will make a difference to the client's future performances? Where to draw the line, and how to effectively guide the client in a suitable direction according to the standard, in addition to providing 'added value' to this particular client. How far have they come on their journey of improvement – compared to last time?

I comment on the disagreement. The auditor replies: *"It does not matter. I know I'm right, it's a definite requirement in the standard - and I'm the one who decides!"*

A similar situation of disagreement at another audit culminated in one of the client's employees bursting out*: " Are you making this up? You NEED to find something!? Our previous auditor (*of several and upto two years ago, also from W*) NEVER said anything about this! I'm quite sure. We were doing the exact same thing then!*

It seems to be a relative judgement, where some requirements are explicitly drawn from a conception of the standard, while others seem to have leeway for evaluation by the auditor. Progress and evidence of improvement figuring as proof of quality management in and of itself. The auditor personally has both practical and formal experience to draw on, as well as knowledge of the approaches of similar clients. In spite of this, the client remains the main authority on their own business and activities as well as those of the industry they belong to.

While the auditor assembles her decision and the resources to defend it with, one question remains: Will the auditor's decision stand the scrutiny of the Summation Meeting, and will it carry beyond the day's meeting? Will it secure the motivation of implicated parties to follow up on the implications of that decision, and will the client remain a client of W?

8.3.3 In-/qualculations as organizing moves

In Ch.8.2.3, an uneven distribution of semi-shared understandings and logics were argued amongst those involved in the audit. It was suggested that for each individual and each separate issue, at least one acknowledged understanding, would reside within

the range of 'rarefaction ⇔ qualculation ⇔ proliferation' (Callon and Law 2005). Overall understandings on an issue would be a collection of mutually constituting hybrid elements of all these types. The distribution of this hybrid across audit participants would most likely be irregular. Who agrees, or not, on which argument, for each individual issue remains to be negotiated, actively or indirectly, by those present.

The decision to come out of such negotiations should turn out as a balanced bargain between the respective parties, the interests and capabilities they each represent. The balance relies on achieving mutual understandings for and of each and everyone. Who is central or peripheral on which issues? Each participant needs to be appropriately acknowledged as holder of a role and a capability. Appropriate identities are created and maintained in support of an equifinal level of meaning that supports the decision – firstly, here and now. Rather than use of authority, logic and rationality is used to persuade. Each individual's sensemaking creates a pattern of legitimation within the emergent community. Reflexive agency is achieved through both collective and personal sensemaking processes. Those that appear as legitimate are awarded the voice to be heard (power of discretion), on particular issues. But it is not a formal, or even necessarily a voiced legitimation. It is practiced.

This is reminscent of the negotiation and maintenance of a social order (Garfinkel 1963), which Pentland (Pentland 1992) described as performed through the handling of help desk calls. The evaluation of the type of response a call warranted, effected a distribution of calls amongst the employees which effectively produced an organizing of tasks as well as an emerging organization of employees, which might be different than the formal organization given in a chart. Pentland used the term *organizing moves* to describe the effect of the call handovers in respect to the respective legitimacy or authority of each. Similarly, the acknowledgement of decisional expertise works ut as organizing moves during the audit.

What is in-qualculable for one actor, may however be qualculable for another, depending of the respective capabilities and resources that each command. When someone accepts an issue as an in-qualculation, they in effect give up their own agency on the matter, and support someone else's expertise. That expert someone, who personally saw the same issue as a qualculation, but argued a case of in-qualculation. The drawing of boundaries that define an in-qualculation, also indirectly defines much of its solution. The characteristics of an in-qualculation defines who gets to decide, by way of who has access to the scarce resources for resolving a rarefaction if any exist, or alternatively can handle the excess of a proliferation. **The creation of an in-qualculation is an organizing move, which in its accumulation effects a social order.**

Adler (Adler 2001) proposes that trust may fruitfully be understood as the coordination mechanism of a third ideal-typical mode of organizing, apart from the other two of market/price and hierarchy/authority. Inversely this implies that an effected social organization (Tsoukas 2001) involves an attribution of trust.

Based on their evaluations of others' performances, participants may entrust decision making to that someone, in what is a logical and rational fashion. The final evaluations and decisions of the day grow out of the totality of the day's discourse, which constitutes a local *" .. knowledge society with the characteristic on-going processes of definition in terms of responsibilities, boundaries, and fact construction"* (Scott and Walsham 2005, p. 308).

8.3.4 The auditor's qualculation for agency and trust

It has been ususal to see trust as something that gives agency, and provides latitude for personal discretion. If someone does not trust you with a task, then it is often fair to assume that they lack trust in you, at least in this particular respect. If you trust someone, then you also trust them to act on your behalf. Trust is agency (Shapiro 1987), as a stark way of putting it. There appears however, to be more to the pair of trust and agency than that. Trust, or distrust, can be reflexively created as opposed to earned over time through empirical proof.

Reflxive trust – creating the right to decide via in-qualculation
In the exemplar's case of disagreement, the auditor brings up a concrete and particularly relevant example of something that has happened, to argue her case. A valid logic to which they can all agree: the 'Gel-case'. It would be difficult to argue this example away as in-applicable to the situation. So what is the 'Gel-case', is it an in-qualculation or a qualculation, in the discussion that took place – for who? The issue started out with a discussion on whether the client's present routines on product documentation were in accordance with the standard's requirements – or rather, originally not the standard, but its adequacy in assuring reasonable accord between the actual product and its documentation. Reasonable in this case being a 100% match, as these are dangerous substances. The client express that they have given reasonable attention to this particular issue. In a fact a lot of attention. They have even had a recent process with the pollution authorities, and arrived at an approved procedure. They try to argue that it is a rarefaction of in-qualculability for the auditor, something that belongs to a scope of reason that lies outside the auditor's realm of agency.

But the auditor persists. She sticks with the logics of adequate safety precautions – as in practical and qualculable. When that does not altogether swing it, she brings in the added authority of the standard of which she is the defined authority, at least in present company. When the client is unable to match the auditor on the standard's specific paragraphs, and therefore unable to debate the standard itself, then the standard becomes in-qualculable for the client, - but it remains qualculable for the auditor. Is this stalemate, two opposing claims of in-qualculability? No, while both argue, the balance of decisioning latitude tips in favour of the auditor, since the client's argument is based on a non-present, and unacknowledged ally: the pollution authorities. The auditor does not acknowledge the authorities to rank above the standard, in this case. To clinch it, the auditor brings in the story of the Gel-case. This provides coherent and convincing proof of the reason in the auditor's position, along with alluding that it is a manageable requirement.

Alternatively, we could see the issue as one of proliferation with too many contradicting arguments to indicate any need of change, any need of qualculation. Again, with the Gel-case story – the auditor leads the way out of confusion by identifying a relevant piece of logic. The auditor has asscertained her grasp of reasonable logic, of the standard, of the clients situation - and her right to decide on the issue: "*I have no choice but to put this in my report as a Non-Conformity!"*

Trust

It is difficult to make the GEL-case as argument balance in the direction of an in-qualculation in this context. Common sensemaking is established, at least for the time being, with an example that appeals to rationality along with values, attitudes and emotions that creates trust (Jones and George 1998). A trust that follows from an ability to argue logically, for agency! An attitude for rationality, that has been judged as legitimate. In this case, it seems that trust follows from having created agency. At least this agency is accompanied by trust. Was there enough trust in the auditor, before the arguments were made? Would they have bothered arguing if the auditor was omnipotent, or if they trusted in the auditor's legitimacy to make the correct decision - albeit based on the standard? What extra costs, to client's daily, result from the auditor's decision? In the balancing of interests – client profit against the auditor's professional legitimacy - the agency to make the call, the latitude to decide will always be contested. **Latitude and trust will need to be won, again and again.**

In effect, a reflective trust (Adler 2001) is established during the day's discourse. This *" [r]eflective trust gains authority from the 'rational' (from Weber [(1947)] to Eccles (1985)), but studied (Sabel 1992) and tentative (Barnes 1981) and less on familiarity (tradition & charisma [(Weber 1947)]) or calculation. In effect derived from open dialogue among peers"* (Adler 2001, p.227). Reflective trust is based on a wide spectre of the sources, mechanisms, objects and bases of trust (Adler 2001). In in acknowledgement of its evaluative character and the above discussions, we may propose that the trust discussed here is a qualculated and reflexive trust. And this reflexive trust is not qualculated once and for all. Reflexivity implies that it is contingent and possibly fleeting. The trust won during a single audit visit, has its limits. If the boundaries of the arguments made are later seen to shift, the the overall argument may fall to pieces. Closure is lost, the black box of logics, legitimtion - and won trust, is open for a possible rematch. What was once relevant may cease to be, and trust must be regained.

Final decision - The need for trust in process and actors

From this follows an accepted *division of agency among actors, and equally a division of responsibility has been effected* – for the specific argument at hand, this specific situation. For the overall audit, the question of the final result lies in the totality of all the individual arguments, and all the individual participants, and where the balance falls on agency and trust. Which arguments are adopted, which delegations of authority and trust are adopted, and does it seem reasonable, all questions asked and arguments told? Trust is needed to start the process off. The client does need to have some faith in the auditor, in order to allow the auditor to see how they actually perform their business, the

daily messiness of it all, along with their strategies to manage. A sincere rendition requires an amount of trust to start it off. To make it a real process of evaluation rather than a skindeep exercise of symbolic trust creation – through an in-conscientious issuing of certificates. Rumours of inscincere, unscientific audit practices would be devastating to the value of the certificate. The certificate needs to be more than a symbol; it needs also to have some relative content that makes it trustworthy as a symbol. Symbols do not stand alone – they need to relate to, be embedded in a context that gives them credibility and legitimacy.

There is a challenge for the group as a whole, but in particular for the auditor, in getting the mix of qualculation and in-qualculation right for the various singular actors, but also for the collective as whole. There is interplay here. Arguments that fit the collective sensemaking keep them together as a group and facilitates the collective maintenance of trust. And, unless provoked, *trust is fairly resilient* (Jones and George 1998; Weick 2001).

It may be a delicate balance that has been achieved, especially if disagreements have been voiced. The auditor is often alone in these situations and her allies reside: in her ability to explain and provide commanding stories, along with the little book for reference, and disembedded at other locations in time and space (Giddens 1991) in the shape of - colleagues, W, comptroller, the whole text of the standard, and in the carefully developed phrased non-conformities and requirements in the report written after the audit visit, when there is time to think.

How precarious is this trust? We can argue that the local and situated developed rationality of the day carry weight, but may the black box open if the circumstances of the client or the applied arguments change? Is there much of the previously established trust available, next time round – in a years time?

8.4 A CASE OF COMPREHENSIVE, SITUATED AND LOCAL DM

The immediate concern of an audit is the production of a certificate. But what does it take to assure that the certificate is actually able to fulfil its purpose in the world at large? An assured role for the certificate is a prerequisite for the whole system of certification in the first place. How is the certificate able to perform that which the various parties involved in the intricate scheme of certification and standards, intends the certificate to secure? The certificate itself is after all only a piece of paper and possibly a registration[6]. How is the certificate made to matter? This is a question that not only deals with how and by who, the certificate is used and drawn attention to - after its production. Equally important is how it comes to be produced. As the theory of sensemaking tells us, both the present, the past, as well as expected futures enter into our evaluations when we consider the merits of, for instance a QMS certificate (Weick 1993). Evidence on how the certificate is produced, therefore matters for its future utility. How the certification scheme is talked about by those who have been in touch with it is crucial for its reputation. The trust which future customers will place in a

[6] In some parts of the world, the certification is referred to as a registration.

certificate therefore also depends on a common notion of, and preferably evidence of, its trustworthy acquisition. A successful audit will constitute an instantiation of the audit as system of control and management, a basis for trust between business actors in our modern society. Every accomplished audit perpetuates the Rituals of Verification which is how Power (1997) describes the audit as a system of public governance. Apparently also rituals require substance.

The generic model of organizational DM, which was developed in Ch.3, is shown below as Figure 8.1 *Comprehensive Model* of *Decision Making.* The model illustrates the role of context in the sensemakings that DM constitutes, and its iterative nature. This context is characterized by a legitimate multiplicity of interests.

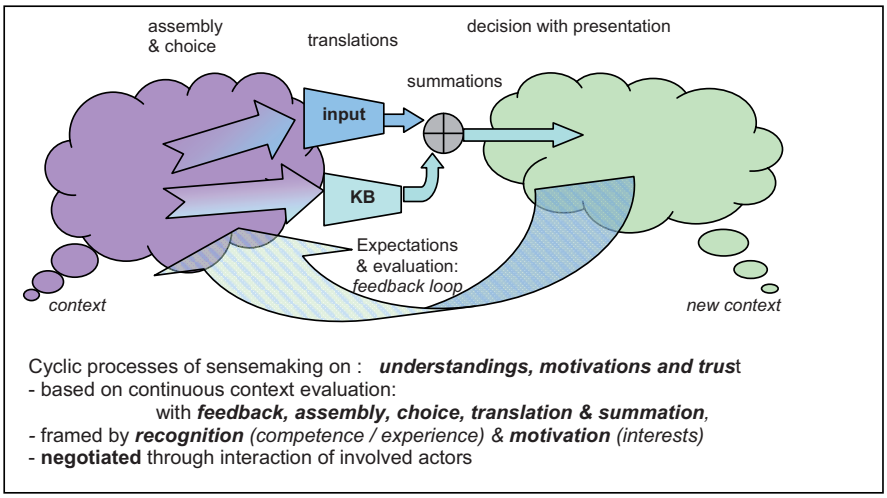

Figure 8.1 Comprehensive model of decision making. *Practical DM is cyclic and iterative sensemaking that establishes the relevant logics and resources with a responsible consideration for the situation at hand.*

By using the comprehensive model of practical DM as a framework, - an overview of the particular context of this onsite audit visit exemplar is elaborated in Table 8.1 *Three phases – towards a notion of mutually acknowledged sense*, in terms of the three sets of interests. The framework is listed as the labels in first column. Each row describes each of the framework's issues in terms of the client, the auditor, and what they have in common. The client is represented with several individuals who have different formal roles within their own organization.

So what is specific to this particular DM process?

- There are 2 main parties, the **auditor** (mostly alone) & **client** (some diversity), and some things that they have **in common**
- The negotiations of sensemaking, involves also the structurally founded difference of interest which must reconcile in part, to something that is equifinal, along with conflicting issues that require a resolved prioritizing
- The broad share of these sensemaking orderings must be resolved within the space of the day's meeting of face-to-face interactions.

DM	IN COMMON	AUDITOR	CLIENT
CONTEXT	Onsite Audit Visit	Knows client	Familiar auditor
Timeline	One day meeting	Single auditor. Present whole day. ½ hour 'timeout' to prepare summation	- *whole meeting :* CEO, QMA, Dept. managers (+/-) - *some time during day :* random employees
Interests	Consensus on audit summation	Integrity in terms of: data gathering & evaluation; Convince client of reasonable and fair assessment; QMS progression and added value to client => client success => retain client	- Certificate with reasonable & manageable terms; - Value for money (certification) & value for QMS effort - Retain familiar / competent / predictable auditor? - Audit as input to internal company discourses?
Frames for recognition during sense-making	Competences, experience; Role & responsibility; Own Interests & motivation, - trust in who/what? - reputation of standard	Engineer practice, Business area experience, Personal Certifications on various standards, Auditing experience, Being accredited reputation / impression of client	Education & business practice; roles ; QM practices, QM audit experience; Reputation of auditing within own business area /industry Reputation / impression of auditor & W
RESOURCES			
Considerations on **FUTURE** (Implicated actors / institutions)	Expectations on: - QMS standard market impacts; - impact of certificate in-/ out of house	Client relationship, Colleagues; Employer W; ISO, IAF, national bodies ..	Customers/suppliers; competitors; market governance Principles
Considerations on **PAST**	Previous audit report; sheets on closed /open findings (NCs) preliminary agenda document	Recent dialogue on audit scope, & client issues/-changes that might affect QMS & audit Client reputation	- Preparations for audit, recent QMS efforts; experience with previous auditors - Past audits; reputation of certification; W reputation; trust in -, reputation, Social capital of Auditor
PRESENT discourse	Discourse & evidence, stories, logics, arguments	This client's presentations & reasoning	Auditors reasoning, explaining, presented resources
Actors' **SENSEMAKING** of each other towards :			
- sense & reason	Mutual understanding of arguments	- improved practice?, - client input satisfactory? - agree with my reasoning ?	- auditor adapting standard appropriately to our industry/-needs ? - do arguments and reasoning make sense?
- motivation	Convincing arguments, in terms of : - specific qualifications (latitude for discretion?	- Are they convinced of my/the standards sense? - Will they respond to audit's findings (NCs)? - agree on me deciding ?	- will doing this improve our business & secure certificate?
- trust	Demonstrate legitimacy, specific qualifications & mutual respect	- client give valid presentation : logical, sincere, verifiable? - agree with my decision ?	- Is auditor competent & able? - auditor as expected/hoped?

Table 8.1 ***Three phases*** *– towards a notion of mutually acknowledged sense*

Three phases – towards an equifinal level of mutually acknowledged sense

How does the day progress, in terms of sensemaking? It is hardly linear, although it is iterative and emergent. And the three topics to make sense of: rationality (immaterial concepts and real life practicalities), along with motivation & trust (social) which are all intertwined in their deliberation.

Figure 8.2 The onsite audit visit – with three phases

There are phases in terms of the social – concerning the motivation and the trust each individual and each organization make of each other during the day. Along with them, their notions of reason also evolve. See Figure 8.2 *The onsite audit visit*. *The first phase* seeks to establish mutual respect amongst equals, albeit with different background, capabilities and interests. In *the second phase* they pool their resources, by presenting and exploring, evaluating, assembling and sorting to build commonly acceptable logics and priorities. By calling on sense and reasonability, the practical and the scientific, a common judgement is achieved on most issues. Where things are lacking according to the auditor, the client may see reason in improvement due to deductions of implications and effort. The evidence and stories effect a motivation that makes them align their opinion. Where the client finds the auditor's suggestion inappropriate, misguided in terms of their setting, the auditor might reconsider based on local circumstances. A common sense of what QMS should mean at this point in time for this client is established. Possibly they agree on everything - but probably not. The *third phase* is where the choices must be made, and the decision finalized. The previous phase should by now have effected an acknowledged distribution of expertise amongst participants. Who has which capabilities, how do they prioritize, and can they be trusted. Through the demonstration of their respective reasoning, and its reasonability, their apparent legitimacy, a trust amongst them has also been established, that allows the decision to be made, despite of, or perhaps even because of, the consequence it will have. Along with it goes the motivation to attend to the consequences. And with accepted motivation and awarded trust - a responsibility is accepted, and its later proof required.

A notion of being a collective may emerge as the collective purpose and shape of the audit's sensemaking towards a collective decision takes hold. They have a common enterprise (Wenger 1998) and move towards becoming a Community of Practice, although **a local and time limited one**. The day's discourse performs a process of repeated internalizing and externalizing of thoughts and experience (Nonaka & Takeuchi, 1995), of pragmatic experience (McCarthy and Wright 2004). A learning and knowledge creation process takes place that involves and commits those present. Does the notion of belonging to this community last beyond the day?

A stable decision?

The boundaries set, and motivations accepted during the day, in order to reach consensus is closed off with the final decision. What remains after the audit visit, apart from the notions and memories of individuals, are a few new material items : the certification decision (most often a yes); its terms, maximum two *nonconformities* (NC's) to be resolved, and possibly some *observations* and *noteworthy efforts* – comments made by the auditor for inspiration and improvement. These are represented in a number of documents:

- An audit report (a few sheets of paper) which sums up the audit in its bare details
- Findings, one sheet for each non-conformity (NC), which describes it carefully, and an boxes that allows a tracking of its follow-up and resolution
- The certificate, or its reaffirmation

The finally produced certificate however is a durable boundary object of abstract trust (Giddens 1991), and it may stand in for the negotiated reflective trust of the process, removing fluidity from the scene – something that has a close resemblance to Latour's concept of the immutable mobile. "Technology is society made durable" (Latour 1987). This boundary object is to assure the client's business partners and customers of their capability in terms of QMS.

If agreement and closure is not reached, or compromised – then the black box stays open, and the alignment of the actor-network of destabilizes, collapses. W may have to pull rank and resort to making a decision in spite of the client's opinions. The relationship will now be a difficult one, and unless other circumstances makes that client stay with QMS and W, then W may soon have one or more clients less.

8.5 "ME AUDIT, YOU JANE – LET'S DANCE!?"

While the certification audit as a concept readily appears to be an inspection of authoritative outside control, like a tick-off exercise, this is not how it proceeds at micro level according to this empirical evidence. The analysis has shown that the auditor seeks to facilitate *mutual sensemaking, for - and of the parties involved.* Through an explorative and hospitable discourse between client and auditor, the 'order of the day' is discussed in a way that defines sense, legitimation (emergent and distributed discretion/authority), motivation and trust. All this is inextricably linked to an audit conclusion that those involved find reasonable and feasible to live with. Equifinal levels of shared meaning are sought, in order to reduce *the amount of incompatible issues (i.e. a 'forcible' translation of interests) that require choice, prioritizing and latitude to decide.* If this is achieved, there are grounds for securing both the reaffirmation of the certificate, a commitment to QMS, and the future relationship of client and W.

However, the onsite audit visit's negotiated outcomes are local and possibly limited in their reach. What it takes to maintain the 'order of the day' will be explored in the following chapters.

9 AVOIDING LOOSE ENDS – WHEN W HARMONIZES THE AUDIT CYCLE

About this chapter

For organized and cooperative activity to take place there must be an ongoing, shared and practiced understanding amongst participants, according to CoP theory. However, there are both practical and 'political' limitations to the sharing possible. Chapter 4 *How much Sharing?* developed a modified view: ongoing action needs enough sharing - in that ongoing action requires a sharing *that reaches and stays at a level of equifinality* (Donnellon, Gray et al. 1986). It sounds simple, but how much is enough shared practice and understanding? What kinds of articulation work does it rely on? These are questions that require empirical answers as organizations, their partners and the circumstances under which they collaborate will vary. What does maintaining equifinal shared meaning entail for W, its auditors and clients, as the audit cycle runs it's course? This chapter *displays and analyses the auditors' efforts to maintain equifinality* as they become visible when the circumstances of the certification practice changes due to top-down measures.

The former practices of W's auditors with its support systems and routines, although they admit some weak spots, were fairly well domesticated and adjusted to the auditors' local needs. Though some elements have become standardized over the years, even compulsory, they are seen as natural and sensible rather than something that might pose undue restraint. However, over the past two years W has been introducing changes to both routines and systems, and even more comprehensive change is underway. The centralization of the Marketing and Scheduling tasks came first, rearranging responsibility for some parts of the audit cycle, but not really changing the process as such. Secondly, local implementation of the new global wide workflow system Ω, which began abroad almost two years ago, is now being prepared. However, halfway into its local introduction Ω is suddenly put on temporary hold, leaving the expectant auditors somewhat disappointed. It is halted for technical and strategic improvements. A few months later, with the Ω introduction still in limbo, the auditors are surprised to learn that W will shortly be launching **a redesigned brand of certification: *ABC***. ABC does not rely on Ω and at first glance ABC appears obvious and sensible, even modest and innocent.

In order to collaborate, or help each other out, a systematic approach is in every auditor's interest. They use templates, mainly in the shape of electronic text documents, to guide documentation, communication and process. In many ways they are the essence of the certification process, the framework of it all. To the extent that templates themselves, or the order of tasks they delineate, sometimes become inappropriate, each auditor takes it upon herself to make prudent adjustments. After all, they are the experts and the templates, although now standardized at a national level, are of their own making. They are thought of, and treated, as helpful tools available for use as they see fit. They have participated in their creation and may initiate and suggest improvements to the auditor with the appointed role as *system manager.* Some do this more actively

than others. W's harmonization strategies, lately topped by W's global wide ***ABC*** initiative **-** with new templates, is about to affect their local autonomy and influence – as well as their relations with their clients.

Due to process changes, the professional negotiations and judgement, that mainly used to take place at the onsite audit visit, now also stretch into, or are affected by, the ***pre-audit preparations*** and the ***post-audit follow-up.*** This second chapter therefore ***broadens the scope to the entire audit cycle***, which usually covers a year. Stepwise, the cycle's phases are in turn unravelled, aiming to identify the auditors' efforts to maintain durable certification practices, as W's harmonization schemes are put in motion.

Research Question:
How is top down standardization of certification appropriated by certification auditors?

Based on observations and interviews, the overall experience of some auditors, including feedback from their clients, is displayed and analysed as the reorganizing centralizations and the new ABC perspective run their course. I seek to identify how the various harmonization elements, which rearrange the timelines of interaction, affect the relations between the auditor and other central actors, and subsequently the climate for equifinal meaning-making – towards client representatives and W colleagues. Figure 9.1 shows a rough timeline of the systemising efforts that take place.

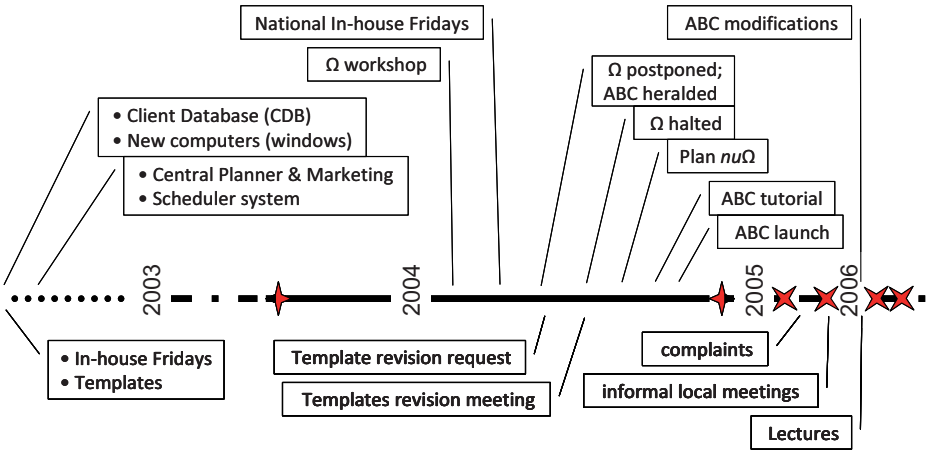

Figure 9.1 Rough timeline of systemising efforts *– from top and bottom*

To recapitulate the content of the harmonizing changes introduced see Table 9.1 on the next page – a copy of Table 2.3 *Three elements of harmonization introduced in three steps.* See the last pages of PART II for the detailed rendition of the events of the case.

Elements of W harmonization:	Step 1: Scheduling *(nationally, but Ω related)*	Step 2: Marketing *(nationally, but Ω related)*	Step 3: ABC *(globally, partly instead of, or in addition to Ω)*
Altered division of labour	Centralization of auditor task	Centralization of auditor task	Decentralization to client; Centralization to artefacts
Standardization of certification features	Domestication (/harmonization) of audit appointment-making	Outline contracts for sizeable clients	Focus Hazard to be defined by client
IS applications & templates	planners: Scheduler all: e-mail, calendar & laptop	new users of CDB	10 new templates: in powerpoint, word & excel; Electronic interaction with client

Table 9.1 Three elements of harmonization introduced in three steps.

9.1 PRE-AUDIT PREPARATIONS

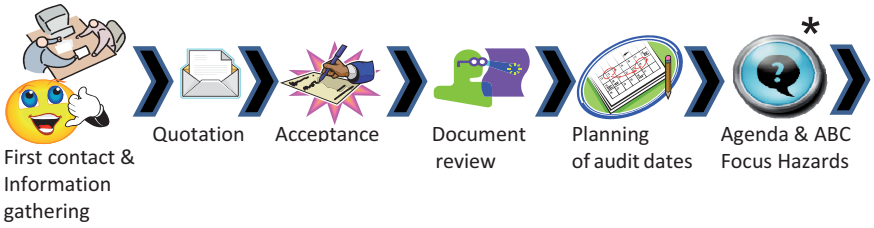

Figure 9.2 The pre-audit process with its original tasks plus the new (*) ABC task of defining the Focus hazards for the upcoming audit.

The preparation phase of the audit cycle has changed in both content and the number of W actors involved. As described in Ch.2.5.1 *New actors and centralization,* both the scheduling and contracting related tasks are now the particular responsibilities of the new Scheduler and revised Marketing groups respectively. The new focus and status of these tasks implies also that the client organization is being approached in a new way.

