Continuous Quality Development by Means of New Understanding

A four year study on an Intensive Care Unit during times of hard work and demanding organisational changes

BY

EVA LINDBERG

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Abstract

The present thesis follows an intensive care unit during four year of hard work and demanding organisational changes (1998-2001). The changes were mainly initiated by diminishing resources and a legislative claim to pay regard to the quality aspect of health care service. The process of implementing a quality system was the main focus for the thesis. Triangulation was used aiming at explore the process from different views. Two interviews studies were conducted one with the staff and another with the leadership. Both interviews were analysed thematically combined with a phenomenographic technique (e.g. using the how, and what aspect). A longitudinal quasi experimental time-series study was also accomplished. The correlation between staff variables and workload were measured once a year. The result show a 20 % increase in workload per staff and year. The staff judged the organisational climate for innovativeness stable over the period. Sick leave increased, and more so, than the general trend in the society. In spite of this increase the prevalence of stress related symptoms was the same. Two different systems emerged, a complex adaptive system and a mechanical system. The two systems exist and functions intertwined. Because of the construction of the patient register it is possible to see that the situation around a patients being admitted ≥ 5 days functions according to the complex systems character while the situation around the acute patients functions according to a mechanical system. Sick leave correlated with number of patient admitted ≥ 5 days (P=.000). It seemed the problem found had its root in the unawareness of the existing of a complex system. The result has implications for a need of increased awareness about how to manage the situation when the ICU is functioning according to the complex adaptive system.

Keywords: Intensive Care Unit, Mechanical system, Complex Adaptive System, Diminishing resources, Workload, Sickness absenteeism, Sense of Coherence, Stress related symptoms, Organisational Climate, Longitudinal