9.1.1 Specialization

With this new division of labour, new roles have been created in W which in turn gives new status to both contracting issues and the planning of the audit cycle. As several people become involved in the W-client interaction, in both organizations, the opportunity for more and overall closer relations is there. By proposing more comprehensive contracts Marketing aims to address a higher level of the client organization, typically top management and the Company Executive Officer (CEO) in addition to the, or each, Quality Manager (QMA) at individual plants or companies. Additionally, designated schedulers should allow for a more timely response to client requests than the busy, travelling auditors might be able to provide. W seeks to provide a more cost-efficient quality service by making these tasks specialized.

There are however more implications for the auditor's work than that of being spared some of the preparatory tasks. While avoiding - or missing out on, some of the interaction with her client, the auditor now needs to relate to both Scheduling and

Marketing to keep on top of things. On the other hand, the ABC Hazard Focus that now has followed the reorganization has a contrary effect as she now also needs to secure the client's decision on which Hazards the coming audit should focus on. This means that there is a new extra topic for the auditor-client dialogue. The following gives examples of how the harmonization efforts play out for the pre-audit preparations.

Centralization - Marketing revises client contracts

The marketing department has been taking over part of the W-client dialogue for some time now, as described in Ch.2.5 *New actors and centralization.* Contracting has become more specialized and professional by addressing mother companies with outline agreements, volume discounts and packaging of additional standards.

However, once established, these far reaching contracts sometimes catch the individual auditors unawares as they find no indication in the Client database (CDB) client folder that Marketing have had dealings directly or indirectly with their old client. Probably, neither Marketing nor their client's head offices have a comprehensive overview of all implicated locations and subsidiaries when new outline agreements are reached. So slip-ups are to be expected. It is difficult to inform all those in charge of numerous and presently distributed and local contracts. They know neither which auditors to inform nor which client folders in the CDB to address.

The client however, will probably expect that W's various representatives know what the others have been doing, and are 'keeping house' properly. The auditor feels awkward upon finding out, perhaps halfway through preparing for the next onsite audit, that the conditions for the audit have changed in terms of fee and time to be spent, or which sites and standards are to be involved at different stages of an overall certification scheme. After such an experience, **the auditors learn to check more diligently for signs that marketing have been involved with their client**.

From the CEO/client's perspective the new experience also depends on what they were used to from earlier certification audits. The specialised attention awarded the company/CEO by separating contracting from auditing may imply an increased degree of professionalism and status for each of them, and for W as a whole. In turn this new status may be perceived to 'rub off' on those that W interacts with, client companies – and their employees. Better terms and more attention could imply that they now represent a more valuable kind of client which demonstrates a kind of affinity and commitment on W's part that should be natural for a CEO to reciprocate by staying on as a client. Also, **expectations are created, by Marketing's representatives, towards the auditors' performances as experts dedicated solely to QMS**, in contrast to Marketing's own expertise and concerns.

However, the revised contracts may also hold practical implications in that later attention from the **auditors might have to be shared in new ways amongst client sites** and representatives. A common frustration when new actors representing an organization take over for former actors is the need to repeat what has already been conveyed to others. If the separate parts of W's organization address different parts of the client organization there will also be a need for the client to coordinate themselves.

This has for instance been described as a frustration for hospital patients who need to repeat their story to numerous doctors and nurses. Evidence of such coordination arrives when an auditor had news of a slightly surprising new contract with a present client's sister company in a neighbouring country. Following a signed outline agreement the client has requested that she, rather than their previous auditor at their local W office, should perform the audit since they want a *"comparable approach across plants"* [related to have happened a few years ago by auditor, 2006].

Centralized scheduling

With increasing numbers of busy clients, multiple standards and extra specialist auditors to be involved, the scale of coordinating time, place, standards and participation became significant for the auditors. Early 2002, this task was centralized to a scheduling planner at head office, relieving the auditors. Some are happy about it, others less so – as a comment from a long time auditor illustrates: *"There has never been so much rescheduling as since this was centralized. I keep having to make changes in my diary. I feel it does not look good to the customers"* [auditor, Sep. 2004]. Possibly the feeling of commitment towards the initial appointment is less when the dialogue is decoupled from the implicated actors. On the other hand, the planner may also broker connection on behalf of the auditor and as such effect a sense of attention, mutually or one way, even if interaction of client/QMA-auditor is decoupled. Such decoupled but brokered attention will need to be affirmed with affinity and commitment by those in question when they do personally interact.

The scope of the planner's tasks has been continuously increasing since their introduction into the organization two years ago. Not being auditors themselves, it has been a learning process. *"It took some time for me get the picture. .. Now, I know which specialists to include in the schedule, even while I'm still on the phone with the client. And seeing as I know most of their schedules, I often know who may be available, even before I check their calendar. .. At the beginning some of the auditors were not too happy, but I feel it has improved. When it comes to the specifics of the various standards, I transfer the client over to the auditor – or arrange for the client to be contacted by the auditor"* [planner, sep. 2003]. As experience grows with this decoupling arrangement, the auditors and planners have worked out amongst themselves, on an individual basis, how to take advantage of or live with the arrangement. The planners have accumulated a conception of the individual circumstances of the separate auditors - not only their calendar, but also their preferences in terms of travelling, weekdays, numbers of days 'on the road', who they prefer to collaborate with if they need specialist assistance, which issues they prefer to discuss directly with the QMA, etc.. **The planner actively brokers connection, sometimes in all dimensions.**

While the planner's brokering efforts for connection between auditor and client may be of minor significance in a professional setting, their efforts nevertheless rely on the nature of the **auditor's own relationship and connection with the planner.** Is the planner, and auditor, interested in having the planner **broker and facilitate connection** beyond the **attention given by making appointments**? Well known examples of connection mediators are switchboard workers, secretaries and personal assistants.

To facilitate this scheduling they all have to keep their electronic diary up to speed. Their availability is documented in the system. The planners, by 2004 increased to two people, manually update the Scheduler application connected to the client database (CDB), along with all the individual calendars of the involved auditors. The Scheduler application caters for reports on booking and production, and allows W management to keep up on overall production without disturbing or attracting attention. Both systems and planners contribute to a decoupling of connection between the auditors themselves, their management's scrutiny and the clients of the upcoming audits, while a filtered notion of availability is maintained. The planners with their Scheduler system and calendars act as a boundary object, letting everyone around it get on with their separate activities, but also severing the mutual knowledge of other's specific attention. Although they try to stay out of professional considerations, the planners do participate in the allocation of resources, indirectly prioritizing which auditors assist the lead auditor with a given client, possibly also assigning another auditor (after debate), and negotiating how much time each auditor uses on each contract and site. At the times of the year that are really busy, like late autumn or in front of the summer holidays, a certain amount of adjustment is needed, especially with the more complex contracts where different locations and specialities are involved. *"You do this one for him, and he'll do the other one for you"* [planner on the phone to auditor, Sep.2004]. In the interest of keeping everybody happy, the clients, W's marketing & management and the different auditors are all discussing and parlaying, via the planner, to accommodate everyone.

Either way, **centralization essentially removed a routine opportunity for connection between auditor and client**. As the planner's comment shows, the auditors do not lightly let go of this part of their client interaction. Several say that they at least email the agenda for comments some time before the agreed audit date, which could be seen as the auditors **going beyond their call of duty.** In this way they may also discover if there are mismatches between their own and the clients' understanding of their current contract. However, the ABC introduction with its hazard focus has, two years after centralization began, now re-introduced a direct auditor-client dialogue before the onsite audit.

9.1.2 The new Hazard dimension

The new Hazard focus included in the ABC audit introduces a need for extra interaction between client and auditor. The client is to choose their own focus topics which are appropriate for their current business challenges. This however warrants a close discussion between the client's QMA and auditor to pick and phrase them. "*Of course it'll take some time to figure out – together with the client, what are suitable hazard areas to focus on – to phrase them on such a level that it is specific enough to be able to evaluate and focus on. If the topic is too broad, then it becomes a futile exercise"* [ABC tutor, in-house course on ABC, Sep.2004]. The choosing of focus hazards implies a need for professional interaction between auditor and QMA some time before the audit and the preparation of its agenda.

ABC focuses on client's hazards

To differentiate themselves from their competitors, W needs to supply its own brand of service - better service than that of the next certification provider. Their new ABC focus aims to enhance value for the client, by directing attention intentionally and specifically towards the *clients' particular hazards.* The client is invited to pick out part of the upcoming audit's focus by identifying the hazards of their own operation, which they feel it important to work on. This new and global certification focus angle with the issues that clients pick is dubbed 'focus hazards' in this text. W aims to maintain and enhance its position as providers of real and added value to their clients. Added value is a concept that is present in both IAF & ISO guidelines on certification (ISO&IAF 2004). The hazards will receive particular attention during the audit, with a particular mention in the new audit report. To the client at least, the focus hazard approach is meant to provide a more individual touch than before. For the auditor's part, the service should be as before except from a better way to communicate what kind of service they are actually providing. Originally audits would focus in turn on the client's main processes, identified through a dialogue with the client. According to W management, both the new and the old QMS approach should, directly or indirectly, arrive at a scrutiny of the same issues with the same findings. Maybe the audit visit will feel less like a surprise test when focus is defined up front?

This tailoring however, introduces, or rather elevates, a familiar and relevant but formerly secondary issue to a new place in the sensemaking arena of the QMS audit. The word hazard is not just a word. It is a concept with wider connotations which implies a new logical abstract perspective for QMS. It is an idea which needs to be translated/transformed into some material and practical form that makes sense to the client, and in particular for their QMA (Czarniawska and Joerges 1996). It is almost like turning inside out the previous argumentation of cause, means, results and risk in QMS terms. The hazard concept requires new frames of understanding and equifinal meaning to be established. Its introduction requires that the clients understand what it is about - and that the auditors can comfortably explain what is about - in the particular instance of this particular audit and client business. Not only must the choice of topics be negotiated beforehand. During the audit visit, the new concept must be grounded in terms of both client and QMS in general. The hazard concept requires the establishment of common language and arguments that enable the translation or transformation of the new concept between different realms of common ground (Carlile 2004) in order to establish new equifinal meaning. **The hazard focus introduces both semantic and pragmatic boundaries to be crossed between the various participants of both client and auditor.**

The initial reaction from the auditors was one of pleased surprise. *"This will make us [all] work in the same way and the client will easily recognize our work. It revamps our brand. .. And it isn't really anything new. We've always focused on the clients' hazards. But of course we will talk a bit differently with the client"* [auditor prior to launch, sep.2004].

As part of the introduction scheme, time is spent discussing what kinds of topics should figure as focus areas. While clients should pick them, the auditor needs to phrase them

for the agenda, evaluate and negotiate on them during the audit, and phrase them for the summation and report. **They must have a suitable level of complexity and scope to be doable within the audit timeframe**. W aims to get closer to their clients and their particular challenges. In short: to be even better and more relevant at certification auditing, than they used to be, and provide clients with additional, individual and recognizable value for money. During the in-house course where ABC is presented to the auditors, management through the local management and the course tutor, clearly instructs that the new ABC is not to cost more, for the client, than the original way of doing certification. *"This is actually what we have been doing all along, just a new way of presenting it to the client. So it should not take us longer time or cost more. And once you've got the hang of the new template, it'll be easy, because it's all there. The phrases that you use most often are there – the same ones worldwide.* [ABC tutor, Sep.2004]. The effort of bridging the semantic and pragmatic boundaries, between people with different or lacking conceptions of hazards and risk, is clearly underestimated by W management, at least in their presentation of the ABC strategy.

.. and in practice?

One and a half years later, a relatively young auditor tells me: *"I find ABC to be time consuming. I now need more time to prepare the audit, because I need the client to decide on which hazards are present, and which to focus on during the certification. I also need time to update myself professionally on these specific topics as they get more attention and require more of my performance"* [auditor, June 2006].

During a coffee brake yet a few months earlier, a senior auditor told me she had just made an appointment with a professor to give them a talk on logistics. The monthly in-house meetings, where all the auditors are to meet up at the main office, is being revitalized by inviting experts to give lectures on topics that the auditors find to be of importance for their own performance. Previously some of the more experienced auditors saw little point in shifting around their schedules in order to make it to all of their in-house gatherings. There was more hassle than gain to be had by attending every time, one of them confided, especially when it involved after hours travelling on a Friday and the agenda wasn't all that rewarding. Attendance now appears to be increasing.

9.2 ONSITE AUDIT VISIT

Figure 9.3 ***The onsite audit visit process with its original tasks,*** *including the new (*) ABC task targeting management with a short Focus hazards summation*

9.2.1 New templates alter the summation

In terms of the onsite audit visit, the previous chapter showed that the initial phase of the audit visit was concerned with 'setting the stage' and achieving a good social climate between those present. Time honoured conceptions of good manners with shaking of hands, exchanging personal small-talk, identifying who is missing and so on. In short, demonstrating that one acknowledges and remembers those involved as individuals in addition to their roles in representing the client organization. Connection may be established between participants, as does any conversation between parties, to the extent that particular individuals are identified.

ABC does not appear to have particular influence on the introductory phase of the onsite audit except to explicitly signal in the agenda that the **presence of top management is assumed and expected**. Although the auditors say it has always been W practice in this country to request management's participation, W and the ABC designers apparently find it warranted to make an issue of their continued participation. Management is specifically addressed both in the opening and closing meetings of the agenda and report templates. The old report template strictly dealt with the facts of the audit evaluation.

The design of the new **ABC template for the summation meeting** encourages **wall projection** of the audit report. Previously performed only orally, an explicit and vivid visual display serves to capture close attention by those present, including the CEO, augmenting the usual oral presentation. See Figures 9.4 & 9.5 which shows respectively the agenda for the summation meeting, along with a comparable illustration of the symbolic feedback on the evaluation of each focus hazard (layout altered for anonymity purposes). The symbolic and instructive approach seeks to lower the threshold for understanding, as well as simplifying the hazard status report.

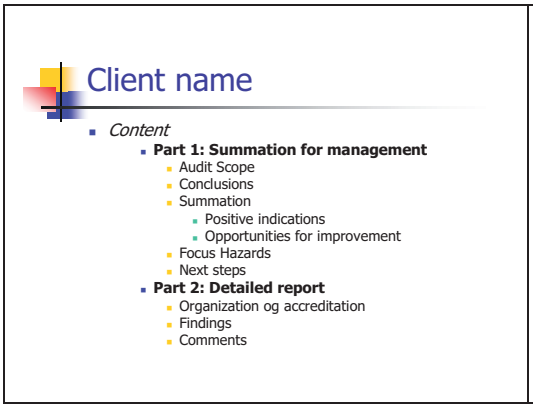

Figure 9.4. Second page of ABC audit report, designed for on the wall projection. *(Phrasing and design are altered here for anonymity purposes)*

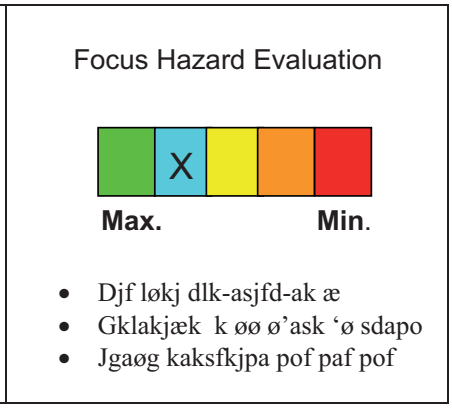

Figure 9.5. Focus Hazard Evaluation. *The overall impression on a single focus hazard is given on a colour scale ranging from Green = Maximum to Red=Minimum.*

The slide of the Table of Content in the summation template (Fig.9.4) identifies: **Part 1: Management Summation which** effectively prompts the mutual attention of auditor and management towards each other. Starting off with delineating the limitations of the audit, the overall conclusion of the certification is given. This is followed by a short summation in two parts: one page dedicated to **positive feedback**, – something that many auditors say they always did when verbally presenting their summation, but usually not in writing. This is followed by **Opportunities for improvement**.
Then comes the results on the client's chosen Focus hazards, which are visualized with one **colour code bar for each hazard topic** (Fig.9.5). This is an intuitive, speedy and efficient way of reporting the auditor's overall impression. The colour code score is accompanied by **a few lines of text**.

The report template's **Part 2: Detailed report** gives a thorough and detailed summary of the conditions for the audit, the findings in terms of non conformities (NC's) that need remedy, and finally comments in the form of observations or noteworthy efforts. All these details will later be entered into the spreadsheet log of the tenth template. The **spreadsheet** for W-client follow-up reporting and coordination is to be co-authored, in the **post-audit phase**. The second part of the summation report goes into greater depth and is aimed to be more sombre, with detailed and rationality supported arguments, conclusion and terms. The upfront summation in Part 1 will also allow busy executives to leave the meeting before this part, but maybe some are moved to stay so that W may prove its mettle to a broader audience? This part aims at those more practically implicated by specific terms and conclusions, as with the former report template, and in closer position to evaluate the particulars of the auditor's conclusions in terms of the organization's practical operations.

9.3 POST-AUDIT PHASE

Figure 9.6 ***The post-audit process with its original tasks,*** *including the new (*) ABC spreadsheet for co-authoring the audit follow-up*

9.3.1 Co-authored follow-up coordination

Separate free text items ⇔ structured accumulation

The tenth template is an excel spreadsheet, intended for client interaction and the follow-up of Non-Conformities (NC). The findings, called NCs, must be dealt with by the client and reported to the auditor for approval, in order for them to receive or keep their certificate. Instead of the previous exchange of text documents – often with the final one a signed printed sheet sent by surface mail, the client is now to report by typing directly into the spreadsheet and sending it by e-mail. The spreadsheet feels enormous – and from the outset the auditors are worried. It has from A to R columns, see Figure 9.7 *Findings Log spreadsheet.* There is one row for each finding, where each

column subsequently describes all data relevant to the NC such as: the paragraph classification from the standard in question, a textual description, the auditor that authored it, audit type etc. There are also columns for the follow up, measures, cause and response, and tick-offs for tracking progress. The file is sent by e-mail and constitutes one common coordination log for all of the client's audits. Over time the document will hold the history of consecutive audits. As the clients actions towards an NC is approved by the auditor – she ticks it off – and it automatically moves to a sheet behind the front page, labelled: 'History'.

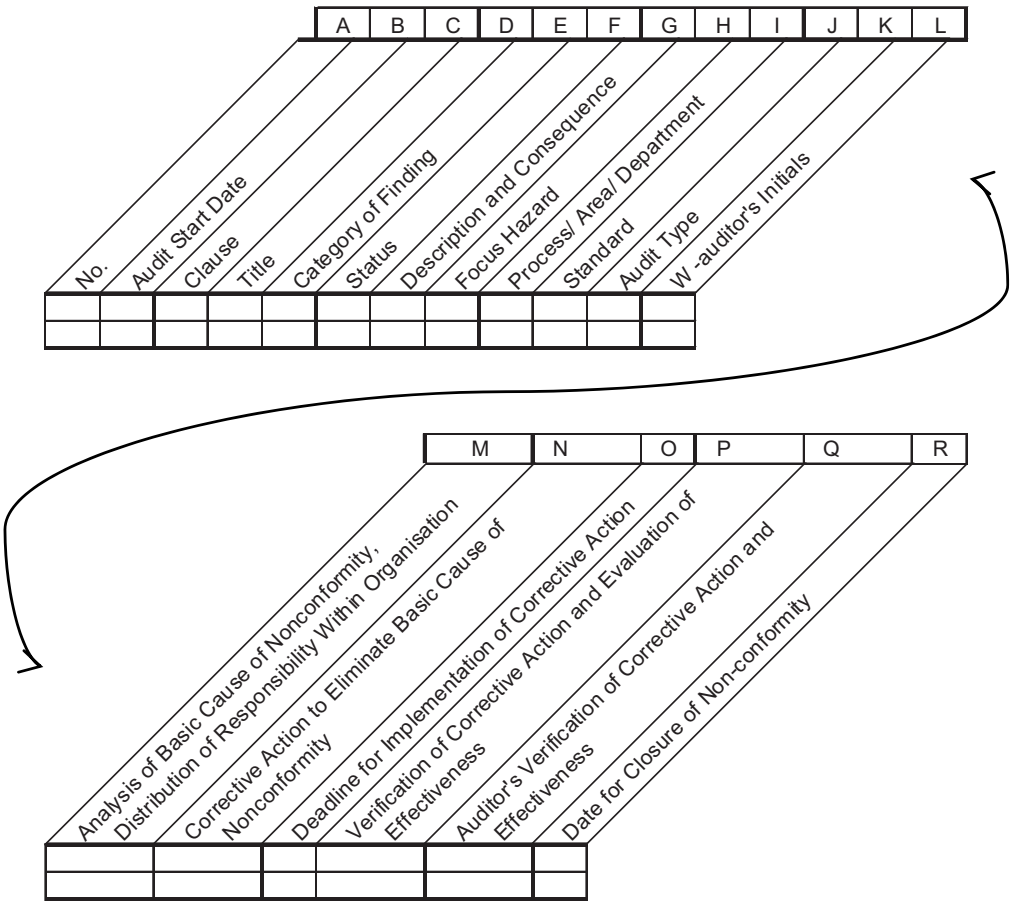

Figure 9.7 Findings Log spreadsheet with the labels of the A-R columns. *M-R are for post inspection follow-up coordination. The layout is edited for anonymity purposes. There are some drop-down menus for relevant values. One row per one single finding or observation. The file accumulates findings of all consecutive audits.*

But not all findings will be closed. The auditors in this country have a long tradition of also giving the client feedback in the shape of Observations and Noteworthy efforts.

W's IT department discovered that **practices are somewhat different in this country** compared to many of the other countries where they worked with the Ω system launch. Comments at a local presentation of Ω, feb.2004, went as follows: IT-guy/Tutor: *"But the ISO 9000 standard says to use these categories!"* Auditor: *"Yes, but the ISO 9000 standard also says that it is optional to also make notes on Observations, and Noteworthy Efforts* [, although these categories do not influence the actual certification decision at the particular audit]. *We have found it useful in the client dialogue to use these, - but where do we enter them in Ω?"* The same issue pops up half a year later, in the new templates, because Observations do not require closing in terms of a certificate – so they remain on the front page. *"That's ok for the first audit, but what about the second, and the third etc.? – they'll remain there on the first page, taking up space!"* Observer: *"But can't you close them anyway?" "No, because they've nothing to do together with closed NC's either* [auditor, april 2006]."

.. and in practice?

Half a year after the templates' introduction another auditor tells me: "*This is a mixed blessing."* Some clients are not used to excel, or Microsoft, and a few are not even used to computers. *"So I have to help them, and instruct them on how to write in excel, or how to install it. Sometimes I have to type into the sheet for them. They send me an e-mail with text, or we talk on the phone, and I type it."* Others question the phrasing in the column labels. *"I have never - ever - experienced so much input from clients on phrasing – they make suggestions to me!"*[W auditor & system manager, May 2005]. Some also find the cells in excel too small and **cumbersome for writing their usually carefully phrased sentences**. They comfort themselves that in the future the client is probably going to do this reporting on the web, and not in this spreadsheet.

Cleans slates, or an accumulated past that intrudes on present sensemaking?

The structured character of the new log provides openness. The results of previous audits are readily available, whether the actors in terms of individual auditors and client representatives change or not. The previous follow-up system of free text single NC paper sheets, which would accompany the old report, would require leafing through and reading quite a lot if an overview was wanted at a later date.

By bringing history, unavoidably into the picture of the current audits' visible result – new elements of accountability are introduced. Law and Callon (Callon and Law 2005) claim that accountability destroys trust, at least the blind kind. The reflexive kind of trust (Adler 2001) may be less vulnerable, as it is partly calculated and strengthened by the long networks of institutionalized practices (Latour 1992), frequent interaction and mutual gains. Imagine if the log were to show the same results, or deteriorating results, year after year? How would that influence their attitudes towards the client and the upcoming audit? Some auditors look at their papers from previous audits on the client, before taking on the next. Others say they only check the last report, and take it from there.

What of the client, how will they reflect on the log, some years into the future? How will facing previous audits influence their motivation to continue with certification audits of their QMS practices? An example of a group of marginal clients is

Kindergartens, who flocked to W one year, many only to leave the next. They subscribed following a special deal for playground certification at special member prices. A large number of them proved to be satisfied to do it the once, as the cost versus further gains proved prohibitive to their tight economy [ref. interviews with board member and manager of local kindergarten, 2005]. Although this incident took place before ABC was introduced, it demonstrates that not all clients find continued QMS certification to be to their advantage.

The spreadsheets perspective of complete accountability of NC coordination may introduce tensions to the relationship and the feelings of connection between auditor and QMA. Sometimes clean slates and second chances could be more productive both in terms of relationships and learning journeys of quality management. On the other hand, learning from history should not be underestimated if improved quality is the main and only goal. Accumulated accounting may warrant to client management that efforts are needed for QMS, in the shape of resources, attention and capability. W suplies conscientious and enduring input to this end. While the spreadsheet allows for electronic communication when the client has become comfortable with the technology, concepts and forms, it also changes the circumstances of the post-audit follow up in terms of a social order, at least temporarily. The separation between actors as in who holds and uses which capabilities no longer follows clear boundaries. While the distribution of authority could be a relatively fluid and pragmatic issue during the audit negotiations, it would be wrapped up in the summation when the auditor made her final decision. The joint authoring of the log opens for new negotiations on both QMS and social orders - as in who performs which tasks and decides phrasing of the follow-up activity. The auditor is still in charge of giving the final OK, but who is in charge of the overall content of the log and its inherent cumulative accountability? Will future audit negotiations also involve the phrasings in the log from the previous audit - or QMS in and of itself from hereon?

9.4 DISCUSSION - EFFECTS OF THE HARMONIZING EFFORTS

The overall effect of strategies of both standardization and reorganization of work has been under debate for a long time. Ever since production lines and division of labour were introduced, consequences for production as well as for employees have been questioned (Braverman 1974).

Similarly, the systematic use of IS in order to improve efficiency and quality in organizational activities has proven to have varying effects on different organizations depending largely on local issues. One insight gained has been that any change has socio-technical implications even if the original effort was merely technical, or merely organizational. Research on informational infrastructures suggests that any change has its repercussions in that a change in systems and order in one location simply rearranges order-disorder in a way that makes disorder appear at a new site. If it requires effort to alleviate disorder, then disorder is probably something we do not want as the circumstances of work and production. However, if the new disorder lands in a site that does not matter to those involved, then the rearrangement may be a success. Maybe disorder is temporary, and will sort it self out?

The work of certification is not readily comparable to that of mechanical production. It involves knowledge based work within a service relationship, implying both mental and emotional labour in addition to more practical tasks. As such there are at least three main parties involved, who hold different perspectives and interests – at least partially: The company W providing the service, the client to be audited – and the W employee auditor.

A good relationship between client and W is a vital element of certification auditing with its discourses of negotiation. And a relationship in such a knowledge and rationality based context needs a reflective trust (Adler 2001) that stems from personal relations, shared rationalities ad structuralising elements. Intense attention and frequent contact (Granovetter 1985) with good communication that may effect *connection* (Nardi 2005) and *equifinal meanings* (Donnellon, Gray et al. 1986) is essential for maintenance of this reflective trust. For good communication to take place and continue to take place, participants must feel connected to each other, hopefully before and during the audit visit, but also after the auditor has left the premises. Good communication is necessary in the follow-up phase in spite of the particular outcomes of the latest audit visit negotiations and judgement. These outcomes have practical implications for the future activities of both auditor and client, including their interaction. The outcomes not only define the terms of the certificate but also infer the social orders which organize future responsibilities and discretion amongst participants. The qualities of communication implicate not only the equifinal understandings that were collectively established during the audit visit, the middle ground and its reasoning, but also how the relationship, with its QMS motivation, will proceed during the follow-up phase, and even into the next audit cycle.

To see how the client/W relationship is affected by W's harmonization efforts, the involved actors' threads of experience over time (McCarthy and Wright 2004) will be analyzed as the interaction reaches over the separate parts of the audit cycle.

9.4.1 Who interacts when, in the revised audit cycle?

The ability to reach and maintain an equifinal level of middle ground on what QMS means in this instance for this particular client implies looking directly at the central actors and what the harmonization changes imply for them. Where are there opportunities for interaction between client and W during the revised audit process that allows for building and maintaining reflective trust, including equifinal meaning? We need to separate between the various actors and recognize the individuals and the personal interaction (Larson 1992; Schultze and Orlikowski 2004), rather than seeing the W-client interaction as the dealings of composite entities. How do the changes affect their **individual experience** of the interaction across the length of the audit cycle? How does their communication fare?

The clients' main representatives are the Quality Assurance Manager (QMA) or a similar role, various department or project/process managers, and top management representatives such as the Corporate Executive Officer (CEO). On W's part it mainly used to be the auditors. As the Comptroller and various back office employees would ordinarily have little effect on the audit climate they are ignored in the following. Due to

centralization, the Scheduling Planner and Marketing representatives now also interact with the client - and with the auditor. In terms of the audit's climate the experiences of the three actors: auditor, client QMA and client CEO are central.

Figure 9.8 *Changes to interaction timelines* shows the audit process tasks in a **complete audit cycle** and illustrates the main tasks where opportunities for interaction are present for the **auditor** and the client **CEO** and **QMA** respectively, **before** and **after** the harmonization efforts are implemented.

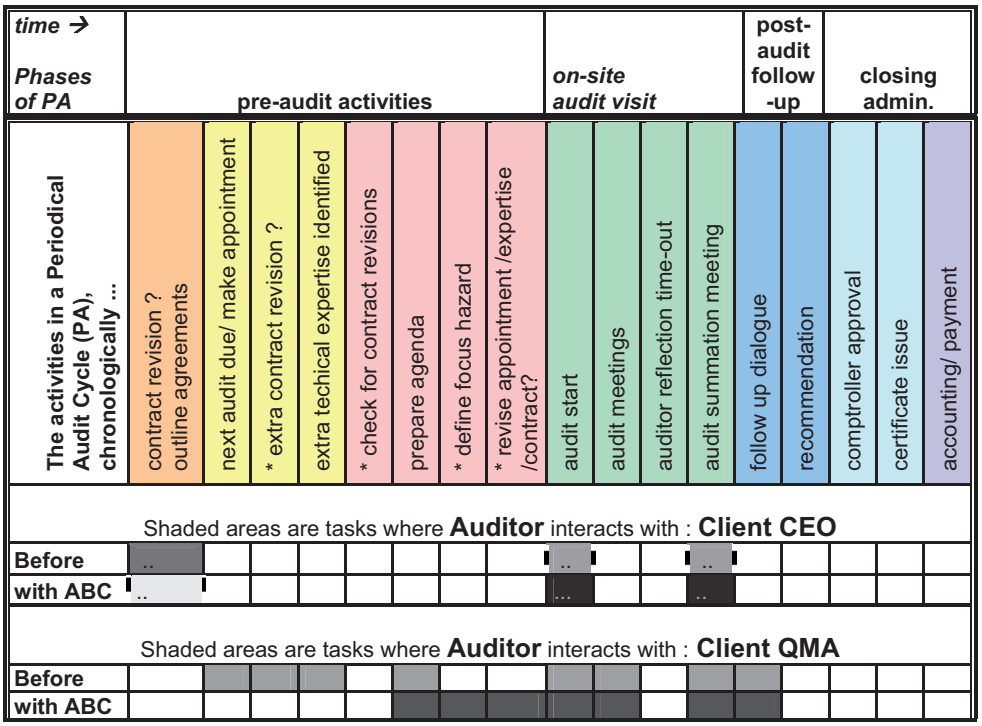

Figure 9.8 Changes to interaction timelines for the dyad auditor-CEO and auditor-QMA, before and after harmonizations.

The diagram assumes that the CEO also previously took part in the audit visit's opening and summation meeting, as they did in the audit visits I observed. There is reason to believe that the former involvement of the client's top management in the audit varies with companies' size and possibly cultures across the world. The template for the new ABC summation meeting divides the summation into two separate parts, explicitly addressing management in the first half. This suggests that W seeks to focus, signal and reinforce a mutual interest in a dialogue between W and client management. It is assumed that the involvement of the client in this country is not substantially altered due to ABC. Maybe it might counteract a future CEO indifference to audit certification.

The harmonization steps thus lead to reduced interaction between auditor and CEO, both in number, duration and content. On the other hand, the increase in number of interpersonal relationships through Marketing and Scheduling should be beneficial to business (Larson 1992). In terms of the QMA, the auditor's time of interaction first decreases with the first two steps, but later increases both in number and content when the third step, the ABC-regime, is put in motion. The following analysis will discuss the changes to the respective interactions of the two dyads: Auditor ⇔ CEO and Auditor ⇔ QMA. Traces, within the auditors' work of consensus seeking negotiations, will be sought of both efforts towards finding *equifinal ground* and the three dimensions of *connection*: *attention, affinity* and *commitment*.

9.4.2 Interaction: Auditor - Client CEO

As Figure 9.8 shows, the relationship between CEO and auditor does not figure prominently in the audit cycle in terms of time spent. Three short, almost intermission like dealings take place, before ABC is introduced. These dealings are shown as dark or shaded squares. Due to their separation, each of these three interactions require connection to be sought and reaffirmed, again. Two are shaded because the CEO does not always attend the audit visit. After ABC is introduced, the number for the auditor is reduced to roughly two interactions: the beginning and closing of the audit visit, if the CEO chooses to participate. Despite limited involvement, the CEO is however vital, mainly in terms of two issues: *i)* Should the company spend time, money and effort on getting and keeping a QMS certificate? and *ii)* Should W be their certification body of choice? In face of a possibly declining market, W has targeted the ABC perspective towards securing beneficial relations to top management, both in terms of marketing and the audit summation. Both topics and their presentation in ABC are designed with a client CEO/management in mind. The limited number of interactions should warrant an arms-length relationship (Granovetter 1985; Uzzi 1997). To compensate for quantity, the quality of interaction is addressed with the aim of closer relations.

The ABC angle aims at improving and strengthening the bonds between the client and his certification partner. *"We will guide you on your journey of quality improvement"* says the new company brochure on ABC, also quoted in the auditors' tutorial. The client's chosen hazards are included in the new report, with a page for each, in a way that not only ensures that they are not disregarded, but also ensures them substantive attention during the summation meeting. The template (see Fig.9.4) has an instructive design with a summation of conclusions before going into the details, the positive before the remaining challenges, and a separate page for each appointed hazard. There is space for a list of comments, with the intuitive code bar in five colours ranging from green to red (Fig.9.5). The auditor is to give her overall evaluation on each focus hazard's status by indicating a colour. And so, the report template allows for an easy to grasp indication, be it positive or negative, of the auditor's impression to be written out, in stark and bold colour. It is simple and elegant, it takes very little time to prepare, and there are even ready made phrases in bullet lists. All the auditor needs to do, is to check the correct colour, remove the superfluous bullets - or remove the suggested text and phrase her own comments.

The idea is to report efficiently to balance the extra effort involved due to the new hazard focus. Both the time spent in producing the report, and the use of powerful symbolism simplifies the effort of reporting convincingly. Effective communication is especially important for connecting with summation meeting participants, such as possibly the CEO, who did not participate in the main parts of the audit visit with its vital discourses. Doing a summation presentation in a way that acknowledges a variation in the audience' backgrounds could augment possibly tenuous equifinal ground. The **division of the summation into two parts with 'separately' targeted communication,** perhaps also indicates that there is a need to address management specifically in order to secure their attendance and connection.

Awarding marks on a Focus Hazard with a 'colour code'

The iterative presentation of: an evaluation on each focus hazard, in addition to the usual QMS report, and the reports' repetition due to its two parts, allows for more feedback, altogether. With more chances, more issues are visibly addressed, - or repeated. On the other hand, the auditor has more statements and decisions to both secure, - and to defend. Despite the text that goes with it, the colour illustration has a very powerful symbolic effect, but also a possibly simplistic effect which stands out. The context which produced the colour score may easily be forgotten and disappear from sight. That is probably fine as long as the response is positive. When the response dips below the average yellow however, especially if disconnected from its motivation during production, the colour gives a clear signal of negative feedback. One that is easy to misunderstand, or misrepresent, for those that have not been involved in the discourses that produced it.

The colour code scheme seems to have gone down well with most clients, when I ask the 'system manager' auditor about it a year after introduction. But not with everyone. One client company, who regularly publish the audit reports on their global in-house Intranet, did not appreciate the colour code. As there would be no way of explaining the conditions of the result to a random reader some place else in the world, they did not want this telltale illustration on display. The colour code was subsequently removed from the final report of this client, **allowing for an exception from W's standard report.** Remnants of previous communication specifically tailored to a particular context may be unsuitable at a later date, as the context of production is no longer there to temper their interpretation (Grudin 2002). If W were to disregard the client's wish to have the colour code removed from the standard report, this would constitute a considerable lack of commitment on the auditor's/W's part. It would also **put the auditor in a squeeze between her employer's and client's incongruous interests**.

Summation: talk & text report ⇔ wall projection, talk & file & report (& web)

At the introduction of the new templates, there was some apprehension amongst the auditors. "*This is going too fast. I'm having trouble with them. We should have had time to try them out properly before we are actually to use them. And the language translation from English is not good."* Several respondents do not separate between the technical functionality and the content when they talk about their IS. *"It's all just one mess – we, of all companies, should be able to do better"* [auditor, Oct. 2004]. They clearly have high expectations of their own and W's performance, and visible lack of

control is disturbing to their image of themselves, or the image they prefer to show clients. Being obliged, from a specific date, to use the new and less than perfect templates, and having to admit that they are not finished, is a disturbing element in their client interaction.

At an interview, two experienced auditors do not like the words and phrases suggested in the template, nor do they like the idea of standard texts. They are relieved to find that these are only suggestions and that they may be removed or rephrased. "*These are the phrases that are most often used. We've looked at several reports in several databases around the world"* [tutor, sept. 2004]: is the claim of the tutor from IT-services when the ABC templates were introduced. The idea is to reduce typing effort in order to speed up report production, enabling an on screen presentation of a complete final report already in the summation meeting. A standard text does not match what the auditors feel certification is about. They do not approach the audit as routine, meaning that standard texts in a report conflicts with this attitude.

My informants like to spend some time to reflect and to phrase their comments carefully to ensure that the client understands what the comment is about. Experience has taught them that comments are easy to misunderstand. If they do not put care into the phrasing, the follow-up phase will demand further explanations. Extra discussions which introduce delays before issues can be closed and removed from both their own and the client's task lists. The projection layout also results in an unusual amount of pages – the paper printout of the report is suddenly more than twenty pages, and it used to be 2-3 pg. *"This is just silly"* [auditor, spring 2005]. A year later I am told that they have changed this, arriving at normal fonts and pages in a paper version of the report. This illustrates a conflict between what they feel is sensible in contrast to standard functionality.

Another concern mentioned by most, is related to **how quickly the audit with its report must be finished off**. They were used to doing an oral summation at the meeting. Conclusions given and "findings" expressed. Most of them finish up the audit report and paperwork within a few days of the audit, sometimes a bit later. This used to include a written report with separate sheets for describing and coordinating separately the follow-up of each non-conformity, classified according to the standard in question. Several auditors mention, even at the first interviews in 2003, that they expect the coming technology to result in W wanting to speed things up by placing tighter time limits on reports. The limit is now a fortnight. In 2005, they report that several of the auditors now do use their laptop during the audit, and even use the projection function during summation. One informant points out however, that she does not relinquish the file during the visit. She might edit and brush up the report afterwards and send it by e-mail. This way she has better control over what actually has been given to the client both in terms of file version, phrasing and time of delivery. Another auditor explains: "*I do not use the templates during the audit, because I feel I can't waste valuable time at the clients' premises, sitting by myself typing. They've paid for my time, a lot of which is spent travelling in this country of such distances, and I feel I must spend as much as possible of that time together with them. I finish up the report in the evening, or when I'm back at the office"* [auditor, June 2006].

The use of a lap-top during the audit, enables and possibly requires the auditors to rearrange the sequence of some tasks. For instance, in order to display the report on the wall, most of the template's fields should be filled with information – or it will cause disturbance to sensemaking and orderly progress. Changes in client's company structure requires a revision of facts. At several of the pre-/early ABC audits I followed, such changes were uncovered during the audit. Should the faulty or incomplete information be addressed during the summation - or afterwards? By releasing the written report later and sending it by mail or e-mail, the closure and finality of the summation meeting is reduced. Post audit discussions will mostly be carried out with the QMA, who is more likely to share or understand the views of the auditor, and not with the whole range of client representatives. Will this reduce or increase the time it takes to wrap up a NC? On the other hand, an onsite visualized textual report might also lead to better understanding and more common ground.

Thinking out the best way to communicate a finding, to illuminate well what the auditor perceives to be lacking in the client's practices, requires a certain amount of tact. The auditors I followed seemed genuine in their wish to help the client to do better as opposed to a showdown of faults. Hurried writing in front of the summation meeting is not compatible with such reflective practices. There is no time to 'sleep on it'. **Apparent use of standard phrases support particular and individual connection with difficulty**.

Considerate use of standardized elements

For favourable circumstances for communication and collaboration, the participants in interaction need some equifinal ground to enable their communication, but also a communicative readiness to interact. A mutual acknowledgement of each other's favourable attitude to communicate and collaborate is sought after.

While the frequency of interactions are important to the maintenance of feelings of connection in terms of engendering goodwill (Adler and Kwon 2002), it is also important that all dimensions of connection are attended to when interaction is taking place – attention, affinity and commitment. The ABC perspective aims to secure exactly this towards the CEO/top management. The added interaction with Marketing should provide resilience in terms of W, and the identified focus on management in the summation should amply provide opportunities for connection. There is however a potential pitfall in terms of the colour code, which might miss its mark. Depending of the professional background and interests of the CEO, it might be perceived as simplistic. Another scenario is the absence of management during the summation meeting. It requires wariness on the auditor's part in how this is presented and used. Its removal may at times be warranted, also in consideration of how the report will be used in other and later settings. A lack of discretion on the auditors' part to adjust the standardized elements of communication could be experienced as a lack of commitment which would subsequently disturb affinity and future connection.

9.4.3 Interaction: Auditor - Client Quality Manager (QMA)

Equifinal meanings need re-finding

The intervals of interaction also change for the Auditor versus the client's Quality Manager (QMA). As shown in Figure 9.8, the terms of the relationships alters both in terms of the amount of time spent but also when significant interaction takes place. Both the pre-audit and post-audit phases require more interaction than before, at least while the ABC perspective is being introduced and settling in. Over time it is possible that, for long-time and stable clients, ABC will reach a level of familiarity and diffusion as to make the changes comparatively inconspicuous and naturalized. The QMA, as the client staff member that is closest to belonging to a trans-organizational community of QMS-thinking, is now to be engaged in interaction with the auditor on professional matters both before and after the audit visit. While this is not new in itself, the new hazard focus increases the scope of these phases as new equifinal meanings need establishing. Both in terms of quantity and quality, the interaction between the QMA and the auditor is affected by the ABC initiative, while the centralization steps reduced their interaction.

The hazard focus brings a new dimension to the establishment of common ground amongst the participants of the audit of which the QMA is vital, especially as the QMA will be in charge of later performance of QMS within the organization. This implies extra work for the auditor but also allows for more interaction between auditor and QMA. The readiness for good communication that is sought between auditor and QMA is inseparably linked to equifinal understandings and rationality, due to the overall objective of their collaboration which is to underpin QMS as a meaningful activity to be appropriated.

Overall, while the auditor-QMA mutual attention capture is postponed to a later point in the audit cycle, due to the centralization, the lately introduced hazard focus amply makes up for the postponement by introducing an increase in the pre-audit dialogue. There is ample opportunity for attention capture and attaining a field of connection between auditor and QMA. The introduction of centralization does however require the auditor to establish ways and habits of interaction with the new actors so that they all may coordinate amongst themselves to achieve appropriate levels of connection via the decoupled interaction. The decoupling thus allows for flexibility, but also requires new connective articulation work. Two years into ABC, two auditors report that they are not satisfied with the way the planners at head office are organizing their schedules. They now keep their own overview to stay on top of their clients' audit cycle progress in order to plan their ahead, and double check that resources are in place. *"I frequently discover that only a week ahead of an onsite audit, the technical expert I requested half a year ago has not yet been booked!"*[auditor, June 2006]. *"It's a mess!"[*auditor, May 2006]. They suggest that, not being located at the main office together with the planners, as many of their colleagues are, their needs tend to be forgotten.

To avoid tensions in the client-provider relationship, due to changes in timelines, technical affordances and systematic responsibilities between the two actors, the auditors must actively seek to balance and adjust their practices (Gasser 1986; Schultze and Orlikowski 2004).

9.4.4 Articulating durable reflective trust

We have seen some of the challenges the auditors faced when the circumstances of their certification practices changes. They now have to consciously re-establish patterns of interaction along the audit cycle both in terms of whom, when as well as the purposes of each interactional event. Efforts are put into re-establishing equifinal levels of shared understanding in terms of QMS and its new logics. As the interaction timelines are altered, the intention of ongoing relations to both colleagues and client representatives need confirmation in the shape of identifiable efforts for connection in all dimensions: attention, affinity and commitment. Both the logical and the social need attention because the auditor needs to support the client's sensemaking of the overall experience with the auditing exercise. The embedded relationships that support business dyads grow out of evidence of predictability, assurance of both gains and continuation (Larson 1992; Weick 1993). Amongst the sources of reflective trust is familiarity through repeated interaction that is based on competence (Adler 2001, p.218). In practice, the client must be left with a sense of trust in the auditor as competent, fair and equal, in W as a certification body which will supply them with value for money and effort, and finally in QMS and certification auditing as approach that will secure their business.

Connection and Equifinal Ground

The effects of W's efforts to harmonize their certification auditing rest, amongst other issues, on their ability to activate the communicative readiness of their clients for fruitful interaction. To achieve a lasting relationship, when their commodity for sale is a knowledge based assessment of their clients' production and QMS practices, it is necessary to actively involve the client in the assessment negotiations exercise. Not only because the auditors rely on their client's cooperativeness for access to information, but also because some measure of shared understandings is necessary to keep QMS on the client's agenda. Both the outcomes of the audit cycle in question and the rationality of QMS, as continuously portrayed by the auditor and W, must make sense to the client. The negotiating sensemaking practices that their interaction effects needs to establish and maintain an equifinal ground along with mutual trust and motivation to stay with and work on their professional relationship with W. A relationship, which unless a basically superficial and trivial routine, will involve both professional and inter-social aspects. It is difficult, if not impossible, to avoid that interpretation, assessment and decision making becomes personal, even when we are filling professional roles. In conscientious interpersonal collaboration *" [a]ffinity, commitment, and attention are constantly monitored, negotiated, and managed through social bonding, expression of commitment, and capture of attention. The management of fields of connection requires significant interactional work to sustain communication over time"* (Nardi 2005, p.91).

The motivation needed to sustain connection to others, directly and especially indirectly via socio-technical arrangements which include people, other technologies and their organization, carries with it individual and personal involvement. Motivation and engagement are mutually shaped with identity and meaning. Sustaining connection is part of the articulation work that we ordinarily engage in, although it is often tacit and unacknowledged as it mostly figures as familiar, ordinary and convenient behaviour, devoid of particular meaning or justification for public eyes (Thévenot 2002, p.69). The activity of audit certification is to a degree already public as it crosses organizational

boundaries and the increasing use of electronic media for coordinating across time, space and pragmatic boundaries, makes it more accessible and vulnerable to 'public' scrutiny. The establishment of plausible justification requires the active engagement of those involved, and thus the time and opportunity to carry out comprehensive sensemaking of that the certification audit relies on, as described in the previous chapter. **The achievement of equifinal ground, motivation and trust all require effort in cross interest collaboration.**

Together, the harmonizing and organizing initiatives introduced in ABC, pose challenges for the auditors in trying to keep their usual (accomplished) sensemaking activities intact during the audit negotiations in terms of *purpose, content, fluent progress, participation and involvement for themselves as well as their clients*. The terms that come out of the certification exercise have practical implications for the client, not only the audit itself, but also its terms of follow-up must make sense.

The harmonization initiatives introduce new semantic and pragmatic boundaries in terms of establishing and maintaining common ground amongst audit participants. The auditor needs new resources, as in new arguments and stories, for their repertoire of negotiating the audit decision. As **the perspective of the QMS audit changes**, the frames for sensemaking and decisions need new translations and transformations (Carlile 2004) as shown by the auditors' initiatives to expand their knowledge base through lectures and extra preparations before the audit**. The new division of labour – as introduced by rearranging the socio-technical setup** of the audit cycle, as in both reorganization and the use of new media affects ***where*** **and** ***how*** **both** ***sensemaking*** **and** ***connecting*** **discourses take place** and the timeframes involved. Most important, is that the auditors must attempt to *keep the rationality of QMS & Certification intact,* thus *the motivation to engage in QMS* along with *a trust in the auditor to have the final say*.

The inseparability of equifinal ground and connection is particularly salient in this knowledge work setting. The continued maintenance needed towards connection implies particular adherence to the situatedness of the interaction and ongoing discourse, including a consideration for the different parties and their interests. Connection in such a setting is flavoured by the individual's unitary experience of intellectual work along with both sensory and emotional stimuli. While the new hazard focus introduces new boundaries for common ground - the various divisions of labour also creates boundaries for connection's three dimensions of attention, affinity bonding and commitment.

Theoretical implications for the concept: connection - readiness for communication

The dimension of connection may be brokered by other individuals. Such brokering is especially relevant when systems and standardizations effect divisions of labour in knowledge based interactive service work. While Nardi finds that connection may be simulated and attentively established also in mediated communication, a similar attention is warranted when connective dimensions are brokered by others, as they need subsequently to be verified by the individual in question at a later point. The other's anticipation of reciprocated attention/affinity/commitment is either satisfied, allowing an adjustment of the experience through cumulating or possibly even conserving it into

an awarded form of trust. Conversely, unmet anticipation results in disappointment and tension towards the other. Brokering of connection, especially beyond the initial capture of attention, requires the broker to be personal and to credibly represent the individual behind the role whose coordination one is formally brokering. **I suggest connection to the broker is vital for the one being brokered.**

Connection is especially inseparable from equifinal ground in service work. Unlike manual tasks where fulfilment is often visible and apparent, judgement of knowledge based activities require deeper involvement and comprehensive sensemaking. Sensemaking of the other will invariably include **a qualifying evaluation of to what degree the other fills their expected role**, which warrants and maintains their legitimation in collaboration and communication. This does not mean that a non-judgemental but expectant connection, as common towards unknown individuals, may be replaced by a strict adherence to hospitality or formal versions of social orders and capabilities (i.e. professional titles) while ignoring the individual. Rather it implies that qualifying sensemaking adds to neutral experiences of connection.

While Nardi discusses the effects of mediated communication in terms of connection across space and time, this case illustrates that other non-human artefacts, such as templates, on the wall projection, etc., may support and extend the qualities of local and face to face experiences of connection, as in communicative readiness. Pertinent visualization and remedies that assist memory and understanding may favourably enhance connection, while poor remedies may disturb it by introducing misunderstanding or feelings of disrespect due to its inappropriateness. On the other hand, interaction via **media such as e-mail and calendar allows a filtered kind of connection** that allows a kind of focused connection with expectations towards a reduced but sufficient proof of commitment. An arm's length relationship (Uzzi 1997).

Analogously to the boundary to communication across communities which Carlile characterizes as syntactic, semantic or pragmatic, which are respectively bridged by boundary objects which effect either transformation, transportation or translation, there are similar boundaries to connection across individuals (and communities). Mediation of connection requires properties of awareness for **discovery** of gaining/receiving *attention*, **substantiation** of a qualified *affinity* of relevant social bonding, and **ongoing confirmation** of awarded *commitment*. The amount of connection needed will depend on the relationship's character in terms of tasks and collaboration: close or arm's length, one-way or two-way, dependents and precedents, including level of equifinality as in a mutually acknowledged boundary crossing.

9.4.5 Effects of harmonization

Over the three years treated here, W has introduced several measures intended to harmonize work practices across countries, offices and auditors. Some are of an ***organizational*** character, some are addressed towards a change and alignment of ***practical certification activities*** - and all are accompanied by ***technologies***. Or one could see them as tools and technologies introduced for management's gains of predictable auditor performance as accounted through production logs along with uniform dialog, time spent and reporting - accompanied by the necessary organizational

and practical adjustments. Either way, the case illustrates that change to of any one these parameters in knowledge based service work inadvertently will involve the other two:

- New IS shifts responsibility for tasks effecting a reorganization that also requires new understandings amongst actors
- New organization requires new usage of tools and a renegotiation of equifinal shared meaning
- New perspectives imply new tasks with new approaches to durable accountability and coordination of them

While it is reasonable that changes in any collaborative activity will require time to mature, recent research poses the question whether ordering efforts produce a new disorder requiring extra effort, not only of a temporary nature but as a more permanent and inherent feature of order creation. Standardization is reflexive (Hanseth, Jacucci et al. 2006). With any change the involved actors will need to learn and adjust to the new regime before it can work smoothly - effectively requiring extra work at least temporarily. Is it then a dynamic feature of harmonization efforts that while some things are harmonized, new disorders accompany them (Berg and Timmermans 2000; Law and Singleton 2000), that disorder is merely relocated (Ellingsen and Monteiro 2006), and that standardization 'strikes back' by being reflexive in producing unintended consequences (Rolland and Monteiro 2002), or does the disorder wane with time by working itself out? Is there a time factor that differs with situations to become zero or is disorder a constant and inherent feature of any activity - a feature of life with its dynamics of perseverance. Or does disorder sometimes only seem to disappear simply because it is relocated to new actors, places or types of work which are out of sight? Has it become invisible and unrecognized articulation work perhaps, or been relocated to sites outside the scope of our control or interest?

Responsibilities & discretion

W has introduced a number of **new actors into the original audit process - socio-technical actors,** to use a collective term for both technical and social actors. Their introduction implies that the relationships amongst them all need reorganizing and coordination. A new division of labour is to be created, and articulation work is needed to secure a fluent process. Strauss described articulation work as efforts of coordination in terms of tasks-tasks, people-tasks and people-people. Actors range from roles and individuals, groups, companies and organizations, technologies and tools, concepts and ideas, knowledges, even the immaterial equifinal or common ground, which all holds some form of interest that affects other actors' interests and behaviours. However, their affordances may vary in that others may have to take **responsibility** for articulating their fluent part in work processes.

For instance, we have seen that the templates give direction and shape to how the audit may be performed. But we have also seen that actors with **a mandate of discretion** may choose to adjust the actual influence of the template. W found it appropriate to allow an auditor to remove the colour code from the final report of a particular client. If on the other hand W is strict in its directions for their templates use, the auditor finds herself in a squeeze between the interests of her employer and client. It is common for employees

performing interactive service work to find themselves trying to negotiate between three sets of interests – their own, the client's and their employer's (Leidner 1993). The employee may risk alienation if they find themselves forced to act against their own better judgement and feelings. Some research into emotional labour found that the danger is small in the case of close relationships (Kruml and Geddes 2000) such as those we have seen in these auditors. It is vital for the auditors to maintain sense in what they do and decide, for themselves and for their client. Subsequently good communication – fostered through connection, to achieve equifinal ground is an essential part of their work for both the audit and certification as such, but also for their sense of self. The risk of alienation is reduced when the standardization of activity coincides with their own evaluation of their tasks and responsibilities.

New equifinal/common ground & practices

To make the service production more predictable, more fluent and efficient one either tries to **standardize the client's behaviour or the interaction with the client** (Leidner 1993). The harmonizing steps of W include both strategies. And for the knowledge based service provision of auditing, the **articulation of equifinal meanings** (Donnellon, Gray et al. 1986), is in effect what audit certification is all about. A shared opinion concerning the current status of the client's QMS and where it should be moving. But standardization measures do not implement themselves for free. The attempt to standardize added value with a focus on hazards – for an assurance of similar W quality in all auditing, increases the amount of equifinal meanings that need to be established. Transformation or translation work needs to be done to enable communication in terms of this abstract idea. It will take time and effort to achieve domestication of the new concepts of hazard and risk. Hopefully the client sees it as worth both paying for and performing their own part of this effort.

Reorganization of work

The **centralization efforts** of respectively Scheduling and Marketing seem at first glance to be similar in approach. Specializations are effected which indirectly also make auditing a more special kind of professional work. On the other hand, what was originally a kind of articulation work performed by the auditor – a coordination of tasks and actors that delineates how, when and by who tasks take place, now becomes 'ordinary' work for the new roles. But, as new actors are introduced the coordination between them arrives as new articulation work. The auditor must maintain connection with the planner so that both tasks and the terms for goodwill are established and maintained. **The in-house goodwill part is delineated in neither tools nor routines** but implies for instance keeping the calendar conscientiously up to date so that the planner may perform their own tasks smoothly. The planners and auditor do however need to interact personally in order to get the job done, and indirectly opportunities for connection arise of their own accord in reasonably polite interaction. However, four years into the central planner scheme, several auditors outside the main office claim it is not working for them. It appears an imbalance between local and distributed auditors has appeared - a difference in their ability to connect due to geography.

The auditors and Marketing also seem to be drifting apart. We have seen that they are sometimes unaware, possibly even disinterested, in the others' activities and the

possible implications of their own activities for the other party. Their tools (CDB) and routines do not support awareness well, neither of other actors' activity nor of the systems' own changes in status. By looking attentively for them, there might however be clues of past actions. The email and calendar that the auditor and planner collaborate through are better because they provide cues to the users. Both systems aim to be boundary spanners/brokers/objects – but while one is aimed at communication with coordinative features, the other is aimed at storing documents in terms of clients and does not provide the systems users with apparent clues. The CDB has no specific affordance for connection.

- The centralization of scheduling has produced the need for auditors to coordinate with and connect to the planner(s) – perhaps reducing the overall coordination effort for the auditor as there are now fewer people to actively coordinate with, systemizing it for the planner's (/W's) part. There are however indications that appointments are late and keep being remade or, especially for the distributed auditors. On the other hand, connection to clients is now something that needs brokering and affirmation. This is in effect a new disorder that requires conscientious effort on the auditor's part.
- The centralization of marketing concerns a harmonization of client contracts. While the audit was always bounded by the contract, the fact of rearranged contract terms and boundaries probably affect the client end of certification performances more than for the auditor. The auditor needs to find ways of staying informed of up to date on terms, rather than assuming that she is in the loop already. This requires a temporary effort towards negotiating this coordination with marketing. Perhaps this strategy implies that some disorder has been relocated to the client?

Informational artefacts: templates with new visualization, outlines and authorships

The new templates inscribe new behaviours amongst actors. Clients now need to document by reporting in a common log. The schemas initiate discussions that indicate the new equifinal ground is being established. Visualizations such as the colour code are so powerful that they threaten to spill over to new settings across time/space to affect the client's own relationships in wider perspectives than before. The agenda's specification of management as members of negotiations as well as an audience yet again rearranges both responsibilities, roles and their understanding of the audit.

9.5 ARTICULATING SOCIO-TECHNICAL SENSEMAKING

The analysis shows that the auditors are faced with new challenges when their familiar patterns of work are altered due to both new routines and templates. Extra work, both in time and content, is needed to *maintain an equifinal ground* that allows them to achieve a consensus on the audit decision and QMS, especially in terms of good working relations across longer parts of the cycle. The harmonizing strategies introduced, both support and disrupt the establishment and maintenance of the (W/)auditor-client relationship, as they know it. With increasing and standardized points in time, over the cycle, when W-client contact is made – in support of a stronger relationship, this contact also needs to be filled with substance - that makes sense. The auditor will also need to negotiate their connection to the co-workers who now also interact with the client. Effectively, equifinal levels of meaning need to last longer than before, beyond the

onsite audit. Equifinality also needs to consider more actors, albeit at different areas of equifinal ground, as the reach of the electronic traces potentially travel beyond the original audience and space.

The scope of their own professional discretion comes into question when the new means of W's global harmonization strategies take effect. The global templates, developed to management's design, at first feel awkward and foreign to both auditors and clients. The slight change in client's role of the also presents new challenges to their negotiations, as the scope of the auditors' discretion also needs to be renegotiated with global management. A balance needs to be found that allows for local adaptation when appropriate, without loosing the qualities of W's ABC brand of certification.

Ultimately, W's harmonization efforts come together through new and extra efforts which support the creation of local universality which "*always rests on real-time work and emerges from localized processes of negotiations and pre-existing institutional, infrastructural, and material relations"* (Timmermans and Berg 1997, p.275). To counter and restrict the amount of extra effort that auditors put down, wittingly or unwittingly, W has in its implementation strategy decreed that ABC will not cost more for the client, nor is it assumed be difficult or time consuming to perform. The auditors are expected to take this part of ABC certification in their stride.

It is evident that new tensions (to legitimation) are introduced into the triangle of partly aligned interests, the client, W and auditor. The next chapters will explore how lonely auditors, making decisions alone with their clients, find ways of maintaining a calibrated (W-)conception of the standard they are doing certifications according to.

10 LONELY DECISIONS – THE ROLE OF CIS FOR CALIBRATION AND MOTIVATION

About this chapter

There is more to getting work done than the articulation work of intensely communicating and coordinating for a fluent division of labour. In addition to dividing work into tasks to be allocated to whom and when, how to perform work for a given purpose must also be known. A shared opinion of both purpose and means, along with skills and proficiency, is necessary to achieve concerted action in a manner that implies a competent organization. In addition to practical capabilities, "*the adoption of concerns, values, criteria, and priorities*" (Schmidt 2001, p.6) are equally important for calibration of practices that may fit into the wider context of an activity. The development of perspectives as in taking y for granted but x as problematic, is thought usually, by sociologists, to require 'social bonding' through rich interaction such as face-to-face or focused encounters (Schmidt 2001), like in a Community of Practice.

For auditors there are at least two, very different, kinds of CoPs that they need to interact fluently and competently with – the client's as well as their own colleagues. Professional interactive service work takes place on the border of a client community, or rather in a cross-section of the employer/home community and the client community. Both will try to influence the auditor's opinions and judgement. How may an organization secure the professionalism of their employees and avoid that they become the unwitting and unprofessional servants of the client's (short term) interests? On what may the professional rely to balance the interests of the two communities? The exploration in Ch.5 *Perseverance* suggests that: with the necessary *heterogeneous resources, including the social and relevant practices of making sense out of them*, it is possible to recognize and separate between different purposes and interests. In this way, relevant calibration is supported - in theory.

Like W's auditors, many have jobs where the majority of their working hours is spent together with or dealing with clients. They may be consultants, technicians, or home care nurses, salespeople or auditors, and in working mostly alone they may be characterized as knowledgeable but professionally lonely. They spend few of their working hours together with their own colleagues. 'Lonely' is characteristic of the work situation for an increasing number of employees who work on their own, but with 'the others', in the growing knowledge based industries. The lonely aspect of these work practices has been sparingly addressed in CSCW research, an unacknowledged and qualitatively different aspect of inter- or cross community coordination. For lonely working experts, in the sense of limited interaction with colleagues, there seems to be little opportunity, or perhaps even little acknowledged need, for either coordination or collaboration amongst one another. Especially compared to the extensive interaction with clients in terms focus and time spent. With increasing use of technologies for in-house collaboration, their colleague interaction might become increasingly mediated and second hand. Where do these lonely workers feel they belong and how do they maintain their professional competence? What resources and practices are drawn upon?

Research Question 3:
How do distributed service workers maintain a calibrated knowledge base?

By using the theory of Common Information Spaces (CIS) as a framework to present the empirical material, this chapter will illuminate the setting of the certification auditors' lonely work, based on an exemplar of a generic certification auditor.

10.1 THE CIS OF AN AUDITOR

10.1.1 The potential for professional loneliness

This analysis turns attention towards the circumstances of both becoming and continuously performing as a competent auditor, one who may act individually but yet in tune to the diverse expectations of others, be they auditing professionals, QMS and standards experts, clients or employer. Before entering interactions with clients on their own, auditors need to learn certification auditing and know how to perform it acceptably and credibly in the eyes of employer, colleagues - and themselves. Secondly, the client must also find their performance reasonable both during its performance and upon later scrutiny, when the added insight of other auditors' and organizations' QMS practices kick in. At least traces of the QMS practices of competitors, customers and suppliers will at some point be discovered and compared. The judgements and rationalities argued by the auditor need to match, or supersede, those of other auditors, if they are to remain standing as valid.

For certification auditors the question of calibration is relevant not only for becoming a proficient auditor, but also for maintaining an attuned practice and reputation for being one. Reputation relies on ongoing reputable action (Scott and Walsham 2005). To confound the application of calibrated expertise, implying maintenance and new topics for calibration, is the added issue of the evolving and changing character and structure of business practices and alliances, industries and organizations, management and government. Knowing the business requires an ongoing effort for the individual auditor. Continued attention to calibration is also warranted for W as a certification body in terms of aligning the auditors' interpretations across different offices and countries. They need to serve global customers in a recognizable way. Regardless of which auditor across the globe is chosen to perform an audit, the result for the client should be the same, for all practical purposes – given that it represents the application of a standard. Staying tuned is therefore an ongoing activity, requiring a motivated attention and professional sensemaking of QMS practices beyond the local and present. Being a reputed and proficient auditor is not learned once and for all, to be instrumentally carried out later, anywhere or anytime.

W's auditors manage their work through a heterogeneous collection of artefacts, routines, technologies and skills. Most commissions are carried out by single auditors working on their own. In between audits they spend time in-house at the office - close to 20 % of their working hours in my estimation. This does not mean that they are all there at the same time, nor is it always spent at the same office site. They may do several clients in a row before going back in. Most of them try to make it to the office on

Fridays, so as to be close to home before the weekend. Their days interacting with their professional colleagues end up far and few between, since in-house time is largely spent on a somewhat hectic follow up of previous tasks and clients – and preparations for new ones. The multiplicity of clients or projects implies that much of their in-house time is focused on organizing as opposed to sustaining their shared competence in a non-static business world. But, when so little time is spent together, how is it possible to stay up to speed and continue to be a contributing colleague within their own organization? Is it possible to develop and maintain a common work practice, or is there a danger that the templates may become trappings that stand in for real substance and consistency? Do templates signify the presence of rituals that Power (1997) suggests?

Some organizations are large, but not necessarily complex, and a vital part of their makeup is that they send their employees out into the field – to do their thing. The aim of this chapter is to explore the lonely work of the auditors, and identify its current CIS. The analysis will explore how the concept of articulation work (Strauss 1985), together with the CIS theory, may contribute to understanding how competent lonely workers maintain and sustain the what's and how's of their work to remain competent – and what extra challenges derive from the cross pressure they operate under. There are examples of empirical studies of consultants' work (Orlikowski 2002), but they have mainly focused on knowledge-/information- management within consultancies, or the relationships of trust or distrust between client and consultant, rather than the lonely aspects of their working situation. Leidner's study of the interactive service providers, such as fast food hosts or insurance sellers, includes an extensive description of how their training involved standardization and rote learning of standard phrases, dialogue and interaction strategies that effectively scripted their one-on-one work situations (Leidner 1993). How much – or perhaps how little, in the way of communication technologies and face-to-face interaction, can a distributed knowledge based organization manage with? Chapters 9 *Avoiding Loose Ends* and 11 *Divide and Conquer,* shows that the auditors perceive standard phrasing to be a disconcerting and marginal option.

10.1.2 A CIS focused analysis of CSCW setups

A main idea of CIS is the creation of *'spaces for putting information in common',* where the spaces include the actors' interpretation of information (Schmidt and Bannon 1992; Bannon and Bødker 1997). The CI spaces constitute abstract notions brought into being and maintained by its members *in connection with material configurations*. They must have more than one dimension if it is to support the diversity of collaborating parties; hence a CIS is a commons for heterogeneous forms of information, giving it a spatiality of multiple dimensions. Articulation work is needed to both create the multidimensionality required to make it a space, by adding resources, as well as in the efforts of sensemaking that need to be shared to some degree. Without some sharing of sensemaking, there is no commonality of meanings. A well functioning CIS is not a static collection of data, but includes aspects of shared treating of, awareness of, use and renewal of its resources. While similar to a boundary object (BO), a BO is not a CIS due to its singularity. Singularity implies limitations to being able to provide robust and multi-perspectiveness in meanings. More than a BO, even a complex one, is needed to enable the meanings and understandings of competent work, including its renewal in a

way that may maintain and sustain the 'whats' and 'hows' of performing work and a profession. Up to speed calibration of know how is vital in distributed and lonely work, and a CIS that will enable calibration must include a variety of input, mechanisms and resources to enable resilient capability for its members. CIS is a complex concept which can be described as a *'living spatial informational commons'.*

Neither does a CIS necessarily coincide with a CoP although the concepts do partly overlap. A CIS is a wider and different concept than a CoP, though both are loosely defined, as a CIS does not in its definition include actual work practices beyond making sense of them and using them as resources for sensemaking. The focus in CIS is the variety of resources available, their use for communication and sensemaking and the available-making of resources for continuous appraisal and meaning revision. It involves the perspective making and perspective taking of individuals (Boland and Tenkasi 1995) in shared ways as they attend to making meaning and sharing meaning across prospective boundaries. CoP on the other hand identifies collective practices as learning arenas, of personal and role-related identity-shaping. CoP's perspective is centred on the collective as a primarily collocated or closely-knit fellowship that addresses performance, while CIS seeks the means of meaning making in distributed communities or even the collectively constituted meaning making practices of individuals who might have very little in common, such as different organizations, different departments or even Distributed Collective Practices (DCP) (Turner, Bowker et al. 2006).

The CIS concept was suggested as an encompassing concept for covering the whole setup of collaborative devices within a specific organization or work situation. Bossen's (Bossen 2002) elaboration suggests seven parameters of a CIS may be used as a tentative framework for the analysis of the certification auditors' practices. By comparing with Bossen's analysis, both his parametric framework and the characteristics of the auditor's lonely work may be delineated and examined.

The Parameters

I will group and alter the order of Bossen's parameters slightly. The first two parameters address the characteristics related to the **context of the human actors and their distribution**. 1) *Degree of distribution* relates to their distribution across time and space. 2) *The multiplicity of webs of significance* relates to the actors' belonging to networks or communities which have some kind of repertoire of negotiated mutual interpretations. This term comes from (Geertz 1975, p.5) where *"Human behaviour is symbolic action where 'man is an animal suspended in webs of significance which he himself has spun"* (Bossen 2002). Membership in such webs can enable an alignment of understandings to a depth that allows for interaction, although not necessarily in depth comprehension.

The third and seventh of Bossen's parameters address the objectives and characteristics of articulation work in order to accomplish the espoused work. Strauss (1985) calls *'the supra-type of work in any division of labor, done by various actors"*(p.8) articulation work. It *"arises as an integral part of cooperative work as a set of activities required to manage the distributed nature of cooperative work"* (Schmidt and Bannon 1992, p.18).

Coordination requires articulation, both of tasks, people, efforts [ibid.], but also of *"..incommensurate opinions and beliefs, or inadequate knowledge of local circumstances.."*(Gerson and Star 1986, p.266). The parameters are: Numbers 3) *The level of required articulation work* - which refers to continuity of communication/coordination and 7) *The need for precision and promptness of interpretation.*

The last three of Bossen's parameters address the resources for work/articulation work. 4) *The multiplicity and intensity of means of communication* attends to the characteristics of means of communication in allowing for necessary calibration of meaning. In his description these means appear to imply more or less direct means of communication. Barring face-to-face contact, phone, e-mail etc. is mentioned. 5) *The web of artefacts* are the material, physical mechanisms of interaction (Schmidt and Bannon 1992). Schmidt & Simone state that: *"Coordinative artifacts stand proxy for the affordances and constraints of the physical and social environment"* (Schmidt and Simone 2000, p.7). They mention *templates* as artefacts that to competent members *specify the properties of the result* of individual contributions e.g. product standards; *Maps* as artefacts that to competent members *specify interdependencies of tasks* or objects e.g. organizational charts, taxonomies, group technology; scripts as artefacts that to **competent** members *specify a protocol of interaction* in view of task interdependencies e.g. production schedules. I have put the word competent in bold here, because this is an important aspect of my empirical case. Bossen's last parameter 6) *Immaterial mechanisms of interaction* refer to habits, routines and organizational structures. Both the material and the immaterial mechanisms reduce the need for continuous coordination in the fluent practices where they have been diffused and are taken for granted.

10.1.3 An auditor's spatial information commons

As the sharing of both the material and immaterial resources for meaning making vary with the actors involved in meaning making are described as multi-dimensional. To explore the character and multi-dimensionality of a generic certification auditor's CIS these are displayed in three tables, each with five columns. Common aspects are given in the far left column. The next four columns separate the resources in terms of four different groups of actors, or CoPs: *i)* the W auditor colleagues; *ii)* W colleagues with other professions; *iii)* the clients, probably belonging to the same or similar industries; *iv)* the generic systems standards community of those who share a professional interest in standards, certification, accreditation and auditing, in terms of QMS, quality, risk and safety.

The following sections will discuss an exemplar of a generic auditor's CIS in three parameter groups:

- **I)** Context of human actors
- **II)** Objectives and characteristics of the articulation work
- **III)** Characteristics of the resources for work

10.2 CONTEXT OF HUMAN ACTORS

AUDITOR'S COMMON INFORMATION SPACE – part I across main member groups				
Common	*Colleague Auditors*	*W-Mgmt.; & central functions*	*various Clients*	*'ISO9000' & profession-related CoPs*
Degree of distribution: 'Lonely' Auditor 'On the road' 80% of time, 'interacts' with =>	Auditor time in office <20%, often separately. meet when: *lunch, coffee, infrequent in-house meetings, shared client, seeking advice*	Centralized: global, regional, national – also: *planner / marketing / comptroller.* 'Monthly' meetings	Distributed, but in focus ≥ 80% Connecting & Communicating : *Audit Visit, Pre-/* post audit*: phone, (e-)mail &* increasingly through *files (schema)*	Distributed & in background. Abstract and concrete, manifest in: *start training & audit accreditation, individual standard re-certifications*
Multiplicity of webs of significance*:* Many : =>	*Standards & certification by W; engineering discipline*	*W-task & brand related perspective on certification*	*Business branch; certification and QMS experiences*	*Standards, certification, accreditation; (engineering)*

Table 10.1 Parameters part I - Context of Human Actors

10.2.1 Degree of distribution

The auditors' main activity is doing audits for clients. Mostly they do these audits on their own – one auditor, alone and off-line except for their mobile phone. For the main audit, or when there is a need for specific professional competence and accreditation, an technical expert will join some part, or the whole, of the audit to assist. My cursory evaluation of a few of the auditors' calendars indicates that about 80 % of their working time is spent away: alone or with some client. As their access to ICT has expanded over the period in question, they can to an increasing extent access e-mail and their in-house client database also when they are away from the office. Preparations can be completed or the summation of the audit can begin at the hotel or the airport, if a network connection is available. The experienced auditors I witnessed did not go on-line at the clients premises. Perhaps the younger may be more inclined to do so as they have little 'off-line habits' to build on. However one younger auditor, when questioned on laptop and template use: "*I feel I can't waste valuable time at the clients' premises, sitting by myself typing. They've paid for my time, a lot of which is spent travelling in this country of such distances, and I feel I must spend as much as possible of that time together with them. I finish up the report in the evening, or when I'm back at the office"* [auditor, June 2006].

During this part of their work, the auditors are physically distributed from each other, and perceive themselves to be on their own and *"performing on a stage"* – in the words of several of my informants. The auditor's work in this setting is of low intensity in terms of the speed of coordinating, sharing or distributing familiar tasks. On the other hand their focus and interaction with their client may be seen as highly intensive, negotiating equifinal understandings of both the client's practices, the standard's

requirements and finally negotiating a common understanding of their match, mismatch with appropriate remedies. This is a type of coordination – not of familiar pieces of work and who should perform them in which order, but of getting meanings across and establishing interpretations amongst the client's representatives and the auditor(s) that allow them to conclude and plan for their common and separate futures. This is the kind of articulation work that is necessary in order to construct and maintain a CIS (Bannon and Bødker 1997, p.92; Bossen 2002, p.177).

Most of the auditors try to make it to the office on Fridays. But they often have clients on Fridays too, especially in the busy periods before Christmas or the summer holidays. Audits tend to pile up when the certificates come close to their expiration date and no further extensions can be accommodated. While there is always somebody in the office, it may not be those professionally closest. At least the 'back-office' employees doing secretarial work, accounting etc. are there, as well as colleagues from other departments. Being in their office, they may be physically close to their kindred spirit colleagues, but in-house time gets busy with ordinary coordination. There is scheduling to be done, appointments to be made and the follow-up of previous audits to be checked up on. There is the planner at the main office who tries to coordinate the dates for the upcoming audits. The planner has access to their electronic calendars, can send them e-mail in addition to a special Scheduler application for the overall puzzle of slotting client companies, client locations (in case the client has various premises), and auditors with the relevant accreditations according to type of audit and standard. The same auditor usually has the role of Audit Team Leader (ATL) several years in a row – although the length of client relationships seems to vary with different countries. Coordination is also required in the preparation of an audit: – perhaps for preparing bids together with Marketing, or for discussing focus hazards and the agenda with the clients of upcoming audits. Finally there is a considerable coordination/negotiation with the clients during the follow-up phase of the audit. There are findings or comments that the client needs to deal with within specific time limits. The auditor needs to evaluate their appropriateness, either to accept and close them, or to discuss additional measures for compliance.

All in all, the in-house time is largely filled with coordination tasks, mostly on the phone, some through e-mail and some by traditional post. Any coordination issues that seem to have floundered in the e-mail systems, due to too many dependencies, are sought resolved through phone calls – assisted by on screen viewing of applications, documents, and e-mail, manually achieving shared views. When e-mail feels too slow – a higher intensity communication means (phone) is sought with the assistance of other applications on the screen. Doing these coordination tasks during spare time out of the office seems to be avoided when possible. The chances that both parties are available outside normal hours, with access to the necessary applications, files etc. are small, and daytime is mostly occupied with the client. The asynchronous and less intense e-mail is more applicable.

All in all, their in-house time still entails a fair amount of distribution in terms of the relationship between auditors, seeing as they are either not there at the same time or are busy with practical tasks. But there always room for small talk with colleagues at lunch

or a chance coffee break. Quandaries that are on their mind may be discussed based on chance encounters i.e. who happens to be present: by the printer, in the next office, or who turns up for lunch. Otherwise one seeks out someone available perceived to be appropriately knowledgeable, or the *comptroller* at the main office. They might send an e-mail or make a call after checking the *whiteboard on whereabouts* – hanging next to the office reception desk, by asking the secretary or checking the e-calendar to assess whether it would be disrupting or futile to contact them. Such dialogue initiation (attention seeking) will however involve actual questions that have found a formulation. If you're not quite sure how to phrase a concern, then approaching someone becomes more difficult. If you are really busy, you might skip both the lunch in the canteen and coffee chats.

But there are also planned time-outs – professional together time. Previously it used be that the auditors gathered for a local in-house Friday, mostly every second week. These usually were a two hour meeting to discuss their work. To accommodate the smallest offices this tradition was in 2004 altered into a centralized half day team meeting at the main office (3 groups of about 15 auditors in each), once a month. Roughly once a month, there was some meeting at the main office which each auditor was meant to join. In practice around 8 times per year was one auditor's estimate as holidays or other holdups would disturb the pattern [auditor, April 2004]. These would be some kind of department meeting where economy, strategy and production was discussed, or an in-house course, as when there are major changes in standards (obligatory) or when new tools or strategies were to be implemented. Lead auditors also meet for a seminar twice a year per country, sometimes with a Nordic-wide attendance. Now, with the new central in-house team meetings for 'professional issues', without management attendance, the overall frequency for each auditor has not really changed much. As clients get priority, not everyone makes it to the centralized sessions every month. The team meetings, reduced from the original two hour sessions twice a month (unless there are other meetings) to the months not occupied by seminars or department meetings are prioritized by management by way of setting up interesting topics for discussion and reporting. This provides an arena for voicing of opinions on the market, ways of doing work etc. without management intervention. It seems however that some seniors attend less than the rest as it is not compulsory to be there. One senior auditor confided that she found the centralized group session to be more hassle than gain due to late travelling, no overtime payment, little new insight to be had, and no specific role to fill. Client matters were prioritized ahead of her own attendance. The new ABC certification perspective seems to have changed this attitude, given the new practice of lectures (ref. Ch.9.1.2) - at least temporarily.

So the majority of the auditor's working time is spent out of the office and not relating to colleagues on matters that concern how to be an auditor, on how to make decisions, or what decisions to make. Neither is it spent intensely coordinating and cooperating, except for its being relegated to the few days and hours spent in the office resulting in busy hours. The auditors do not think of their work as that of mainly coordinating tasks. A major share of time and effort is however spent with or directed at the client. The interaction on coordination with non-auditor colleagues, such as the planner and perhaps marketing is however increasing. Contact with other professional communities

are sought intermittently when problems or situations occur that give rise to ponderings, or on the off chance that something catches their attention when professional literature or websites are surfed.

10.2.2 The multiplicity of webs of significance

Within this brand of certification, all of W's auditors have an engineering education and working experience within their field. This experience is required for accreditation for given standards in specific fields. They receive accreditation codes when they have been through the relevant qualification programs. These also need to be renewed on a regular basis to remain valid. The qualifications involve theoretical training & tests, occasional controls of their/W's work performance by an accreditation body, and regularly having a qualified colleague take part in audit where one is team leader (every three years). This allows for getting feedback on performance, both to establish status and to indicate opportunities for improvement. For instance one of my informants has specialized in metallurgy, another in organic chemistry and food safety.

Profession related webs of significance

The most apparent webs of significance are related to: engineering professions in general; being auditors of certification; W colleagues - partly overlapping webs with other roles such as back-office and management due to similar education backgrounds, work experiences or interaction; the standardization/ accreditation/ certification/ ISO related communities. The degree to which they interact, communicate, keep in touch by reading new material such as magazines and websites varies, in particular with location (local, national, Nordic, regional or global), opportunity to communicate easily, and issues to communicate on.

Client related webs of significance

The ones listed above all overlap to a certain degree and pertain to their employment and professional experiences. Orthogonal to these, but no less significant, are the webs of significance that auditors establish together with their clients, especially over time as an auditor will often keep their clients, but also during a single audit cycle. Given their specialization, an auditor will perform certification on clients within the same branch or industry. Depending on the markets this will also involve them with businesses that are in direct competition with each other or competitors abroad. As the majority of their time is spent focusing on their clients, it would be natural for them to both relate to, and even adopt, individual clients' concerns on doing well within their market, as well as the industry's international success.

In Table 10.1 these webs of significance are spread across four groups which each have their own commonalities in terms of interests and means of interaction and connection. The last of these – the ISO 9000/profession related one hosting the indirect collaboration, mostly one way communication, with identification and belonging (Tajfel and Turner 1985; Turner 1985; Ashforth and Mael 1989) established through imagination with adoption of ideals (Wenger 1998), with indirect symbolic proof of belonging given by their accreditation codes.

10.3 OBJECTIVES AND CHARACTERISTICS OF ARTICULATION WORK

AUDITOR'S COMMON INFORMATION SPACE – part II across main member groups				
Common	*Colleague Auditors*	*W-Mgmt.; & central functions*	*various Clients*	*'ISO 9000' & profession-related CoPs*
Level of required articulation work: Vital : obtain shared/equifinal QMS-meanings through communication & connection	Calibration of Meanings & resources for: *knowledge & meaning brokering*	Coordination & Meaning: *attitude to client & certification*	Some coordination; mostly connection & Sensemaking for : *rationality, trust & motivation*	Calibration
Need for precision and promptness of interpretation: NO, - but needs shared in-depth interpretation or Delegated authority & legitimation	Low, but in-depth for : *Calibration of meanings*	Generally Low, but High for : *planning & in-depth under-standing;awarded discretion*	Low for: *coordination* High for: *Understanding & awarded discretion*	Low, but in-depth

Table 10.2 Parameters part II - Objectives and Characteristics of the Articulation Work

10.3.1 The level of required articulation work – outside the audit visit

Coordination of familiar tasks

There are several threads of coordination here: *i)* The coordination of when and who will do which audit – mainly with auditor, secondly with auditors and/or local management; *ii)* The coordination of the scope – with client & marketing who bear overall responsibility for contracts; *iii)* The coordination of the agenda, and recently *iv)* of the new focus hazards – mainly with the client; *v)* The coordination of the follow-up after the audit – with the client; The timeline of the follow-up is based on the criticality and urgency of necessary measures. And finally, *vi)* an internal quality measure is performed by the Comptroller – *W's national coordinator of QMS* who issues the certificate based on an evaluation of the auditor's recommendation. The experienced auditors only mention this internal control measure in passing. Apparently it is seen more as a practical division of labour than as something that is bound to raise questions or counterclaims.

i) The *Planner* at the main office mediates (Bannon and Bødker 1997) the calendar entries of each auditor as well as a common Scheduler calendar application, in order to find available timeslots for all involved. This can take some time to resolve, even weeks and months for some audit visits if the client keeps rescheduling. The client needs to have a large part of his management staff available – at the auditor's beck and call during the visit. There tends to be a lot of rescheduling. One reason given for this is that W's clients prioritize their own respective clients in their planning. However one auditor claims *"there is a lot more rescheduling now than before the scheduling was*

centralized and the Planner (mediator) position was established" [auditor, april 2006]. This rescheduling also increases the amount of work pileups in front of holiday seasons or when the final deadlines concerning the certificates' validity periods are coming up. The use of a mediator here, the planner, may serve to reduce the auditor's stress concerning changes, but may also make it easier for clients to initiate a change when there is a go-between. A reason for the centralization was to achieve less pile-ups and a more even workload during the year [local manager, sep.2004]. The Scheduler program, which holds the overview of all the planned audits, is mainly used by the Planners and management who seek status data on production. Another auditor is disappointed in the planner's ability to keep on top the workload – and the allocation of audits to the different auditors. She feels that her requests for additional technical expertise tend to get forgotten, and that the workload has not evened out [auditor, June 2006]. In fact, quite the opposite. They have both restarted their own logistics initiatives by using a worksheet to keep on track of their clients and their audit cycle timeline.

ii) The second thread of coordination regards the scope of the client's contract, and thus the relevant standards and cycle. This implicates which accreditations the auditor needs, i.e. who audits the client, and the amount of time to be spent on/with the client. This coordination eventually involves the auditor, the client, marketing, the planner and other appointed auditors. A guideline in a template sums up the cycles and when to address which topics. Although the principal auditor often will be the same as last time, sometimes additional auditors may be needed for special topics based on the client's line of business and where the client is assessed to be on their *Journey of improving their QMS*.

iii), iv) & v) Based on auditor's run through of previous personal notes, the report and resolving of previous audits, stored in a paper folder and the CDB (common document database), the auditor will contact the client for a discussion on the agenda of the upcoming audit: the topics to be addressed and prepared – including hazards, people to be present, documentation to be sent beforehand in either direction, and when selected sites are to be visited. Discussions of these issues take place between client and auditor, as will the follow-up after the audit visit, supported by documents, e-mail and phone conversations.

vi) On concluding the audit: the recommendation and its terms will be validated by the comptroller at main office who will finally issue the certificate to the client – usually every three years. The evaluation is mainly based on documents found in the CDB. If the auditor has doubts about what decision to make, or its terms, this will usually be dealt with during the follow-up period after the audit visit. The auditor may discuss the situation with colleagues or the comptroller if she finds that appropriate. Phone and e-mail are the prevailing media.

Coordination of less familiar issues

Coordination is a notable part of a client relationship which may be attention-consuming in that the coordination of each single audit may go on for weeks, in between the other work. Apart from the new discussions due to the hazard focus, the coordination cannot be said to be intense in view of being mentally challenging. As

there will be several clients to deal with in during the few hours the auditor spends in-house between audit visits, it may be relatively busy. Any urgency is related to the auditors' wish to gain undisturbed time for writing out reports etc. or having time for a relaxed tête-à-tête with a colleague without scheduling particular topics for discussion.

Apart from the articulation of tasks-tasks and people-tasks, a significant part of the auditors' work is the articulation of connection and relationships, along with common understandings and equifinal meanings – the people-people issues that indirectly affect both work and articulation work. This, in terms of the client, now takes place both before the audit, during the audit visit when the auditor is mostly on her own, and during the follow-up. Given that W seeks efficient communication on certification, in effect that results and evaluations are written out and displayed before the auditor leaves the client's premises, there is a certain urgency to resolving the conclusions of the audit, and its particular consequences, during the visit.

10.3.2 The need for precision and promptness of interpretation

The audit visit at the clients' premises is an ongoing negotiation, during which the client presents themselves in order to the chosen agenda. The client presents their QMS activities and strategies, and the auditor poses guiding/prying questions and does spot checks. All the while there is a negotiation of interpretations regarding the client's practice and its possible match or mismatch to the standard (ch.8). At the end of this process the auditor presents her final conclusions and findings, prioritizing their relevance in order to achieve a workable CIS for those involved. The presentation at the audit summation, the reports and follow-up log are a central to the support of this work. The stories and the rationales used during the day are central to their mutual trust and motivation for the follow-up stage. Central is also their mutual treatment of the others as peers, albeit with a situated authority distributed amongst them across the board. Mainly the client knows his business, its markets and their own performance. The auditor knows the standard and QMS practices across a range of clients.

The auditor puts a lot of effort into ascertaining that the client has the same, or an as close as possible, understanding of these conclusions and their implications, as the auditor. These negotiations take place almost on the go. The presentations take place – and are summed up and prioritized according to gravity, during the summation meeting of the on-site audit – before the auditor(s) leave the premises. This promotes an intense calibration with the client in order to construct a CIS and common *webs of significance* for those involved in the audit. In order to do this, the auditor's working knowledge and repertoire of arguments and knowledge must be calibrated to W's and the wider QMS community's conception of the standard and its practical application.

The coordination of the equifinal meanings needs precision, several perspectives, perspective taking and perspective giving between parties when their interests and outlooks differ. If understandings are present and no new transformations need to be made in order to bridge differences in conceptions, then there is little urgency. If however the parties stand far apart, there is a considerable urgency to resolve understandings in a robust and multi-perspective manner so that the client will wish to continue as part of W's portfolio – and take QMS seriously in the manner delineated by

the auditor. This is not always easy. As we saw in chapters 8 and 9, emotions may be evoked, when things seem unreasonable or untenable. At a team meeting, following a discussion of the merits and failings of a particular client, one auditor exclaimed: *"Do we really want this kind of client?"* [auditor, March 2004].

10.4 CHARACTERISTICS OF THE RESOURCES FOR WORK

The two previous sections have lain out the context of the human actors and what they are about in this work context. We now turn to the practical resources – social and technical, that are in place to support this work practice. Are the parameters suited for delineating and understanding the particularities of service work in general, and certification auditing in particular, by securing *reputation* and *performance*? The *distributed* nature of work implying professional loneliness with need of *mediation*, the diversity of interest that needs to be handled, but not obliterated?

Bossen divides the resources for work into three groups: *communication means* (face-to-face, phone, e-mail ..), *coordination mechanisms* (schemas, plans, templates ..) combined with *immaterial mechanisms* (habits, division of labour in use, routines ..). Note however, that these immaterial mechanisms do not coincide with the immaterial artefacts - the meta-concepts and ideas discussed in Chapter 5.2.2. The resources for work not easy to classify neatly into these categories, as they display several qualities at once and neither may operate in practice without the other. Rather they seem to be dimensions of the same parameter. The mechanisms may be seen as particular to a practice whilst the communication means are more open. One could however argue that a phone is also a coordination mechanism when its use is part of a widely accepted routine. Do routine meetings between auditors figure as an immaterial mechanism or as a communication means?

The means of communication are to cater for the calibration necessary for the auditors to carry out their work. Since they are performing service work – their calibration of professional knowledge is directed at two opposing parties. W and the ISO standards community on the one hand, and the clients with the markets they are part of on the other hand. Neither of them can be expected to be homogeneous or stagnant, and the auditor is to provide a benchmark, in accordance with the current opinions of the standardization community, which also - the client and their markets are willing to accept as a tool for trust in their business dealings. This is a rather tall order. It implies that the auditor needs to be confident in her arguments and judgement.

According to Bossen, the more the webs of significance overlap, the more the immaterial and material mechanisms of coordination have successfully been put into place and use, the less there is need of multiplicity and intensity in communication. Overlapping webs imply that more common ground has been established. The interaction has in part been institutionalised, supporting ties across actors (Chapters 4.3.1 & 5.4). Habits, routines and equifinal understandings are in place. Material mechanisms are on the one hand fixed or more open in their possible interpretations, again depending on the overlapping of the webs of significance. With less overlap there is need of more connection efforts across individuals and organizations to enable the

establishment of good communication and equifinal ground (Ch. 4.2.2). When connection and communication needs to be mediated through artefacts – closeness relies on a breadth of perspectives, in effect a redundancy that avoids one-dimensionality, accompanied by an intensity that allows the necessary verification of understandings and trust in a timely manner (Ch.4.3.2). These understandings need also to cater for mechanisms of social identification (Ch.51.2), of identity regulation (Ch.5.1.3) to allow for a comprehensive sensemaking in order to bridge, and balance, the adversarial element of collaboration between parties of diverging interests (Ch.5.1.4 & 5.4). The arguments and final decision must make sense, not only to the client – but also for the auditor. Otherwise, the auditor might feel she is playing out a power exercise on failing grounds – evoking emotional dissonance, as delineated in research on the effects of emotional labour in service work (Ch.5.1.4).

AUDITOR'S COMMON INFORMATION SPACE – part III across main member groups				
Common	*Colleague Auditors*	*W-Mgmt.; & central functions*	*various Clients*	*'ISO 9000' & profession-related CoPs*
Web of artefacts:	(Intranet) Templates; Verbally shared stories, rhetoric & examples	Intranet Templates; Reports, news & directives; accreditations	Doc. Templates: *Contract, Agenda, Report, Log- (NC-sheets)*	Standards; Profess. literature: *magazines & Internet sites;* Accreditations
***Immaterial mechanisms of interaction**:*	Coffee & lunch break routines; Sociable maintenance of connection	Org. structure for task responsibility; habits of informing	Audit procedure & audit cycle; Good manners & hospitality; Stories & examples	Training, individual Certification & Accreditation Regime;
***Multiplicity and intensity of means of communication**:* Generally, for all interaction : Phone & e-mail & =>	e-calendar; CDB W-Intranet– in limited use; Suggestion-box; In-house Friday, lunch & coffee breaks; office interaction/ discussions	e-calendar; W-Intranet; CDB; Dept. meetings / courses	Pre-/post audit dialogue & audit & follow-up: *planner +marketing, document files, meetings, onsite audit w/discussions, presentations, explorations & interviews*	other W-colleagues:Intranet discussion site; CoP Internet sites, Professional courses & conferences, interpersonal colleague dialogue

Table 10.3 Parameters part III - Characteristics of the Resources for Work

The mechanisms of interaction for the auditor with the client, material and immaterial, were discussed extensively in both Chapter 8 *Who decides what?,* and Chapter 9 *Avoiding loose ends*. It was apparent that both the material and immaterial mechanisms of interaction are related and have implications for the other, and are closely related to the communication mechanisms too. When any of these were altered, as described with the comprehensive ABC harmonization approach (Ch.9), the re-establishing of equifinal ground with the client required new resources for negotiation. Equifinal ground, as in

recreation of a CIS between W – employer and colleague auditors is needed. The auditor's latitude in terms of making appropriate adjustments to the harmonizing directives needed establishing – in order for them to succeed in creating suitable CIS with the client. Creating and maintaining an appropriate CIS with the client is the overarching goal of their work, and something which requires the auditor's full attention. In effect – the objectives of meaning articulation work differs across actors and webs of significance.

That which constitutes equifinal ground will also change as the client's business circumstances alters with its markets. But what is the situation in terms of construction of a 'home' CIS with colleagues and auditors, with W, their employer, as well as the ISO QMS community - in contrast to the part of the CIS that concerns the client? Does the idea of multi-dimensionality cover the aspect of legitimately diverging interests and their diverging associated meanings? What about the intensity afforded by the means of communication?

10.4.1 Web of artefacts

The material mechanisms are many, some perhaps less plausible as they are common to varying degrees, but none the less important for the auditors' information spaces as they both directly and indirectly shape their conceptions of how to perform certification audits:

- The audit client database: administrative client info + comments-field (little used) + file folder
- The e-calendar/e-mail
- Whiteboard by secretaries desk with presence information on each individual
- Common lunch in canteen and coffee break – mostly small-talk, but encounters that allow for bigger or more private issues afterwards
- Green-book – personal ledger/notebook - each auditor has their own (some have replaced this with a laptop – to what degree they store files for later reuse I'm not sure – maybe they original notes are scratched as they get edited into the new reports.)
- Client paper file-folders with copies of all correspondence (perhaps the reason that the electronic copies sometimes are not downloaded to audit client database)
- The standard – every auditor has a personal short-version paperback copy (A5-size, 1 cm thick)
- The templates – the ready-made forms and schemas that incorporate guidelines, checklists and coordination mechanisms for in-house articulation work and client coordination and CIS
- The description of procedures/routines – accessible on a server as folders and files. File database (CDB) and the normal procedure of the audit as it proceeds through the organization, starting with bid, scheduling etc. To be implemented into a future IS with workflow- and file management.

Some of these artefacts are common to many of the actors that take part in the CIS, but many are particular to a group of actors as shown in Table 10.3 Parameters part III. See also Chapter 11, Figure 11.2 *Social actors*.

As described in chapter 9, the harmonization strategies are restructuring of the former divisions of tasks. This introduces new artefacts, as well as influencing the use of the artefacts, for instance the CDB. When marketing concludes a bid they file it in the CDB, while the auditor may not notice the changes to running contracts, causing frustration. Marketing and auditor may perhaps be at different levels of urgency, and they have, for historical reasons, little in the way of a CIS amongst them.

10.4.2 Immaterial mechanisms of interaction

The standardization community's way of organizing audits has a long history. My informants have been doing it, more or less this way for as long as they have been in business and it represents the essence of their organizational experience. While officially the same in one country, the templates and their surrounding routines and habits differ across countries and cultures. These nuances became apparent when W started to implement the Ω workflow system across their global offices. There were differences to the procedural parts before and after audit visit, the shape of templates, the division of labour between auditors and back-office, but mainly the audit itself seemed to similar. But also the use categories for classifying findings in the audit was slightly different here, in that my informants use the optional categories *observations* and *noteworthy efforts* in addition to NC1 and NC2 (ch.9.3.1). The final reports and written dialog through the follow up of the audit visit constitute and represent the process of arriving at the final conclusion - equifinal meanings for those involved in the audit.

The Certificate is issued and represents the closure of the interpretation or construction process (Bannon and Bødker 1997) in a single artefact – or boundary object (Bowker and Star 1999) as Bowker and Star term it. A CIS with sufficient closure to allow for forms of translation and portability between communities (Bossen 2002) (p.177), fulfilling the purpose of a certification for a company is to be established during the audit visit. The process of negotiation, the constructing the equifinal understanding in an acceptable agreement, is assisted by the auditors' use of a repertoire of boundary objects, of stories and meta-ideas that may travel (Czarniawska and Joerges 1996), suitable examples of how to do it, or not to do it. These boundary objects take the shape of stories, concepts and arguments of created and shaped for this particular purpose – as described in Ch.8.2.1 of the Gel-case. They need to fit the standard in question, the business community as a whole – and the client and his market situation in way that gives credibility and trust in the auditor's competence – and the motivation to continue QMS as the auditor has suggested. Such stories and examples, ways of describing in order to achieve equifinal understandings comprise vital immaterial artefacts, and their confident use needs to be embodied, 'routine' – in effect an immaterial mechanism for the auditor in her work. These stories also supply the clients with examples for resolving the NCs in order to keep their certificate. An onsite audit, with its negotiations, hospitality, in-qualculations and qualculations, add up to considerable effort of revising the CIS to accommodate those present – yet also staying aligned to the standard and a wider QMS community. The CIS of this audit is articulated in particular during the onsite audit visit.

The immaterial habits and routines that guide this improvisational negotiation process are supported by the physical templates. But, the embodied routines and procedures of behaviour and experience are a vital part of these resources. The accepted flow of the whole audit is both embodied in the experienced auditors' know-how, almost tacit knowledge. How to mediate equifinal understanding with clients and accreditation bodies is an acquired skill. In effect the audit implies the construction and maintenance of common information spaces (CIS) which involves – in different ways: the client, the other auditors, colleagues and W management, as well as the accreditation body in case of an accreditation audit. The various dimensions are tied into one CIS, at the point in time of awarding the certificate. At this moment, all the diverse meanings within the CIS of the auditor need to add up and align. This is calibration in practice – *the suitable balancing of meanings between the overlapping webs of significance for the various actors*.

Both the material and immaterial mechanisms are extremely important for the carrying out, documenting and presenting the certification audit. This is a long time business which has had both the opportunity and the practice of establishing working infrastructures in shape of codified experience. These have been incorporated into immaterial habits – with a conception of a professional identity. What it means to be an auditor, and how an auditor acts.

But the main resources of this calibration of interpretations and meaning do not readily fit with the parameters as described here. The immaterial resources – stories and arguments, conceptions and explanations of the standard, suggest an extra parameter – or perhaps ***an expansion of the material resources in tune to ANT where the artefacts comprise both tangible objects as well as the immaterial and abstract concepts – intellectual goods – especially when meanings are concerned***. And secondly, what could support the creation and maintenance of a professional identity, as an extension of meanings and interpretations is not identifiable, although intensity of means of communication might be a useful clue.

10.4.3 The multiplicity and intensity of means of communication

Table 3.1 displays that there is multiplicity to the auditors' means of communication. In Chapter 9.4 we discussed the importance and effect of differences in the timeline of their interaction with various other actors. Distributed across other actors or time, the building of relations to the client was seen to require more effort than ongoing or face-to-face interaction.

Face-to-face interaction, as the most intense means of communication, takes place for the auditors, primarily with their clients. At the onsite audit – they face the client, armed only with their heads and a few templates. In effect – their professional identity, their immaterial artefacts and mechanisms, and templates. At the office they are face-to-face with the colleagues that are present at the same time, when they look up from their desks or leave their office cubicle - not too many QMS-auditors amongst them. The auditors themselves comprise the most important web of significance for the auditors themselves in terms of the know-how of how bring about an audit and its conclusion.

The face-to-face communication between these auditors is infrequent, and mostly with a fairly low-intensity character. Apart from chance meetings at the office and for lunch, and the odd audit that they perform together, they will actively need to seek each other out for direct personal communication. The in-house Friday was created as an institution by the auditors themselves – exactly for this reason – to provide the support they need. So, the material and immaterial mechanisms of communication figure prominently in their communication – the routines, the indirect communication via the documentation and communication of the audits themselves, as well as the templates. The circumstances of auditor-auditor interaction, and presumably knowledge calibration, is mediated and/or of low intensity.

The means of communication/mechanisms of interaction for these lonely service workers are not particularly advanced in electronic media terms. Off the shelf software caters to the basics. There is however a great variety of means, many dating back to *pre office computing* times and adapted to computer use more or less successfully. They have all been in place for years, although the Ω IS coming to replace the current client database will probably challenge some of the existing mechanisms. I expect also, there will be differences between the younger auditors as opposed to some of the more experienced auditors, as in which means and mechanisms they choose to use, depending on experience and habits.

All in all, there are differences to the intensity of interaction, depending on who it is they are communicating with. A small share of the auditors' time is spent **on high intensity communication** regarding audit coordination (planning), but **low intensity** in the ongoing but distributed interaction **with** auditor **colleagues**. On the other hand there is **an intensity present in the articulation work pertaining to constructing a CIS together with the client** – in particular during the audit visit. This local and intense, situated articulation, challenges the resources available to the auditor, then and there. The outcome relies on the auditor's ability to handle the situation and refers us to this chapter's initial questions on how to acquire and maintains the skills of performing the audit – of being an up to date auditor with calibrated knowledge and performance?

Another question is – how does the auditor manage to balance the effects of the low-intensity communication within the W-community against the high-intensity communication with the client?

10.5 MULTIDIMENSIONAL INFORMATION COMMONS – OR MULTIPLE CIS, TO SUPPORT LONELY WORK?

It is a challenge for distributed service workers to establish and maintain a calibrated knowledge base in face of their intense interaction with clients. For the certification auditors in this case, there is a clear difference to the frequency, quality and resources for the interaction and meaning making opportunities between the auditor and client on the one hand, and on the other hand - the auditor and her colleagues, employer and professional community.

10.5.1 Becoming an expert auditor

The opportunity for the auditors to reflect and discuss is vital. Both during their training period that builds on the substrate of an engineering education, and later when participating in community discussions and reflection, although thinly spread in time. They need to establish and revise suitable examples and resources that enable them to be up to date promoters of standardised Quality Management. Internalizing these, making them embodied (Blackler 1995), living them out through practice (Lave and Wenger 1991) as part of a professional identity allows for developing improvisational skills for client interaction. As they become experts in their CoP (Ch.5.1.1), their repertoire of suitable Boundary Objects as well as their skills in improvisation may well have grown to the extent that they do not perceive the same amount of gains in prioritising internal activities in the community. For the expert, the new IS tools are seen as something to be tackled and exploited to the degree that suits them, rather than the supply of answers to what to do and how do it. The same goes for in-house meetings that take up scarce time in a busy work schedule. The degrees to which the material mechanisms of interaction will be utilized by different users over their different learning trajectories will vary. As systems and organizations drift (Ciborra 2000) individual competencies are not static. The opportunity to try out and discuss new issues within their home community is an important aligning and calibrating mechanism. The loss of such an arena could over time imply a lessening of the coherence and unity of the auditor's community and organizational knowledge.

The temporal aspect, with accumulation of organizational knowledge for future use as improvisational resources for interaction with the client, is I believe an important aspect here. The redundancy given by multidimensionality could cater for this. Novices have a smaller repertoire to take with them on their ventures into the clients' worlds. As illustrated by a young auditor's comment upon the completion of an in-house course on the upcoming new Ω IS tool: *"How is this supposed to make me a better auditor?"*[auditor, Feb.2004]. This auditor sought in new tools a support on the difficult issues in dealing with the clients – not the nitty-gritty of practical coordination, but rather the other aspects of articulation work, towards the consummation of the audit into a decision and certificate.

So - one central issue for certification auditors is: *How to achieve and maintain a suitable repertoire of boundary objects of stories, examples and arguments* to support their articulation for reaching equifinal meaning – by involving the client in a shared CIS.

10.5.2 Maintaining competence and capability

As mentioned above, the use of the web of artefacts – the material resources must include the habits and routines to confidently make use of them, as the parameter immaterial mechanisms of coordination suggests. First learning to use them through discussion and reflection, but later to replenish, revise and internalize (Ch.4.1.3).

To be useful, the sum of the auditor's experiences, gained through their interaction with many clients, doing their work, going through their own training and recertification, gathering resources, even creating these resources, they need know them intimately.

They need to be part of who they are as an auditor. Lived practice will serve to regulate their professional identity, countered by their own efforts of identity work on their own professional identity (Ch.5.1). This will include active use of their im-/material artefacts, including creating or adapting them.

Calibration in balance of opposing interests

In face of crossing interests, the service worker needs to reconcile meaning and interpretation of the two main positions – the client on the one hand and the standard on the other (assuming that employee, employer and the larger professional community align). So, they not only need to bring meaning across - by crossing the functional boundaries (syntactic, semantic and pragmatic) by transferring, translating or transforming issues to bring understanding in terms of some form of recognizable issues (Carlile 2004). The difference of interests may need balancing, prioritizing and choice. This may imply creating new equifinal meanings in order to argue towards an acceptable conclusion of the audit – as we saw in chapter 8 *Who decides what?* The ability of an auditor to create in-/qualculation necessitates that they separate and choose between opposing interests, and ensure that the client is comfortable with the process and result. Consequently, the CIS of auditor and client need to include aspects of connection as part of the meaning making, as well knowledge creation (Nonaka and Takeuchi 1995).

A relatively young auditor said, when ABC had been their mode of certification for a year and a half, that ABC required more of her in preparing for the audit than it used to (Ch. 9.1.2). But there is more to it than that. She now finds it difficult to balance between the opinions of the client and her own conception of what should be the right decision. She needs to work hard to build her arguments, to gain their trust and motivation [auditor, June 2006], to the extent that it appears to be uncomfortable. She feels she does not get the technical expertise backup she needs as the planners forget or disregard her requests for particular experts, it has been a long time since her last recertification, due to some part time employment, and she has missed several of the national team meetings. All in all, the 'home part' of her CIS does not have the redundancy and qualities that allows her to comfortably negotiate meaning for herself and her clients.

10.5.3 Separating between interests and meaning

Clearly, there are different concerns that must be addressed by the articulation of collaboration, interpretations and meaning. Getting meaning across is different from creating the new equifinal meanings that allow for common action in face of diverse interests. It seems that equifinal meaning is not just a possible subset of a 'totality' of meaning or common ground. Rather it requires a new argument that also resolves the paradox of legitimately opposing interests. The auditor seeks the argument that removes the feeling of having to force a decision when lacking the convincing arguments to support a satisfyingly equifinal meaning.

The auditor's quandary is reminiscent of findings in research on emotional labour, aiming to work on the clients' emotions and feelings, which is typical of many kinds service work (Ch.5.1.4). Research on emotional labour has found that employment

latitude, the employee's personal discretion on whether to employ emotions in the interaction, reduces emotional dissonance, which means that standardized and overseen emotionality increases dissonance. In the case of multiple, short, impersonal encounters the amount of dissonance increases, especially where clients are negative. Longer, 'get to know' encounters appear not to affect dissonance (Kruml and Geddes 2000). *Training that helped the employee to recognize, understand and feel empathy, to identify with the client but avoid adopting these meanings*, also helped to reduce such dissonance.

In terms of distributed work, where ongoing calibration of knowledge is important, the above suggests that enabling of interpretation and sharing for equifinal meaning is not enough to support work when interests do not align. A CIS in an adversarial setting also needs to acknowledge and allow for identification of differences in interests. The immaterial mechanisms and practices that shape a CIS must support reflection to enable identification and separation of interests, followed by support for bridging the differences in a way that is appropriate to the situation. Based on the finding in Chapters 8 and 9 this implies that a CIS must hold: *i)* the resources for negotiating agreement – i.e the im-/material resources (Ch.10.5.1). *ii)* Ongoing immaterial practices that include reflection, learning and *identification of separate interests*. *iii)* Training in judging the situation and in use of resources.

For the auditor who did not feel comfortable with ABC, it seems the intensity of coordinating meaning with the clients far overreached the intensity of interpretational activity within the home community.

10.5.4 Maintaining a CIS in face of drift

Drift, the changes in circumstances which imply that once smoothly running practices do not necessarily stay that way, is a challenge for knowledge based work (Ciborra 2000). Drift concerns that fact that circumstances change. Managing drift has been compared to shooting at moving targets.

So what brings about drift? Drift may be defined as the situation where one set of reality does not match the evolution of another set of reality. In terms of certification auditing, several factors can be identified, that all challenge what we have termed the calibration of certification auditing - even when it is according to a standard. It is exactly the handling of drift that certification auditing is about - the realignment of interpretations across the board in terms of the standard. It is the auditor's job to handle drift. And to do this, the auditor relies on her 'home community' to participate in developing relevant articulation practices to establish equifinal ground through a CIS.

An expert's drift, loosing track and calibration, is not easily discovered when they work alone. The traces the auditors leave of their activity, are concise and to the point – filled into templates and document databases. The performance at the audit visit is closed off with the conclusion - at least if the client concurs with decisions and directives for their future QMS practices. Colleagues may find comments in the current document database, which allows for free text. Things to remember for next time. These are to date, most often as empty as the report which often has not been electronically filed, but

stays in the paper binder (Ch2.4.2 & 9.4.5). And even when the report is there – the 'inhouse' public aspect of this system may result in a careful tailoring of what is put there. Whether the result of conscious strategy or not, I have found – in other folders than the one reserved for the particular client, correspondence pertaining to internal discussions between the 'comptroller' an auditor as to a suitable conclusion of an audit. All documents in the system are accessible to all colleagues within the national department. The CDB is clearly not the place to reveal doubt. Unless they raise any doubts or issues of calibration with manager, colleagues or central comptroller, a lonely auditor may well remain lonely and drift off.

Traditionally, their professional identity – who and what an auditor is, how one performs as an auditor, is the vital element of providing coherent and credible certification practices - in the field. My local informants supported their own identity work by establishing the in-house Friday for discussing their practice, practicing tool use, making and revising templates, discussing and sharing stories to be used as a repertoire in negotiations, tinkering with them on their own when the need arose. On the other hand, their standardized training, and organized retraining, forms a stable background for calibration. The example of the busy auditor, hosted at a smaller office, distant from the now centralized functions of planner, in-house team meetings, as well as management and comptroller, shows that for this auditor – centralization and distribution has gone too far. The home-CIS has become too low-intensity, compared to client interaction, allowing even a postponement of the standardized retraining. In time this local office counter this by actively introducing lectures into the team meeting to make them more relevant, and re-introducing local informal meetings to keep each other up to date.

Drift, as demonstrated here pertains to:

- The personal learning trajectory of the individual – which needs maintenance
- Changes to W's way of performing certification – like the ABC harmonization
- Changes in the standard, or regulations given by the national accreditation body
- Changes in other laws and regulations
- Trends in business concerning issues of QMS, reputation, risk – lately exemplified by W's hazard focus. An auditor refers to several issues over the years, which they would focus in order to supply additional value, such as 'calibration of instruments'. *"We had an in-house course on that"* [auditor, June 2006]
- Changes to market situation
- Changes in organization – such as the centralization of tasks
- Changes to IS – such as the templates, which rearranges responsibility amongst actors – such as the excel sheet co-authored with the client (ch.9.3).

Drift is brought about at an individual level, on an organizational level, and in wider society. In the interest of making a sound judgement with which the client agrees, that auditor needs to be able to address issues as they arise in a confident fashion.

10.5.5 Implication for CIS

For W maintaining a CIS for their auditors

In work setups where diverging interests and drift affect the necessary CIS, this exploration has shown that a balancing of interests and creating the resources to forge this balance is a necessary part. Imbalance in intensity of communication across communities seems a clue that suggests the CIS is vulnerable to change. Rather than seeing the complete arena for the auditor as one multidimensional CIS, I suggest that a more fruitful approach is to see these the two webs of significance – the auditor/W versus the client – ***as belonging to two separate CIS that need balancing*.** This allows for a separation of interests that allows identification, and dealing appropriately with challenges.

In addition to supporting understanding by bringing it across boundaries (transport, translate, transform), a CIS should support creation and revision of meaning, along with functionality for verification and validation of meanings and understanding – such as providing awareness that understanding is real. The co-authoring of the audit-log by client and auditor could be seen as an example of this, even if it runs into practical trouble in terms of balancing responsibility and roles. The overall objective of *the CIS the auditor is involved in needs to support recognition of diversity of interest, the establishment of trust and motivation - in addition to meaning.*

Other issues of collaboration, which tends to be left out when one focuses on the physical aspects of work settings, are the issues relating to motivations or politics. A common prerequisite in discussions is that all participants are conscientious and mindful in efforts of work. Leaving out wilful hampering, which would have to be delegated to risk and strategies for alleviating risk, there is still plenty to contend with for systems- and organizational design in allowing room for limited resources, tiredness and mistakes, or plain indifference to some perceived marginal objective. Schmidt & Simone say: *"However, a protocol only conveys stipulations within a certain social context, within a certain community, in which it has a satisfactorily certain agreed-to meaning and it only does so under conditions of social accountability"* (Schmidt and Simone 2000) (p.7). This implies that securing a conscientious effort necessitates some method of making effort visible and accountable. Visibility of effort effects the possibility of control but also it's dialectical opposite, namely the possibility for acknowledgement within a community. On the other hand, the level of imposed accountability will reflect on how the auditors perceive the trust that their employer has in them to perform their work. Drastic increases of visible accountability may be seen as a violation of that trust.

Separation of CIS has also been suggested on opposite grounds – to separate and allow for private CIS. According to Bannon & Bødker (Bannon and Bødker 1997), based on (Giddens, 1990): *"[certain kinds of] organizations have been delegated a certain area of societal competence which is not part of the everyday competence of the rest of us"*. For such an organization it is extremely important not to reveal the complexities and ambiguities of phenomena/decisions "front stage".

For CIS parameters and concept

As discussed above – legitimate difference of interests, suggest viewing the auditor as member of two separate CIS rather than one.

For calibration of knowledge, practices that involve the user in the creation of a CIS and its maintenance, and thus the professional identity, is vital for the ability to forge new meaning. This goes to the parameter immaterial mechanisms and the kind of meaning sharing to be articulated. This requires that the auditors' voice, as frontline operators on W's behalf, is heard as participants in the creation of the mechanisms of interaction. The presence of such bottom-up elements and the effects of redundancy and multiplicity of resources in producing a recognizable certification audit practice, of expected quality, are discussed in Chapter 11 *Divide and conquer*.

The parameter material artefacts should be expanded to include immaterial artefacts as resources in negotiation and alignment – in line with ANT.

An aspect of CIS that is poorly covered in Bossen's elaboration and parameter of time – essentially drift (Bossen 2002). Bossen's empirical examples used to develop the framework are fairly static. This case indicates that CIS also may accommodate temporal issues with an adjustment of parameters.

This case has also illustrated that high intensity in means of communication is not necessarily the only an important delineating aspect of a CIS. Rather this pertains to the type of articulation work that is present within the setting. For coordination or reorganization of familiar tasks – their recognition for reallocation, then intensity of means of communication is important. For other kinds of settings – such as the lonely working auditors – the intensity and depth of understanding, the development of organizational knowledge and its inscriptions in the immaterial and material mechanisms is the clue – with an awareness of what kinds of arguments and interests they would support.

An important limitation to Bossen's treatment to note is that several of his parameters derive from his empirical case where coordination of work tasks are a primary issue of the articulation work he describes (Bossen 2002). The framework requires some adjustments for other types of articulation work. Over all I find CIS as a useful perspective for understanding the kind of articulation work that is central in the auditors lonely work – the articulation of negotiated meanings.

10.6 CALIBRATION REQUIRES ACKNOWLEDGING DIVERSITY

In order to secure the recognition of a separateness of interests, this case suggests that the CIS of such parties should be seen as separate and in need of balancing in terms of the lonely practitioner who needs to acknowledge both. The identity, motivation and capability of a 'lonely' worker hang in the balance of the various CIS the employee belongs to. The ability of the CIS to support the establishment and maintenance of a sense of belonging and identification with the relevant CoP is crucial for allegiance, motivation and competent capability to perform lonely work in a mutually acceptable

manner. Effectively, the lonely worker in must be able to separate meaning into separate CIS representing separate interests, and balance between them to adopt to the relevant one - with concern for the others.

Implications for CIS

The theory of Common Information Spaces (CIS) illuminates the setting of collaborative work by acknowledging that diversity in meaning is present, that meanings need construction and maintenance, and that meanings may to some degree need bridging, in effect creation of new meaning - in order for work to proceed. This attention to meaning addresses that a different kind of articulation work, than that of plain coordination of tasks, is needed to establish the meanings and understandings necessary to perform both professionally and collaboratively. This is particularly salient for knowledge based work, and especially when you are performing it on your own.

Where difference of interest is legitimately present, as in lonely service work, this case demonstrates that the impact of this difference is easily underestimated, especially in situations where drift is substantial. Consequently I suggest securing attention to this fact in the socio-technical organization of work by modelling the CIS of incongruent interests are as separate CIS that need balancing.

And yet, this seems highly personal and individual, despite heterogeneous resources and practices of meaning making within the CIS one identifies with. The lonely individual ends up as responsible for their own calibration across time, their previous and their next certification audit. The next chapter will explore how standardization is used, by all actors, to secure calibration across individuals, space and contexts.

11 DIVIDE AND CONQUER – GLOBAL CERTIFICATION IN ACTION

About this chapter

While standardization is an increasingly popular strategy for producing predictable results and work practices, the literature varies on how standardized production is actually achieved outside the realm of mechanical production. According to the explorations in Ch.6 *Predictability* it seems that exactly what to standardize, and how to secure correct and equal use of standards is an empirical issue for exploration due to the complexity of circumstances, beyond needing to be heterogeneous and flexible. How may the idea 'one size fits all' in the shape of structural, procedural, terminological or performance standards (Timmermans and Berg 2003), be made to fit into all possible socio(-technical) contexts in a way that makes standardization a plausible approach for predictable production of knowledge work?

Is standardization an approach that will secure qualities like interoperability, smooth coordination, quality and control, interchange and repeatable results for everybody, every time and everywhere? For QMS auditing the global scale goal of W and its auditors is that auditors should arrive at the selfsame predictable judgement regardless of origin - be it Scandinavia, Japan or Brazil. Another auditor or office should be able to take over a client where another left off. Certification of standard's compliance is a growing worldwide business which aims to secure the trust amongst unfamiliar actors that most business ventures in a market based economy rely on. It has even been suggested that audits are performed all over the world as rituals for verification of trust (Power 1997), rather than actually assuring core practices worthy of a certificate! This claim suggests that the difference between an actual compliance with substance versus a show of standardized practices is difficult to pinpoint.

Could it be about distilling the right standard, and if so – how long will circumstances stay stable enough for the standard to remain viable? What methods would we use to devise it? Will success come as the brainchild of informed experts, prioritizing between every possible concern to arrive at an overall abstract solution – a top down informed approach (Davenport 1998)? Or will the lived and emerging strategies of repeat performers successively crystallize into stable and standardized ways of performing – also known as the bottom up approach (Timmermans 1999)? Or – is the generic standard, as identifiably stable and fixed, really something that comes to life and exists only in the eyes of the beholders as recognizable and thus matching? Adding to a sense of stability as a locally performed co-constructed instantiation attributed to the standard (Ellingsen, Monteiro et al. 2007).

For these W auditors, we posit that predictable auditing, in effect standardized certification practices, is the resulting overall performance, the sense made – or the superposition, of numerous individually credible means and activities, structured but also appropriately improvisational. Separately, tasks and means address the various and individual concerns and circumstances of involved or implicated actors and link them to

(the idea of) a standard. Uniformity is achieved, not as one single way of performing – but as an equifinal set of understandings drawn from multiple practices, each involving subsets of actors, that separately make sense as belonging to the standard. While W is a global company which, amongst other services, delivers certification audits according to the ISO9000 *QMS* standard family, its auditors are the ones who actually see to it. They produce this service in direct interaction with their clients, on the spot, and in face of tangible consequences for their clients. In the long run, there may also be consequences for colleagues, their employer and themselves if they get it wrong. Caught between multiple interests the auditors themselves have their own identity as a vested interest in performing audits according to expectations.

The following presents mainly the auditors own strategies for meeting the expectations of other actors across clients and instances, and thus attempting to secure their own interests and identity in the process. Ch. 8 *Who decides what?* described how they managed the onsite audit visit, Ch.9 *Avoiding loose ends,* how they adapted to and performed W's predictability moves across the audit cycle as new harmonization efforts were introduced. And Ch.10 *Lonely decisions*, described the circumstances and resources available for persevering in their professionalism when alone with opinionated clients. Drawing on the previous chapters, we *now systemize and categorize their approaches, seeking the purposes they address*. But first, we look at the auditors' circumstances and ways of systemizing their practices before and leading up to W's global harmonization efforts. Finally, we proceed to analyse the practical strategies which from the auditors' perspective amounts to performing good work: certification audits befitting of W employees.

Figure 11.1 below illustrates the timeline of the various events that I witnessed or was told of during my fieldwork.

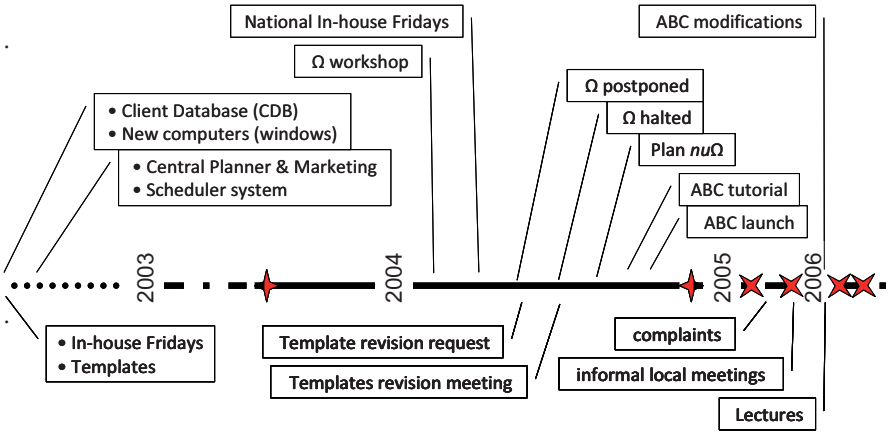

Figure 11.1 Rough timeline of systemization efforts *– from top and bottom*

Research Question 4:
How do service workers pursue global scale quality through standardization of their work practices?

As practical strategies, a selection of various actors' systemizing means (material, rational/immaterial, social) are shown in Tables 11.1-3 *Material ~, Immaterial rationality ~, Social strategies.* These are by no means complete lists, but serve to illustrate the point of socio-technical heterogeneity. And - that all the actors involved, including clients, seek to organize and systemize their situation to further their own ends.

11.1 BEFORE W'S GLOBAL HARMONIZATION EFFORTS

11.1.1 Performing the standardized certification audit

The practices of audit certification are systemized, in fact standardized to a great degree. Not only through W's own ways of performing certification, but also delineated by the internationally designed, nationally implemented systems of accreditation that look into the practice of both certification bodies as well as the auditors themselves. In order to receive and maintain their accreditations for the various standards, every auditor carries out a training program at regular intervals. This implies, for one thing, that an experienced auditor goes with them on an audit, to see how they perform. So they know what auditing is about, they know the standard's content, they practice - and receive feedback every once in a while. When additional specialist expertise is required, they are accompanied at the onsite audit visit, one being the Audit team leader, the other being Technical expert. W also requires them to have professional working experience within a particular field before becoming an auditor, such as: IT-development, food production, metallurgy, etc. However, as discussed in Ch.10 *Lonely decisions*, the auditors are often on their own during the crucial audit visit, and they feel strongly that they need to perform competently when they are visiting the client. *"It is like being on stage. Our performance is being evaluated too. .. The templates are very important to us."* [auditor comptroller, Sep. 2004]. So they have a local part to play in a big scheme, where their formal competence as auditors is standardized, as is their training and its maintenance.

Additionally, their work refers to the application of a standard, in effect their interpretation of the standard and their ability to bring it across to their clients. For the sake of credibility they must secure, and display, a consistency of practice worthy of a standard. They run into trouble when a client observes that the previous auditor never had any objections to this way of managing a given process (see Ch.8.3.2). Handy is the justification that the present comment reflects that the client's overall situation today is different than last time. Circumstances have changed, and now they have moved on in their journey towards improved QMS. Better still if the previous auditor was from a competing certification body. A consistent evaluation of and discussion of clients' QMS performance, together with the client, is a central issue. Divergence should not be evident.

Thirdly, the complete certification procedure with offer, contract, scheduling etc., should be consistent, especially when new individuals and roles are entering into the W-client interaction, as discussed in Ch.2 *Case W* and Ch.9 *Avoiding loose ends*. The responsibilities along with their limitations and boundaries, for auditor, scheduler, marketing and accounting, need to be redrawn, negotiated into place including ways to secure sharing of information and coordination. Effectively, there is an emergent re-standardization of their division of tasks taking place, as in who deals with and talks about which issues with whom. It is evolving and emerging as time and circumstances change, and especially as the auditors become used to the schedulers' presence, their trust in and delegation to them increases, as the schedulers increasing workload attests. Habits are manifesting themselves, anchored to the emerging, 'in use' joint quality of e-mail, scheduler program, shared personal calendars and phone, as an ensemble of boundary objects, supporting a Common Information Space (CIS), that lets each of them get on with their own tasks. However their habitual interaction patterns with the auditors have individual traits which the schedulers are learning to accommodate.

The following looks closer at the organizing and systemization of work that the auditors have put into place over the recent years to further support of their own work – effectively their personal and collectively developed standardization strategies.

11.1.2 Emerging order in maintaining business as usual

The auditors are actively concerned with the quality of their own performance, and those of their colleagues. On a day to day basis, there is no call to spend much thought on W colleagues in other countries. But sometimes the outside world intrudes. One of my informants is to participate in an audit in the neighbouring country 'B'. *"It started a while back because one of our national clients, who has a plant in B, was not too happy with the way the local W office had handled an audit. So they asked us to handle the next one from here. They said they wanted the same people in both countries"* [auditor, April 2005]. She seems modestly proud that her performance has been preferred. This incident, a few years ago, contributed to management's initiative to look closer at developing global client contracts. This brought about attention to the fact that reports from, and ways of performing, the audits needed to be harmonized to greater degree than they presently were. A report from country P should look the same as one from country C. Even simple things like where in the document the W logo is put. If they are to deliver a homogeneous product, it should look the same, and it should not concern, nor need to be evident to the client, where the auditor actually comes from. One auditor should be able to continue on a report that somebody else started. Hence a technical harmonization of report production tools and communication means were initiated worldwide for W's offices. But with one initiative, others soon followed.

The need to share documents and information amongst themselves is not new, even though they individually usually keep the same client for years. If not before, the final issuing of the certificate, which is performed by the comptroller at the main office, requires communication and information sharing. Relevant documents, amongst them the auditor's report and recommendation, thus need to be available to the comptroller. So they have database system (CDB) for storing all correspondence regarding a client in the same folder. But most of them are used to doing it the paper way, and the paper

archive is still in action. The database is meant to be a common repository, but formal communication is performed by letter. And copies are kept in loose-leaf binders. This means that, even though documents are initiated in the system, later updates of the file often goes somewhere else, because they forget to upload. Mostly they remain on the C-drive of the auditor's laptops. So while the database is incomplete, it is in active use as it holds the templates of the various documents along with a complete register of clients. Frequent challenges with finding updated information, retaining background information for later use for other kinds of audit has lead them to the fact that it is smart to keep everything in one place where they all can get to it. A previous agenda may be reused as a first draft before editing and adjusting it to the next client and audit. But while sharing and helping out is evidently smart, it is not so overwhelmingly necessary so as to never forget. They usually find what they need in the binder on the shelf, if they are in the office. Or, you can ask the last auditor to mail you the latest file that got stuck on their laptop.

As each local office used to be fairly independent in handling and following up their own clients, they are used to taking initiatives for improving the circumstances of their own work. They tinker with templates. Competent auditors that officially belong to other parts of the organization may stand in to pull the workload. One office of auditors started having local meetings every fortnight for discussing professional issues amongst themselves – The In-house Friday. They fix things, share good stories and arguments, and get on with their work. They are proud to tell me that this office is the best office in terms of using the database system correctly and consistently. They use their meetings to practice the use of their computer applications. And so they know a bit of each others proficiencies and quirks, as well as having a common conception of suitable practices, and smart moves. When they find the templates inadequate or faulty they make proposals to improve on them. There is a 'systems manager' who attends to coordinating, approving and implementing changes in the templates, or making new ones. In the mean time, while waiting for the next update, each of them tinkers on their own. Sometimes, an auditor does not agree with the content in the common version and completely make their own.

But with increasing centralization, the scope of their local discretion is shifting. With increasing collaboration across offices they need increasingly to adapt to more common modes of doing. Use the same templates, and be more consistent with where files are stored. The client folder needs to be complete with the formal documents. But what about informal documents, such as a drafts or a discussion where decisions are in doubt? A two-year old letter of discussion addressed to the comptroller, stored in a draft folder rather than the client database folder, illustrates that perhaps not everyone is comfortable with the accessibility and accountability inherent in the common database. Not all audit decisions are clear cut and doubt free.

The new system Ω, currently under implementation in several countries, but not yet here, is eagerly awaited, although with slight apprehension. It is expected to improve filing practices as it will make forgetting impossible. You cannot move on in the process until the workflow database has received an updated file. Upon asking: "*Do you know how Ω will work?"* one auditor replies: *"No, but it's got to be better than what*

we've got now. People keep forgetting to store their files back into the common database when they've completed it on their laptop. .. The initial file, which is created in the common database, just sits there, more or less as an empty document, there's no text apart from some client data: organization name, number of employees, address and the like. I hope they will move all our existing client files into Ω, but I must say I'm somewhat apprehensive because I think there's a lot missing. .. And all our templates of course." Researcher: *"So you use templates? Who made those?" "Oh we've been doing that for years, but they need updating of course. Templates for writing our report from the audits, and for the agenda, and findings, etc. We have a lot. Some should really have been removed now because they are out of use. Different people even made their own and stored them on the common directory too. We've got a shared system of templates and a systems manager in charge of keeping them updated. Over the years, the standards have changed and templates along with them. Sometimes the accreditation body has asked us to change phrasing. There's a backlog on updates now, while we've been waiting for this new Ω system. They were initially made in WordPerfect you know, but now they're in Word, just converted I think, and they're not good - not easy to work with, if we need to edit something. But we don't want to spend too much technical work on them, to make them better because they'll probably be redone in the new system anyway."* Researcher: *"So the updates are both technical issues to make them work better and changes in their textual content?" "Yes both. Some auditors change the phrasing in the template on their own so that they are better suited. That's not good - it should be done in the common template so that we all benefit, and use the same templates. It looks silly to the client if we don't do it in the same way"* [auditor interview, Jan. 2004].

It turns out – some months later, at an in-house training course prior to the planned local launch of Ω, that there will be an attempt to transfer the existing client files into Ω - as well as the existing templates. They have already been outsourced to India for transformation. There is some consternation as they thought, local management included, there would be a round of updating the content before this. They have been holding back on their own initiatives, and now it is too late! It seems that the Ω project management has been unaware of the backlog – they just dumped what was recorded as the official templates. It also turns out that each country will continue to use their own templates, even in Ω. "*Do we get to see them? Maybe somebody has done something smart. Will we see them in the new system?"* says an auditor. *"No, each country has their own database, so they will not be readily available, except in the tutorial version which we have here now. If you like, you can see them now?"* replies the tutor. Clearly, the content of the document templates are not a prioritized issue for the IS developers, which are now in their second year of their global implementation of the Ω system.

Several questions are brought up, both by local management and auditors, which seem to surprise the Ω-designers and implementers that are here as tutors. The biggest debate concerns the relevant categories of audit findings. Practice seems to be somewhat different in this country compared to most of the other countries where Ω is already launched and in use. "*But the ISO 9000 standard says to use these categories!"* says the IT-representative. *"Yes, but the ISO 9000 standard also says that it is optional to also make notes on Observations and Noteworthy Efforts (*although these categories do not

influence the actual certification decision at the particular audit*). We have found it useful in the client dialogue to use these, - but where do we enter them in Ω?"* asks the auditor [local in-house training session for Ω, March 2004].

All in all, this office has developed local ways of doing the audits, and some of these habits have been adopted by the other offices. Gradually, as the auditors increase in number and experience, the fledgling standard ISO 9000 has gotten off the ground, the initiatives spread, mesh with or adapt to the habits of other offices. They now have a common system, nationally, of updating the templates as well as similar practices in terms of which categories they use. Other countries however, have different practices concerning Observations and Noteworthy Efforts. Local habits arise out of locally conceived ways of making things practical. To avoid that each of them will be inventing the wheel all over again. They are open to the ideas of others and disappointed when they find they will not have ready access to possibly innovative designs by their global colleagues. These practices of developing personal and collective habits, is by Tsoukas described as self-organizing, which focuses *".. enduring patterns of coordination between actors*" (Tsoukas 2001, p.9). But it concerns not only organization as patterns of behaviour - it also concerns the making of boundary objects or reifications that may transcend space and time. The auditors are slowly and incrementally standardizing their practices, but also pragmatically letting them go, adapting, evolving and even dropping previous ways when they become obsolete, to replace them with something better, more to the point. Durable organization implies manifesting practices also in artefacts and practical routines. Artefacts they can bring along when they go on their lonely audit ventures to clients' premises. Such artefacts portray professionalism in both content and visual presentation. Artefacts that may be recognized as belonging to a competent organization which knows, and takes pride in, what it is doing.

With more actors involved, some at other locations, the need is now apparent for awareness functionality to keep more 'public' track of the status of the audit cycle for each client. Such functionality was missed by the frustrated auditor, who was taken by surprised at the unknown change of terms in a client's contract (Ch.2.4.1). The scope of this cross-office requirement suggests that a more centralized, and technical, approach is expected by the auditors themselves. The scale of efforts needed to systemize across contexts inevitably puts the ball in the court of management.

11.1.3 Auditor initiated template revision

Revision of the document templates is something that the auditors often talk about. Since they can be edited in a text editor, they sometimes make their own private versions, even though they know they are not supposed to. They have procedures for collective revision, to be initiated when needed. The document templates are used both as checklists in carrying out the audit, to account for the actual audit, to communicate results to the client as well as to manage the potential findings that are to be followed up within certain timeframes. There are templates for bids and client dialogue. Changes in the standards and input from the NA (the national accreditation body) on the standard's interpretation may also give input to revisions, which are then proposed to the 'systems manager' at the head office. The same individual presently also holds the role of comptroller, and is the one to perform their own Quality Assurance (QA) on audit

decisions by OK'ing, or not, every recommended certificate before it is awarded and issued - signed with blue pen on embossed paper.

With a national focus of centralizing the organizing of audit production, the auditors relinquish some of their personal and local autonomy. In theory they agree with the rationality of it all. *"We must not let anyone hack off the limb we're all sitting on!"* [auditor, June 2004], as they metaphorically put it. They organize themselves in new ways in hope of spending their time more efficiently. The last months before summer break have a heavy workload, and they wish to have the audits more evenly spread across the year [certification manager, Sep. 2005]. The manager, also a practicing auditor, was present at the Ω-course and has forwarded their common concerns to W Certification's global management about how their local practices that are not accommodated. A few months later, the Ω - local launch is postponed. Upon getting the news at a local team meeting, that the current system has been granted a longer life, a discussion on the state of their templates resurfaces. The auditors agree that they cannot wait any longer for new templates. A spokesman contacts the manager to get her opinion. They agree to have a revision immediately after the holidays. Due to retirement, a new systems manager is appointed to prepare an overall revision together with three colleagues. The four of them start preparations immediately, but little headway is made due to the heavy before-summer workload.

The first templates revision meeting – discovering top-down efforts
After the summer holidays, barely 6 months after the Ω-course, the four meet at the head office, including (the observing researcher and) one of the Ω-tutors from head office. As she is training to become an auditor, as well as being IT-proficient, she will be in charge of the technical revision of the templates according to the group's decisions. What catches the others unawares, is the fact that she arrives with news of: *i)* a complete halt to Ω, pending a total system revision, as well as *ii)* a limit to their mandate! They may not touch so and so templates because there is project underway for revising them into global templates! The group is clearly surprised, both by the news itself - and their loss of autonomy. My presence as a researcher was agreed months ago, probably before anyone had news of this central, top down initiative. The mood is apprehensive and questioning, but loyal. *"May we see them?"* asks auditor D. *"As far as I know, they are not done yet. They are working on them in country C."* says the Ω-tutor. *"Is there a draft that we can see? I mean, we can't actually do much with the others if we do not know what they are about!"* continues auditor D.

She goes off again to confer with their boss, and to gain access to drafts of the new templates. While she is away we chat about templates. Auditor C has been systems manager with responsibility for the 'audit system' for the past ten years. In suit with the latest initiative to revise the document templates, she takes part in this meeting, but she tells us that her retirement is only a month away. *"Now it's D's responsibility. I'm only here to be the watchdog. Because I've learned a thing or two, doing this job. This is NOT EASY! ... I've seen unimaginable consequences, even if you change a tiny dot. I've sometimes done small changes upon request, because I've seen no problem and deemed it sensible. But suddenly, there is lots of clamour: 'W H Y, have you done that? You CAN'T do THAT!!'."*

There have been countless initiatives to revise the document templates. Both their technical makeup as well as their shape and content. *"Now we'll also remove some of the obsolete stuff. Every half year, every year there are new initiatives, but we don't do it properly. The technical stuff only gets tinkered on, because we're always waiting for some new system. In a half year we'll get something new, in a year.. In two years we'll be having that new system, so we have to postpone. The past year we've done very little. And now this big global system is stopped, or rather it won't be coming right now. So it's good that we are going through this now. At present there are a lot of process changes going on, so it needs doing."* auditor D comments:*"due to the lack of official revisions, people have been doing it on their own."* C, smiling:*"But I don't really know anything about that, do I."* D smiles back at this, implying that officially C doesn't know, but in reality .. .

The IT-representative comes back with permission granted to look at the drafts – in confidentiality. They scan through them quickly, just to see what they are. They have telltale names. They now know which of the existing templates not to spend time on. They stop at the tenth one: – a spreadsheet – and open it. This is new and different, and they are cautiously apprehensive. *"How many columns are there?! – R columns!! I must say, that's a lot" says auditor D. "The clients are supposed to write in this sheet – their responses to our NC's?"* continues auditor C. *"Yes, I'm told this spreadsheet will replace the NC-template. All findings in the same file. We will coordinate the follow-up by alternately writing in this sheet - the client and us."* replies the IT-representative. *"Hmm ... I'm afraid the clients will be confused. This is too big. I think many are not used to Excel"* [auditor D].

The meeting goes on to discuss every document template in the original template file folder. Which of them may be obsolete, where does text needs revising because it's poorly phrased, or because the standard has been revised so it's not relevant any more. Changes in procedures – who does what, and in which order, also influences the document template layouts. The four of them mostly agree, but also decide to let their colleagues have a say before they actually implement. On closing the meeting, they go over the limitations of this revision project. *"If we find document templates, made for the new system, they have precedence. We have to use them, no discussion. Also the ones made for this new product launch, the ABC thing"* [auditor D]. *"Hey you're not supposed to say ABC - its' A.... Based Certification – in full. Ok?"* [auditor B]. *"– of course!"* replies auditor D – and they all laugh a little. Management's directive on articulating complete product names, both in talk and writing, especially their own brand names, appears sensible, but also slightly silly. *"Three letter acronyms are so much faster to handle, especially in writing"* [auditor D]. This is a practical indication of a constant drive to the practical simplification of their circumstances. And, it stands in contrast to management directive.

11.1.4 Systemizing successively more centralized and global

As many of W's clients are operating in a global market with operations and companies across the world, W has decided that they need to make their practices similar and accountable across borders and continents, in order to cater with an identifiable quality also for this particular market. And since W has always been a global company, the

basics of a global technical infrastructure is partly in place already. This decision spurs both basic technical updating and the harmonization initiatives that have been described and analysed in Ch.2 *The Case - W Certification* and Ch.9 *Avoiding loose ends – when W harmonizes the audit cycle.* Drawing on these chapters along with the descriptions of certification practices in Ch.8 *Who decides what? – at the audit visit,* and their overall practical circumstances in Ch.10 *Lonely decisions – The role of CIS in calibration and motivation,* we now proceed to analyse the practical strategies which from the auditors' perspective amounts to performing good work befitting W employees.

Responding to top-down efforts – new global templates

The new templates are put to use later that autumn, as discussed in Ch.9 *Avoiding loose ends*. They include a slightly different focus compared to the old ones. They are structured to identifiably address the relationship to the client. The report takes care to involve the client relationship, in being noticeably positive in addition to the former way of reporting the professional, scientific and factual matters. They address management – by being formally positive in documenting positive findings, by specifically mentioning client management as participant in the standardized agenda, and by giving a management oriented summary before the summation goes into the details. This client management focus aims to make client management identify themselves (Ashforth and Humphrey 1997) with QMS in general, this certification audit's results – and W as their proficient provider. One new document template (the excel sheet) is designed with specific attention to client interaction by involving the client in its production. The formal focus has switched from plain rationality and facts, to indirectly include social relations to the client by specifically involving and tailoring the audit to the client's own chosen hazards. One could argue that the former NC-templates covered the same relationship, but the aspect of visible accountability is different due to the accumulated character of the multipurpose spreadsheet with its historical log.

The new document templates also contain some readymade phrases. My two interviewees, looking over the newly arrived templates, did not like the words and phrases suggested, nor did the idea itself go down well [interviews, autumn 2004]. They like to use some time to reflect on, and to phrase their comments carefully to ensure that the client understands what the comment is about. Experience tells them that these comments are easy to misunderstand. If they do not put care into the phrasing, then the subsequent follow up of the issues can involve more explanations later.

The auditors are in principle favourable to standardization; this is after all the nature of their business. However, although positive, they retain the right to criticise based on their practical merit and their own professional experience. They try out the templates, but find it necessary to launch requests for change – and do. Phrasing and translations of headers and field texts is the most prominent issue. The clients also involve themselves in the excel sheets phrasing, someone tells me later.

With the introduction of ABC brand, the roles of the auditors in systemizing their resources for work effectively changes. From being initiators of templates and reflective exercises aimed at improving their own performances and its consistence across audits,

clients and auditors, they are now to interpret and put to use centrally designed initiatives. At first they are not even awarded the discretion to make suitable adaptations if they were to see the need. Directives demand that templates are to be used from the given date, even if they are incomplete and use faulty language due to poor translation. Auditors 'quietly' work around as best they can, and leeway is finally granted when a prominent client complains. What they see as stupid design is eventually amended, as when the audit report with presentation layout is finally made in a printout version too.

11.2 PRACTICAL STRATEGIES FOR GOOD (UNIFORM) CERTIFICATION

Clients' sensemaking of strategies – Does it look and feel right?

When it comes to judging the effect of the systematic practices of W and its auditors, the primary candidate for examination would be the clients and the sense they make out of W's certification practices. Effectively for this analysis, this boils down to firstly trusting that W's traditional way of performing, with their considerable market share, carries some proof of what their clients deem appropriate and important. Secondly, in addition to my own observations of audits, the auditors' reactions and their stories of how their new approaches are met by clients, in some measure give evidence on how they perceive these to be appropriate on their own and their clients' behalf.

So, what do the auditors, and W, do in pursuit of global scale quality standardization in their work practices? Their strategies are in the following sorted into three groups characterised by their practical shape, although most of them in their effects or implementation relate to the all three categories:

- Material - practical and symbolic support
- Rationality - immaterial and abstract support
- Social - opportunities for reflection and connecting

The tables below show a few chosen examples out of a number of practical strategies that contribute to consistent certification audits, at least within the country. They are mainly drawn from this chapter, but also the three previous chapters. Each represents an example of a stabilizing element and its major characteristics. For details refer to Ch.9 and Ch.10.

11.2.1 Material strategies

Material strategies are in its physical form easily transported, but their use in practice follows not only from their technical affordance, but how they are meaningfully used, integrated into work practice and its purpose. Table 11.1 *Material Strategies* lists examples of systemizing measures that have tangible shape. However, as listed in the column *Characteristic*, they each may incorporate several or all of the standardization types listed by Timmermans and Berg (2003): structural, procedural, terminological or performance. In effect, the material strategies are practical instantiations of the auditors' and W's formal, and informal, conceptions of what the standard structure, terminology and procedure of certification work should be. And the performance goal/standard to be

fulfilled is related to the identifiable use of the strategies and other measurable aspects such as time limits and production goals, which materialize in the circumstances of their contracts which are in part regulated by the accreditation body in its delineation of which parameters the price of the audit are to be based.

As circumstances change, such as the competition, clients' hazards and economy and their own available expertise, they will need to adapt their practical approach – such as the phrasing of the templates. And thus there is drift which in turn will affect the structural, procedural, terminological and performance standards of their work.

Material **strategies for systematic certification practices**			
Strategy	**Characteristic**	**Comment**	**Release mechanisms**
Templates – letters & reports; first local, then national. Later – W introduces some global ones.	Speeds up document production; enables coordination with client; delineates usual procedure; produces familiarity & recognition	Examples:quote, audit plan, audit report, findings & corrective measures; agenda;	Tinkering on templates; Procedure for revision; later: do not touch, later yet: monitored tinkering
CDB	Store & access documents sorted by client/contract; National access	Incomplete documents; Need to know where	Forget to upload; Store elsewhere
Paper binders per client in auditor's office; (personal computer directory)	Quick access for auditor in office; Quick overview; supports memory of previous audits	Auditors keep client for years	Do not look unless you have to, or feel like it
Colour code	Symbolic	Sometimes inappropriate	Later: In some instances removed
Embossed, stamped certificate	Visible proof of quality, of belonging.	Grand, for all to see	
Parameters of quotation, accredited by national body	Number of employees, ~ sites, type of business etc. for fair and equal competition. Should make it possible to assess the effects of change for the overall price across competitors	Allows planning of audits – time & manpower. Only parts of the calculation are public.	Provide proof of quality rather than quantity

Table 11.1 ***Material*** *strategies for systematic certification practices*

11.2.2 Immaterial Rationality strategies

As negotiation of decisions in face of a diversity of interests is a central activity for certification auditors, they also seek to be systematic in their argumentation. Equifinal meaning is sought. Providing recognizable arguments for mutual sensemaking is a vital aspect of making their work predictable in the eyes of both clients and colleagues. Transfer of information will suffice for those of similar understandings and knowledge (Carlile 2004). For others, translation or even transformation is necessary depending on the type of borders between the social worlds/communities in question. The material strategies need the support of immaterial resources such as meta-ideas, explanations and

stories that make sense. Table 11.2 *Rational Immaterial strategies* lists examples for consistent practices.

***Immaterial rationality strategies* for systematic certification practices**			
Strategy	**Characteristic**	**Comment**	**Release mechanisms**
Stories	Supports arguments across time, client, semantic or pragmatic boundaries	Easy to remember and share	Resource to use when needed
Explanations, models	Demonstrates competence & rationality	Supports rational allocation of agency/ legitimation	Resource to use when needed
Contract that specifies performer.	Recognizable & comparable judgement	Client wants same auditor. Neutral?	Some countries practice new auditor allocation for every audit
Noteworthy efforts rather than Non-conformities	Separates dialogue for motivation and improvement from formal judgement	Tailoring & added value, supports social relations	optional

***Table 11.2 Immaterial rationality strategies** for systematic certification practices*

11.2.3 Social strategies

A third group of strategies aim to support reflection and sensemaking which allows for demonstrating sincerity and mutual learning. Being systematic on such issues secures training and maintenance of capability and relations. These indirectly support

***Social* strategies for systematic certification practices**			
Strategy	**Characteristic**	**Comment**	**Release mechanisms**
In-house Fridays	identity, sharing stories/arguments, discussing & learning; who knows/does what; Builds identity, proficiency, self-assurance; later: lectures	Participants within department; later: national but in-house only	Do not attend; Later: Suggest topics for discussion or lectures
Accreditation training regime	Mentored practicing		obligatory
In-house courses	Shared learning & reflection	Alignment; discover differences	obligatory
Coordination Media use	Habits evolve on communication & connection		individual
Respect, earnestness & modesty towards client; and vice versa; ABC: client involvement in audit process	Favourable climate for building trust, motivation and acceptable decision; ABC: client chooses hazards & participates in logging	Building relations; ABC: connection and ownership of process => trust & motivation	Not needed: hospitality is a social norm, usually perceived as positive; Help client with Excel

***Table 11.3 Social strategies** for systematic certification practices*

In the following examples from the empirical material are discussed as representative of strategies to not only standardize for consistency, but also to deal with the inherent side-effects that are common to standardization efforts. Three typical kinds: *Ambiguity, need for workarounds* and *asymmetry*.

11.3 DEALING WITH SIDE-EFFECTS

11.3.1 Ambiguities

Ambiguity, as discussed in Ch.6.3.1, concerns the differences in understanding that may arise due to time-space distanciation when making sense of information created in another context. While equifinal meaning and mutual trust is enough for reaching a certification audit decision (Ch.4.4), global predictability and consistency in decision making is a taller order. Ambiguity is necessarily something to be avoided, or at least managed.

Sensemaking, boundary spanning and in-/qualculations revisited

Sensemaking, described as contextual rationality, was explored theoretically in Ch.3 *Decision making*, and empirically in Ch.8 *Who decides what?* It was found to rely on: expectations and recognition in terms of those expectations and on prior experience. Of this, sense would be made, iteratively producing a contextual sense and judgement. For certification auditing, we found that if the certification process made sense to the client, capability, trust and motivation was produced for QMS and its actors.

Carlile's framework (Carlile 2004) for boundary spanning, describes three ways to effect sharing and understanding, depending on the knowledge and vocabulary of the interacting parties. If they belong to the same functional community, share the same kind of knowledge and experience – a transferral of information across the syntactic border between them will do. If they share only partly the same knowledge and experience for recognition and sensemaking, then a either translation or possibly a transformation is necessary to cross semantic or pragmatic borders respectively. This description however, refers to boundaries between communities or professional roles, conceiving the individual as whole and homogenous in their ability to understand and reason. But iterative sensemaking implies also that we may understand parts of a rationale, and accept it, even if do not understand it all. To model such partial, equifinal understanding insight from ANT is useful. Actor networks can be treated as an actor – and conversely that an actor can be expanded into a network of actors, then individuals can be seen as heterogeneous, a network of several actors – each holding separate knowledges and borders of a syntactic, semantic or pragmatic kinds. This view allows us to see the agency of an individual, or that of a group, as heterogeneous and distributed across actors and multiple borders within the entity. What makes sense to one actor (partial actor/individual) because its boundary is syntactic is incomprehensible to another actor with a pragmatic boundary.

Multiple and fluid objects/actors meet semi-permeable boundaries

As individuals, there are aspects of arguments that we relate to and recognize, make sense of, while there are other aspects that meet up with our pragmatic boundaries –

ending as in-qualculable – to be ignored or passed on, delegated to another actor (Ch.3.2.2). As such, all of W's strategies – the material, rational and social, for providing services with a quality that we recognize as understandable, sensible and good are multiple. Parts of this multiplicity speak to parts of us. What makes sense to one individual is the accumulation of cyclic process of sensemaking, where each cycle comes from a partial understanding, one or more aspects of a multiple object.

Consequently, any heterogeneous actor relates to different actors in various ways with multiple qualities and several kinds of boundaries. As individuals who make sense of our surroundings, we are heterogeneous and composite in our capabilities and any measure that seeks to communicate with us needs to be heterogeneous in its approach, if sense is to be made and a relationship built. A hospitable approach to achieving equifinal meanings by systematic means is an approach that recognizes the dissimilarities of actors by catering for heterogeneous communication by offering multiple, corroborating evidence, arguments and logics.

Distributed and multiple recognition, understanding, trust and motivation

W meets challenges of ambiguity, of possible doubtful interpretations with redundancy, with a broad spectrum of measures that each holds a number of 'messages'. For instance – a template is an amalgamation of various concerns. Its visual layout, as something fixed and orderly, carefully chosen phrases, the logo in the same recognizable place every time, gives evidence of careful consideration, of usefulness and value. It takes resources to make templates, to get them to work. It attempts to remove any link to haphazard of unscientific approaches. There are traces of all this, and possibly more, in the visual layout alone. This aspect needs no acts of translation to be understood. Going 'deeper', an individual phrase in one part of a template may refer to some specific competence, familiar to one, unfamiliar to another. A phone call or a discussion at the onsite audit visit can clear this up, or delegate the issue to another actor who is more familiar with it. Either way, some distributed understanding is reached, some here and some there.

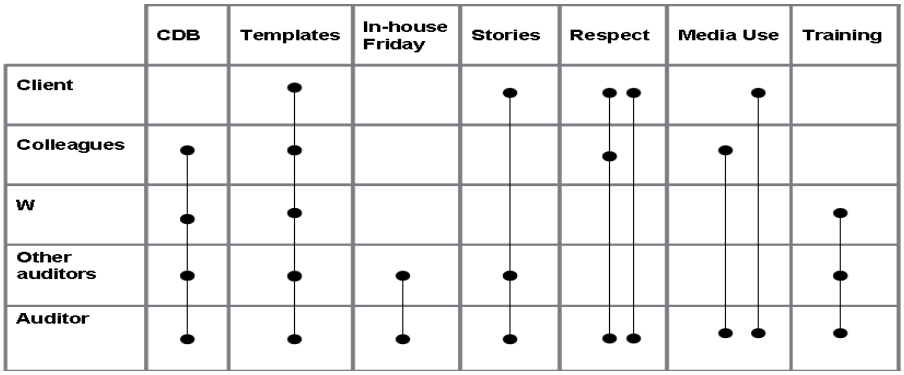

Figure 11.2 Social Actors (left column) whose practices are affected by the multiple partial socio-technical standardizations means – in the remaining columns. *The connection dots indicate which actors interact with or via the various means.*

Figure 11.2 shows examples of systemic measures as part of certification practice, and which social actors interact with them. These figure in the actors' sensemaking and contribute to equifinal meanings amongst them. While each measure and object contributes to partial understandings and a distribution of these amongst actors. The plurality of measures, also contributes resolve ambiguity in making sense clearer. Ambiguity is resolved though multiplicity – unless there perspectives that are legitimately different which contradict each other.

All in all, ambiguities need to be resolved to a degree that allows for equifinal meanings to evolve, and be maintained, both in social and technical terms, in both relational and rational perspectives. Material and immaterial artefacts are actors in this sensemaking that act to make the sociotechnical network more stable than the social or the technical alone. In interactive service work, multi-interest settings, the technical actors do note secure stability on their own either. Also, multiplicity itself introduces ambiguity, making it necessary to tailor the use of standardized approaches. Standardization when it comes to knowledge and meaning relies on intelligent application. As circumstances drift (Ciborra 2000), new ambiguities will need resolving, indicating that for information infrastructures, large actor networks, maintenance is a never ending issue. The practice of certification auditing, in support of a formal standard, is a case in point.

11.3.2 Workarounds and release mechanisms

In addition to dealing with ambiguity with multiplicity, workarounds, as discussed in Ch.6.3.2, are systematic ways of improving, correcting or compensating for inappropriate or lacking functionality. They appear as actors' motivated actions towards performing their work, but also of organizing and improving the circumstances of own their activities. Workarounds represent deviation from plan and system, in order to accommodate more important concerns, like adjusting the standardised audit report to make it suitable for the client's intranet posting (Ch.9.4.2).

On closer scrutiny, we find that most of the standardizing measures, which have been in use in W for a while, have some form of safety release mechanism that allows deviation and workarounds. Examples of these are listed in the far right column of Tables 11.1-3. Previously, the auditors would just do what they found appropriate – such as adjusting a template to their own needs. With the more centralized initiatives, management is at first loath to let any discretion loose, but over time some concessions are made to accommodate the auditors' and clients' concerns when directives become unreasonable. When it comes down to the individual audit, W relies on, and needs to trust, their auditors to perform sound judgement by adjusting when appropriate.

11.3.3 Asymmetry and tension

Asymmetry concerns the distribution of agency amongst actors (Ch.6.3.3). Effectively, systems often achieve, or maintain, standardization indirectly by limiting the options of their users.

Shifting discretion

The auditors are used to working on their own, taking charge, handling situations and making decisions. It is natural to them that this also concerns the preparation of the resources they need. Their attitude to adoption of and alignment to common procedures and templates is consistent with their perspective of their own roles, in that they evaluate on merit. Their self-image and discretion to act as their clients' auditor is consistent with their practiced commitment to their work, which constitutes also their confirmation of being and feeling like a part of W. They identify themselves with W's objective and *raison d'être.* In return, they expect reciprocal confirmation of their roles and responsibility from colleagues and management, confirmation on their social identification (Ashforth and Mael 1989; Ashforth and Humphrey 1997). The shifts in the scope of their own discretion, which result from the centralization and global harmonizing, imply perhaps that a new identity needs to emerge. Identity regulation is being attempted (Ch.51.3). They are becoming members of a new subgroup of W: W's corps of auditors – perhaps even a local variety at that, rather than individual members of the big W. Their alignment to the new common ways of doing now needs to be visible to their colleagues as well as their clients. More visible than it used to be when they handled more of the client-W interaction on their own. But, and this is a big but - this alignment must not conflict with their efforts to perform the audit visit in a way that secures the audit itself to proceed. And so they are uneasy with dictums that reduce their freedom to perform that which they are hired to perform – a certification ruling and a locally crafted legitimacy (as discussed in Ch.8).

The auditors are in principle favourable to standardization. This is after all the nature of their business. However, although positive, they retain the right to criticize based on their practical merit and their own professional experience. They try out the templates, but find it necessary to launch requests for change, when they find reason to do so. Rephrasing and translations of headers and field texts are amongst the most prominent issues. The clients also involve themselves in the excel sheets phrasing (Ch.9.3.1).

With the introduction of ABC brand, the roles of the auditors in systemizing their resources for work effectively changes. From being initiators of templates and reflective exercises aimed at improving their own performances and its consistence across audits, clients and auditors, they are now to interpret and put to use centrally designed initiatives. At first they are not even awarded the discretion to make suitable adaptations if they were to see the need. Directives demand that templates are to be used from the given date, even if they are incomplete and use faulty language due to poor translation. Auditors work around as best they can, but leeway is finally granted when a prominent client complains. What they see as stupid design is eventually amended too, as when the audit report with presentation layout is finally made in a printout version (Ch.9.4.2).

11.4 MULTIPLE ACTORS CONCERNED

From a management perspective the issue of consistency translates into certification practices that are predictable and recognizable, thus credibly of good quality, on a global scale for whoever it should concern. From a theoretical perspective managements' harmonizing activities are efforts of standardization, of making

certification audits uniform across the world. Management's *practical material* approach to global practices, which basically expand on local systemic practices already in place, are for instance: the same ICT tools, the same templates with the same visual layout with logo, ready-made phrasing of judgments, ready made symbols for judging hazards (the colour code), a standard report for on-the wall projection in support of presentations (powerpoint) (Ch.9). On the *immaterial, conceptual side*: quick to grasp communication through symbols and formal documentation which lends a touch of seriousness; and, every client has, per definition, hazards in their operation (which they may not be aware of) which every W-audit shall aim to identify and help clients to address. And finally *relational and social approaches*: expressly include the client CEO; always start the summation meeting with positive findings - and by including them in the report (and on the wall) these (too) are given extra weight; relationship building by involving the client also in pre-audit preparations and post audit follow-up.

To ascertain that all W auditors will implement ABC and perform in harmony, W aids local management by designing a common internet tutorial, with a test, and specifying introductory training sessions which support understanding and becoming familiar with the concepts. Additionally auditors are admonished to be careful to adhere to the rhetoric so as to present ABC clearly to clients. All these efforts, directly and indirectly, address primarily the auditors. However, as Leidner (Leidner 1993) explains, the standardization of interactive service work invariably attempts to control the behaviour and performance not only of the employee, but also of the client. Fast food clients must order their food at the counter as there is no service at the tables. W's ABC clients must now participate in the co-authoring of the audit log in the excel sheet. But in doing so it becomes apparent that many clients are not able to do this off hand. For these, a dialogue of explaining and discussing the fields of the log sheet is needed. In this case, the standardization evidently produces extra work for the auditors – work of articulating equifinal meaning.

W starts off with a top-down approach to standardization, reminiscent of formal organization, which aims at *"[f]ormalizing .. taken-for-granted knowledge [in the organization] and making social relations quasi-independent of the restrictions of local interactions - in two words, de-contextualizing interactions - is the defining feature of formal organization"* (Tsoukas 2001, p.8).

Other actors involved in the audit practices are the clients. The previous chapters have shown that clients too, make their stands in terms of the harmonization activities. The auditors' opinions and rulings are discussed and negotiated. What they find impractical or unreasonable is either contested and adjusted, or plainly neglected and diverted when the auditor has left the premises. W's new ABC focus attempts to tie the clients closer by involving them more, nurturing relationships, formalizing an inclusion of tailoring and positive feedback. The clients' responses to these efforts influence how W will use and adapt their harmonization strategies. The accreditation bodies, as well as the international organizations as described in Ch.2, also have influence on how W performs certifications and shapes their systems, like the phrasing in the templates.

But finally - the auditors, and other employees of W, attempt to effect standardization of their practices, for their own purposes. The auditors have their own stakes in organizing their work practices in a durable manner. They seek approaches and resources that aid them in their work wherever they might be, and preferably in ways that visibly displays that they are not on their own even if they are alone in the flesh. They are part of something bigger and recognizable. The standard is familiar and evidently a part of their rationale as displayed in their argumentation – the examples drawn from other organizations' practices, its richness and appropriateness to this client, their ease of performance. The paper templates, or the wall projected summation presentation, are visible evidence of their own organized and competent practices. They do however need to feel comfortable in using them. And to secure their own performance, they have every interest in maintaining organization. And so, they too initiate their formalization and standardizing efforts, while they also negotiate and adjust their performance of measures delineated by their superiors.

Difference of approach between auditors and management

Both the incremental approaches and the more structural approaches of the auditors, at this stage, display differences that match the distinction made by Tsoukas concerning formal and informal organization regarding social relations (Tsoukas 2001, p.8). *"An informal 'organization, is heavily dependent on contingencies. It is a haphazardly evolved arrangement that presupposes that actors already know what is going on and accordingly adjust their behaviours"* (Tsoukas 2001, p.8). Whilst *".. formal organization entails the abstraction of social relations and their subsumption under generic rules, thus enabling co-ordination over indefinite spans of time-space"* (Tsoukas 1998). The case displays that the auditors also initiate and effect systemization of their work – their own and that of their colleagues. The auditors initiate formalizations that are focused towards their task of negotiating based on a contextual rationality. The social relations during the audit are a by-product of their diligent hospitality, demonstrated rationality and differentiated capabilities – not something they expressly seek in and of it self. Established through qualculations and in-qualculations. Of attending to the perspective-taking and –making of the client as the audit visit proceeds. Of translating and transforming understandings. The visible and formal is strictly practical and party neutral: the templates. And the auditors are clearly uncomfortable with both pre-designed formulations, the prospect of accumulating and making visibly accountable a possibly lacking progress in client's QMS, and the formalized new displays of relations to the client, which are foreign to their present practices. That which appears affected and out of character easily becomes embarrassing and tacky. *"I always use to be positive in introducing the summation, but only verbally, never in writing"* [auditor interview, autumn 2004].

The social relations are not evident in the formal standardization efforts of the auditors for performing the audit, but is dealt with up front - in terms of contracting performed before the particularities of the audit begins. The have standard letters for contacting the client (Ch.7.1.4), and most of this dialogue is now centralized away from the audit (Ch.9.1.1). The auditor's lack of particular focus on systemizing the social may be due to the fact that they never thought of this possibility, or that they have resolved this issue in another way. There is something different, that arm the auditors: their

experience and repertoire of stories and examples. The narratives display a comprehensive and situated rationality which are pertinent to the discussion at hand and each particular client. Picking and using the correct one, is part of its validity – and it builds relations. The proof of its appropriateness in fitting exactly to this client, of providing value for money, relies also in avoiding any resemblance to garbage-can characteristics. These are reminiscent of the narratives discussed by Orr and Brown & Duguid (Brown and Duguid 1991; Orr 1996), while also relating to Czarniawska & Joerges discussion on travelling ideas that are manifested through translations, where adoption of ideas are based on reflective and local sense-making that follows from chains of translations (Czarniawska and Joerges 1996). It was not picked from a list. It derived from the appropriate and experienced reasoning of an experienced, authentic certification auditor, committed to this client. Commitment and authenticity being part of the necessary performance that will allow the client to award them a reflexive trust, for real negotiations - and future dealings. This auditor has our interest at heart. The auditors establish social relations by tailoring their systematic practices to the context and this particular client. *Social relations are dealt with in a roundabout way, on the auditors' part.*

The auditors initiatives are also concerned with appropriate templates and having arenas to develop their resources of narratives and examples. When the in-house meetings are centralized, the added hassle of participation is judged against personal gain. The expert and practised auditor prioritizes attendance when the new ABC perspectives produce a need to review and renew competence and verbal resources (Ch.9.1.2). Again, this is evidence of personal utility being balanced against effort, and the need to demonstrate belonging to the national CoP of auditors, or at the local office, as opposed to the challenges met in the line of duty as in performing for their clients.

The case demonstrates that a main attitude when standardizing service interactions should be to take wisdom from performers in the field, and what kind of support they seek. In this case, there are perhaps good reasons for the auditors lacking attempt to formally standardize elements of their social relations with their clients. Rather, resources for this purpose are derived in a different way, as a collected ensemble of stories and examples that they comfortably juggle in terms of the situation. These stories are applicable to the extent that the auditor has internalized their logic and significance and can relevantly and legitimately use them. Yet they are often collectively created, adjusted, corroborated and made relevant through collective perusal and editing. They are used to perform the transformations that enable different communities to communicate and relate to each other (Carlile 2004). As such they represent informal but *".. enduring patterns of coordination between actors*" (Tsoukas 2001, p.9), which contribute to practicing the relations between client and certification auditors into being. This practice of articulating relationships is supported by the technical artefacts in the way that they support the identity of the auditors as competent members of a competent organization. The templates fill this purpose both through acting as tools to think and remember with, to secure a smooth progress of tasks and elements, of displaying orderly performance, visibly related to the recognizable W brand and logo.

The standardization elements of the management initiated ABC certification procedure, which indirectly affect the social relations to the clients, are seen to be tempered by the auditor's use and intervention. Standardization, as in use, is in this case effectively a co-constructed practice of all parties of the service interaction as identified by Leidner: the employee, the client and the employer (1993).

Efficient – for quantity or quality?

The evidence of extra work in performing the co-authoring contradicts the traditional conception that standardization should reduce the overall effort. If standardization of assembly line production is an analogue to standardizing knowledge work, then the reuse of tailored, informed and knowledgeable formats, clear boundaries of tasks should in turn imply limitations to the knowledge needed by each performer. However the clients responded with questions, suggestions and need for help when they were asked to report according to the format outlined by the excel-sheet. Standardizing interaction and communication at least requires that the participants learn and understand how the format is to be used. And they need to figure out how their own circumstances may be transformed into a suitable message in formation. The hazard concept also brings about extra work towards the client – and in-house to deal with it. Within the time-span of this case – time does not seem to be saved. On the other hand, the ABC approach triggers extra activity of reflection and learning amongst the auditors. It has its cost, for both auditors (the audit is not to cost more) and company (more focus on In-house Friday), but may also be necessary for maintaining W's position in the market? It presents new opportunities for calibration amongst colleagues which the discussion in Chapter 10.5.1 suggested as necessary.

Standardization (beyond physical objects) is socio-technical and equifinal

Can translation, transformation and creation of meaning for equifinal understanding come about through standardized, premade and automated means? Redundancy through variety of means could be an approach. This would require receivers to make the connections of several perspective-takings/makings that together will add up to some kind transformation, all on their own. And while this sounds complicated, time consuming and slightly unpredictable – that is perhaps what we do when we assess something in the time available. We perform acts of sensemaking, making do with the available. Unless we are drawing conclusions alone and in isolation, by chance or wilfully measuring and comprehensively calculating, we put trust in the sum of our own and other's evaluations and of more or less decipherable evidence – also on issues of quality and consistency. A client's or the public's verdict of whether a performance is good, fair and competent relies on reflective trust with multiple evidence. Effectively, standardization of socio-technical performances needs to take a socio-technical, a multiple approach which can produce equifinal meanings on the matter. In other words, a good quality performance is the sum of broad and multiple strategies, which each are locally coherent and consistent, rather than one comprehensive and stringent.

The scope of this cross-office requirement suggests that a more centralized, and technical, approach is expected by the auditors themselves. The scale of efforts needed to systemize across contexts inevitably puts the ball in the court of management in terms of material resources and meta-ideas, balanced by the auditors' tempered use.

11.5 LOCAL CONSISTENCIES ADD UP TO A GLOBAL STANDARD

The effect of the systematic efforts as in use, rely on clients' sensemaking and response. Does it look and feel right? – To me, my colleagues, the company? - In terms of logics and rationality? - In terms of proof of commitment and mutual benefit evaluated by the social relations which service relationships require? Do the clients deem the certification service, its outcome quality in performance and consequences, with its systemic aspects, to make sense and feel right? Their response throughout the audit cycle, and the evidence of their staying with W as clients provides some answers.

Empirically, the case demonstrates multilayered and multipurpose approach where these service workers dividing up the challenge of global scale quality – not by chopping the service into bits and dealing with each item separately, but by standardizing parts of their interaction and communication. As sensemaking goes, each separate strategy addresses a number of issues, that add up to a recognizable standard for the various sense-makers in various ways. By adding or adjusting standardized elements, the standard is performed in unique ways for each individual involved. Separate aspects making partial connections between actors (Strathern 1991). Their solution to achieving global scale quality is to apply a suitably redundant number of standardized measures to ensure equifinal ground for those involved. This is evident in their so far successful practice and *consists of numerous standardized elements, some tight and formal, others fluid and loose, which add up to a socio-technical network of actors that both overlap and complement each other in addressing the concerns of both the individuals and communities involved or affected by the service performed.* There is no rigorous match between means and effect, or whose concerns are alleviated by which measures, as each measure holds the potential of multiple boundary spanning acts. There is no saying, in a large actor network, precisely which of these acts in fact contribute to the alignment of separate actors or partial actors. Each measure may hold qualities that support transferral, translation and/or transformation in aid of an actor's alignment to a contextually sensitive equifinal meaning.

Given that equifinal meaning is what it takes to get an actor's support and alignment, it is not necessary to have complete and tight standardization in every measure. Actually, it seems prudent to have release mechanisms for standardized elements, safety valves, which allow considerate and reasonable exceptions from the rule. These contribute to tailoring the service by making it reasonable and context sensitive with aim to gain client's acknowledgement, trust and motivation for continuing the service, and QMS.

With a growing scope in strategies pursued, also due to the auditors' own initiatives, the bottom up approach to standardization also promotes and asks for management involvement – effectively asking for top-down measures. However, these are sought as complements to their own bottom-up initiatives.

The next part of the thesis

This concludes the analysis part of the thesis. The next part presents the contributions and implications of this research work.

PART IV

CONCLUSION

PART IV – CONCLUSION

12 PRACTICAL DRIFT

Certification auditing is a line of service work that builds on long traditions. Yet it is unlike much of the work practices that research on IS support of organizational activity has looked into. A basic but unexplored aspect which presents itself in certification auditing is its constant negotiation of partly contradictory interests. Auditors work within an oppositional state of affairs that will never disappear - as it is the fundamental reason for the activity itself. Put bluntly, it presupposes an atmosphere of distrust amongst organizations born out of the market economy's institution of competition. ***This exposes generic aspects of knowledge work that are largely overlooked in previous research and brings added perspective to both its IS support and theory.*** Secondly, this work has a lonely quality to it, even though it is part of a collective practice recognizable as such across individuals, offices, organizations and countries. The onsite audit visits, according to my empirical material, are mostly performed by auditors working alone. In the interest of keeping its cost down, it will remain a largely individual, thus personal activity. Yet, it would not remain ISO standard certification auditing if it was not identifiable, and making sense for clients and public, as comparable to a common and shared practice.

Significantly, standards certification auditing is a work practice that is both *personally individual* and *contextually sensitive* (in terms of various actors, past, present and future), and *yet still a collectively shared practice*. What do the characteristics of this practice imply for (its organization and) IS support? How may local negotiations be supported by a corporate IS? Are there other kinds of work that in terms of IS support would benefit from an analytical view of their practices as grounded in negotiation and qualculative judgement - rather than as neutral treatment of facts and information?

This thesis approached these issues by aiming to:
Explore the use and establishment of corporate IS for standardization of service work, by exploring how the distributed knowledge based work practice of client centred decision making is performed, and subsequently affected by the company's global harmonizing efforts. Further, how these service workers approach IS and standardization for work support.

The overarching research question of this thesis is:

RQ0. How is IS supported distributed service work negotiated?

To be more specific, this thesis has approached the research question **RQ0** by exploring the work practices of knowledge based interactive service work – namely of W's certification auditors and how they relate to information (as in use, make, create, get, store, retrieve, communicate, forward, receive, ignore, understand, misconceive..) as part of their negotiated decision making. And in order to find how, or if – or rather how much and in what way, Information Systems actually support work across or between

heterogeneous organizations it has been necessary to delve quite deeply into both circumstances and work practices to understand some of what the auditors do - on their own terms.

By exploring the activity at a micro level and analysing it as a heterogeneous, socio-technical networked activity, where there are both allied and non-allied actors, several contributions and implications can be identified for the literature on information infrastructures, knowledge work in general, and CSCW. The case provides practical insights for resilient systemizing of knowledge based global service work practices.

12.1 A SERVICE FOR MUTUAL SENSE-MAKING

Negotiations rather than power exercise

The service of certification auditing, as seen in this case, plays out very differently from what common conception would have it. Auditing has an apparent aura of control, as demonstrated also by nervous clients. And it is also that. But, its continued existence as a service to be paid relies on a performance that clients find sensible and valuable to the degree that it hopefully outshines the control aspect. During an audit, certification auditors ask and check, discuss and explain, - and acknowledge the client's individual circumstances in their assessments. The client is approached as a respected peer, while a range of authority is delegated to rationality and science via other resources (the standard, examples, logical arguments), allowing the auditor his-/herself to refrain from pulling rank as much as possible.

An alternative way to put it would be that the auditor mobilizes allies in support of a decision. However, and this is important, there are *two actors to mobilize allies for* – both *the client* and *the standard* (represented by the auditor and certification body). It is the auditor's task to turn the presupposed distrust, on which certification as commodity is grounded, into enough trust for business markets to thrive. The establishment of equifinal ground relies on the auditor being able to muster allies also for the client, but with a favourable balance to his/her own allies.

Independent attitude

These auditors perform service work, knowledge based and interactively, in relatively lonely circumstances. By a rough estimate, at least some 50-70% of their working hours are spent out of the office, performing certification audits of their clients – alone in terms of W colleagues. This is a central aspect of their work, and one that shapes their professional personality in a particular way. I propose that they are of a more independent nature, than many other study objects of knowledge based work practices might be. This probably influences their attitude and how they respond to and approach systemization and standardization of their work, the functionality of IS and other organizational measures. They have, or need to have, a relatively clear idea of who they are, and what the purpose of their work is. They are licensed to tell their clients what they think about how they perform their business, even though they do so matter-of-factly and modestly if they can.

Management of such independent employees has been likened to herding cats. However, I venture that auditors identify with a general purpose, and pursue this independently in a conscientious manner, rather than in an egocentric way.

Introduction of new actors require renegotiations of alignment (roles)

Any change introduced into a work practice, social or technical, - even of the immaterial kind, implies that all the **relations in the network will be/need to be revised**. This is particularly so when interests are only partly aligned. Which actors are affected, how much and for how long depends on the character of the change. Some changes are temporary, some are replacements of old routines with relatively local implications, but some come as ongoing additional tasks. Chapter 9 *Avoiding loose ends* explored the implications of W harmonization initiatives. For example:

- ABC and organizational centralization, both contribute to expand the time and scope of the client-auditor 'committed and rational interaction'. It also increases the number of other actors the auditor needs to interact with in a committed fashion. => Extra work
- W's directive of global template use with no exceptions constitute a shift in the domains in which the auditor has latitude to act, to decide – to perform their work, as opposed to the latitude now allotted to W and/or the systems. The distribution of legitimation, between the various parties (W/systems & auditors) needs revision and adjusting in order to find a new and appropriate balance that allows the auditor to facilitate the each client's sensemaking. => Negotiation of legitimation
- As standardization reaches the abstract domains/functions of work (serious KW) – maintenance effort must be made to make long reach sense at 'higher' levels - crossing the syntactic boundaries is not enough. Potential allies need to be reached at a semantic level with transformations. Effectively, equifinal levels of sharing (albeit socio-technical in approach) need more substance than before. => Standardizing sensemaking for longer reach, i.e. across semantic and pragmatic boundaries, implies supporting accordingly the reach of the tacit, contextual knowledge/knowhow that is needed to make local sense.

12.2 CONTRIBUTIONS TO IS AND II RESEARCH

A central result of this research effort is that: information systems support distributed service work - **as part of a larger assembly of standardization measures, is** characterised by **a broad-spectrum approach displaying practical drift** in its **effect,** but also allowing for **practical drift in its approach**.

12.2.1 Standardization

I venture, not only that W's auditors in their own work aim to adhere to the ISO9001:2000 QMS standard, as is actually certified by the competitor who certifies W[7], that through ongoing systemization their own work practices **they are in fact subject to standardization - but not standardized, strictly that is**. There is a distinction here, illustrated by the fact that in describing the certification audit practices

[7] W informs me that this practice desisted as of 2006 due to new regulations.

I have used words such as: good, conscientious, dedicated, professional, systematic, rational contextuality, organized, predictable, qualculated, equifinal, fair and equal - because standardized simply does not have the right ring to it, based on the certification auditor's day to day performance and working perspective, as I understand it. Yet from a theoretical point of view, starting with the standardization community itself, who has expanded their activities. At the outset it was the terminological and functional, onto engineering and commerce, and later into the organizational and effectively social domain. To the academic literature of research, the certification auditing practices do represent standardization, *but only in partial ways as a performed standard* (Strathern 1991)**.** The auditors themselves have, or they used to have, *individual latitude within reasonable limits*. **A latitude which secured a necessary degree of local sensitivity in the performance.** Action that is socially taken to be reasonable is reflexive in its approach (Callon and Law 2005).

Standardization of the knowledge based work in this case of W Certification, relies on an *assembly of partial standardizations* of variant kinds, function and duration, not to be mistaken for a summation. The assembly consists of separate material, immaterial rationality and social organizational 'elements' that are standardized. Some aspects are fluid and open to interpretation, other aspects fixed and rigid – or somewhere in between. This assembly of standardized measures adds up to, as discussed in Ch.11 *Divide and conquer*, **a broad-spectrum approach,** that will affect different actors in differing ways, depending on who they are now, where they are, and where they intend to go. The loose connections between, at least some of the measures, add up to practical approach with a fluidity to its totality.

The looseness and **flexibility** provides a limit to propagation across the actor network (Perrow 1999), which has a dual effect. In being flexible, such when removing the colour code, the risk of possible adverse affects for the client's other relationships, is reduced. On the other hand, as discussed in Ch.9 *Avoiding loose ends*, the lack of propagation can also be a problem, as when the auditors fail to download the completed files to the client database (CDB). With a local focus, they forget since they do not see the consequences for the wider network. Old habits contribute, since the Comptroller gets the final recommendation by post anyway. **Redundant** measures (material, rational/immaterial and social/organizational) are needed to compensate for this looseness (Snook 2000).

12.2.2 Self regulating

The effect of this type of standardization approach is **a practical drift**, in that revisions and adjustments are made as circumstances change and drift (Ciborra 2000). In face of the client's individual situation, the auditor and W, allow for minor adjustments, by for instance removing the colour code from the final report even when the template is intended to be in global use. Likewise, the clients effect their own standardizing measures on the certification service they buy, as when they ask for the same auditor across countries and sites. Since they have the power to do so, they move to limit the variance in the service provided. When W introduces its harmonizing strategies, the latitude of the auditors to perform this regulation is altered more than appropriate according to the auditors and they request change.

W traditional approaches hold lessons to be learned for standardization in of service work. Though deeply standardized – their pragmatic approach was loose and fairly 'disconnected'. In terms of the auditor – the most important 'input' in the production process – training and retraining via expert participation is a fairly social way of standardizing performance by shaping the auditor identity. In terms of client interaction, there were release mechanisms and a local opportunity for sensitivity – which allowed them to connect with their clients in a relatively individual manner. In the use of electronic systems to forge suitable standardization of practices, there seems to be an inherent property of rigidity and inflexibility (more actors and connections are made), probably beyond what designers actually intend. This inflexibility needs tempering, otherwise – the users are robbed of too much of their latitude to be profitable. In designing IS a certain flexibility is need to allow adaptation to local circumstances – just as the auditors interpret the ISO standard for a particular client. This in order to reduce the risk of uncontrolled propagation across the actor-network.

Such bottom-up adjustment is accommodated in the traditional organizational design of W's practices, as the irrelevant is removed and new circumstances are catered for. Alternatively it comes by force as a resistance, blatant or through covert evasion and workarounds (Gasser 1986), to top-down measures, invited or uninvited, that appear inappropriate or unimportant. In a setting of multiple and only partially aligned interests – akin to a market based organization, all actors are initiators and advocates of organizing and standardizing measures. Some with more effect than others – given that the standard (in this case ISO9001:2000) hovers above them all to keep changes in check and in accordance to the principles, tempered by the idea of an ongoing journey of improvement.

12.2.3 Heterogeneity, II and CIS

Although Latour (Latour 1987; Latour 1992) makes a point of that technology supplies durability, this case demonstrates clearly that it is the heterogeneous combination of the technical and social that together make for durability, with the degree of flexibility that the client-auditor relationship requires. That the practices of certification – as indeed they corroborate formal standardization of practices, rely on fair and equal treatment. At the micro level, this is provided when social actors perform qualculation and judgement rather than square cut categorization and calculation in their applications and interpretations of the standard and the clients' practices, as discussed in Ch. 9 *Who decides what*? This heterogeneity is social and technical, but the technical is both material and immaterial. The contextual sensemaking that the auditor is to cater for, aiming to transcend not only syntactic, but also semantic and pragmatic functional boundaries (Carlile 2004), needs abstract and conceptual support along with the physical (Czarniawska and Joerges 1996).

This case supports the claim that Information Infrastructures (II) rely on ongoing maintenance, as prudent and timely interpretations. What does quality mean in practical terms for this client, today? As circumstances drift, so must the infrastructures adapt to this change, but in a way that also maintains a close connection to its origins. While the literature has pointed out the rigidity and inflexibility of infrastructures, and the futility of more than incremental changes, of the extra work connected to handling the side-

effects, this are also the effects that affords a certain stability, that foster recognition and sensemaking for rationality, motivation and trust (Weick 1993; Czarniawska and Joerges 1996; Weick, Sutcliffe et al. 2005). Reflexivity poses not only instability and extra effort (Hanseth, Jacucci et al. 2006) – it also allows for change and adaption. The central issue for II establishment and maintenance is to accept that drift will and should take place, to take note of and plan for it, as an ongoing balancing act. A system of revision in practices, as iterative development in new systems, as cultivating living systems (Aanestad 2002) to support necessary evolution.

The standard that is the object of certification here is a case in point – the standardization of an abstract concept: Quality. It has characteristics of a meta-concept that represents an idea, affording it the mobility to travel *'and yet it can be read in differing ways'* (Czarniawska and Joerges 1996, p.23). Re-enforced by objects, followed by actions, practiced into institutions, which attain their own black-boxed images, the meta-concept is made to represent the idea.

Common information spaces (CIS) can be used as a framework to analyse the practical circumstances for articulation of meaning making within and across communities (Bannon and Bødker 1997; Bossen 2002). The case shows, as discussed in Chapter 10 *Lonely Decisions*, that the distributed knowledge work of the auditors relies on their conceptions of their own identity, of who and what they are as compared to what their clients might like them to be when they visit. The CIS must therefore support distributed knowledge workers ability to recognize and separate between interests, to sympathise rather than to adopt what is inappropriate for their role in the relationship. This means that the auditor must be able to separate the Client-auditor CIS from the auditor-W-QMS CIS from one another, and not mistake one for the other by balancing their influence. This is a challenge in distributed knowledge work.

12.2.4 Negotiations

The overall system – the practices in a socio-technical environment, need to support and mediate establishment and maintenance of relationships, trust and motivation. I propose that contradictory interests this is to some degree a generic feature of collaboration, which tends to be downplayed or forgotten when organizations seek to support collaboration with technology.

As discussed in Chapter 8 *Who decides what?* and Ch.9 *Avoiding loose ends*, it ends up as the task of the auditors, on behalf of the standard and with the backup of W, to avoid a business exchange governed by a hybrid of market and hierarchy, by establishing and maintaining a relationship to the client based on trust (Adler 2001) by facilitating an interactive and reflexive process based on knowledge assets. This implies being context sensitive to the clients' situation and acting reasonably.

12.3 METHODICAL IMPLICATIONS

When the object of study is large scale IS and II, it is a challenge to get access to productive sites for insight that cover a relevant section of the phenomena in question. This is particularly so with an ethnographically inspired and practice oriented

perspective. The plurality of actors involved (at various places in an actor network), their multiplicity of interests, the effects of drift and evolution, implies that an ethnographical investigation should involve multiple sites and actors, arenas and extensive, longitudinal studies. A team approach. Additionally, by combining, albeit limited, personal participation in courses, related events involving other actors, and technology use with periodical observations and interviews, a richer understanding is possible. This provides a broader and multilayered perspective than observation alone would provide.

Ethnography and practice studies seek first hand experience, personally, or through direct contact with the actual actors – the social and technical ones. This could be supplemented by looking at 'second hand actors' produced by or interacting with the first hand actors of the network under study. This provides additional perspectives, revealing features that are possibly aggregate or condensed over time, providing some sort of essence. The obvious is their documentation, systems and other information such as web pages. In this vein, Pollock and Williams (Pollock and Williams 2008) suggest a Biography of artefacts where actors and communities in the surroundings of artefacts (e.g. a client forum) may provide insight on the evolution and circumstances of the artefact itself, and its makers.

The duality of the object of study in this case, provides also provides extra relevance to the subject under study: systemization and standardization. A study of the work practices of a certification body implies looking at the standardization of standardization. The auditors and their company can be seen as a lens that has accumulated and holds traces of a long trajectory of activity, providing an aggregate and abstracted perspective on what it takes to implement and maintain standardization - covering a broad number and kind of actors. It is my claim that the auditors' systematic practices hold an accumulated wisdom from countless audits - as does the traditional way the organization has organized its production.

What has been a difficulty – the separation of production from process, is also an asset for data collection. The auditors' response to W's harmonization attempts is coloured by their inbred experience of how the standardization of client's QMS is to be achieved. It involves (invisible) articulation work of which they unaware in the sense that there are (good and important) side-effects that are unaware of. Their focus on using the right words, the active relationship building towards clients, the support of material props – nice templates that represent accumulated experience with certification, good arguments, all adds up to their role in the maintenance of an information infrastructure of a formal procedural standard. Additionally, the evolution of the ISO9000 series, its shifting focus from the 87 version, to the 94 version, the 2000 and onwards again, tell an accumulated story which this thesis has just lightly touched. W's shifting focus too – from quality to hazards, represents a similar shift and evolution. Both the standard itself and W's approach testify to successful evolution and an adaptive and heterogeneous approach not only to standardization, and IS support of work practices, but also to distributed knowledge work.

12.4 IMPLICATIONS FOR PRACTICE

The analysis of W's practices over a number of years in terms of systemizing their certification auditing work, including recent strategies that include IS, provides interesting insights into challenges and opportunities. While W faces the same kind of challenges that many other distributed and global organizations that provide knowledge based services, W has several advantages compared to many other knowledge based industries. Firstly, they have experience and approaches that were developed locally, in close contact with clients and without the interference of modern technology. These represent bottom up initiatives that have honed their approach over time.

Secondly, they have employees who find their work meaningful and who actively engage in improving their own circumstances. Quality is the name of their game, and processes of quality improvement are a matter of course. Motivation is present, but there is a challenge in finding the time and opportunity to participate – and perhaps a way to prioritize if opportunity is scarce.

Thirdly, their systematic approach to both learning the work practice and maintaining it also holds opportunities for revision and innovation. QMS itself, and W certifications' performances, has institutionalised revision and evaluative practices. It has been broad-spectrumed and multiple in its approach both before and recently. And it has had release mechanisms that allow for local adaptation when needed – dealing with side-effects and drift.

However, as circumstance in the business community changes with the availability of and expectations towards use of new technologies, new challenges arise as to the role and place of these artefacts (material and immaterial). Not only the place and role of the technology itself – but also the subsequent places and roles of all the involved actors – management (local and global), the auditors, the clients, competitors etc. Expectations change, visibility and access changes, scope and reach changes – making for a rearrangement of work and a necessary rearrangement of legitimation. Who is to do what? Integration implies that with longer reach and propagation, there are more actors with differing interest that need consideration. Their main challenge and opportunity with changing systems, lies in translating and transforming their former institutionalized knowledge into the new actor-landscape – with an iterative approach that allows for more manageable changes and revision.

In the interest of quick returns, and the ability to diffuse a standard quickly throughout a complex organization, it is tempting to give strict directives of standardization and compliance. Moving quickly with maximum efficiency and momentum should allow for quick diffusion. But there are perhaps differences in terms of which parts of work and its resources are suited for strict versus more lenient standardization. Some key words, meta-concepts, are more important that perhaps the whole rationale, arguments and terminology (terminology). The visual layout of templates, rather than the exact content with complete phrasing (design). The order of tasks, who performs them, and their content might need a more lenient attitude that allows for personal difference and client preferences (procedural). How quickly a report must be completed, or Non-

Conformities (NCs) addressed lends itself to strictly standardized time limits, while a judgment must be allowed on the appropriateness of using strict scripts of conversations aiming at instilling positive emotions in online clients (performance).
As W actually knows, when it comes down to the nitty-gritty of performing certification audits, standardization at an information infrastructural level, across interests, cultures and knowledges is a never ending story. It requires ongoing maintenance, in terms of IS support as well. It requires systematic revision and an acknowledgement of the inherent drift of any human endeavour. It requires a sensitive, thus heterogeneous approach and W's practices have demonstrated that release mechanisms (safety valve) are useful to compensate for any restrictive measure that might miss its mark..

The case has shown that technical means – both immaterial and material – can stand in for social and individual effort, but may not stand alone. Information Infrastructure requires ongoing maintenance of all sorts – material, rational/immaterial and social. Computers and automated systems, checklists and calculations cannot remove the need of human and considerate qualculations - only support them. Therefore, W needs to mindfully balance the resources for sensemaking and meaning making, with an awareness to difference of interests, for both client and auditor. Secondly – in addition the practicalities, the overview, the guidance - and trappings provided by their templates – a main resource for the auditor is an up to date repertoire of reasoning and stories that they know well and are comfortable with. This grows out of collective reflective practices.

12.5 FURTHER WORK

For this particular case

The research that has been presented here lacks the supportive evidence of certification auditors in countries further afield. How certification comes across and is performed, in Asia or Brazil will undoubtedly be similar, yet also be different as what is considered normal business procedures will have their variations – especially in terms of how the social measures of hospitality, acknowledgement of capabilities are performed in practice. The stories to use to make the same point, the arguments that reach home, the order of tasks will probably differ. I have no way of knowing how fitting, what is essentially an approach to harmonisation designed in northern Europe, has been for the auditors' work in other countries. Why was Ω workflow halted, to be outsourced and redesigned? Had its implementers' forgotten old lesson learned in terms a modicum of flexibility, or were the demands on flexibility greater and more varied than it was possible or relevant to accommodate? In terms of functionality, or technical features?

This work should be followed up by looking at, what has happened afterwards, but also take a look at the institutionalising practices of different kinds of standards, at certification auditing in different countries, by following the artefacts and their creation in the IT-department, managements' approaches over time, competing certification bodies, perhaps the accreditation bodies, and those who revise the standard. A few large clients' and their take and experience of QMS certification would also provide an alternative perspective.

IS support of collaborative work across organizations and interests

While this case has contributed*, the understanding of the additional work characteristics brought about by the shift from in-house cooperation to collaboration between incongruous organizational entities with legitimately separate interests*, needs further exploration. I propose that the articulation work aimed at achieving connection and rationality based trust for dealing with contradictory interests is a generic feature of knowledge work rather than an exception limited to service work.

This case on certification auditing has brought out new aspects of articulation work where actors' interests are only partly aligned – the creation of shared meaning, or rather equifinal meanings, but also the need for an awareness or accommodation of separate meanings and interests. For large scale systems, variety in usability is a way larger issue than dealing with local tasks. Usability is also an issue of accommodating both the unforeseen - and drift. Question like: What does multi-interest and broad-spectrum approaches imply for IS-design? - For the role of the users? - For the user interfaces? – For the implementation process? – For the use process over time?

* * *

In terms of my introductory question – *What makes large IS different and apparently more difficult to design and adopt in use?* The beginning of an answer is that large IS and their existence - as in use - *relies on the doings of people*. Their technical aspect are fundamental, but yet only the beginning. Large IS need to achieve an infrastructural quality, which implies that they need to address a sufficient amount of common interests, while also somehow accommodating for the local needs, and continuously adapt to them as general circumstances change. Large scale is not only about the number of actors implicated but also about the relations between these actors that need working out and cultivation. With large scale comes a large diversity of interests, making the issue inherently complex, demanding a heterogeneous, fluid and broad-spectrum approach. This needs to consist of both social processes (public-wide learning and involvement), material (a variety of technical solutions, ranging from the simple like a template to systems) and immaterial elements (concepts and ideas with wings to travel – such as: *quality*).

How such processes can come about largely remains an empirical question for further exploration, beyond that it is time consuming and in need of constant local adaptation to handle drift. Guiding visions and a central objective that a broad spectre of actors will find meaningful may aid both motivation and the ability to carry out the necessary local adaptations. The case in this thesis suggests that the presence of release mechanisms, calculated opportunities for working around, could be one element, when legitimate diverse interests simply do not add up. Another is to conscientiously involve end users both during the design phase, and later. While top down design often focuses on the needs of the central actors - downstream of information 'flows' (they are often centralized and easier to involve in collaborative design activity), equal attention must be allocated to: *) the users who are to provide information (and use templates), and *) the mutual awareness of each others' legitimate interests. If A does not know what B needs, an accommodation of B's concerns is left to pure luck – or will rely on a very clever design for an objective where exceptions will presumably never arise.

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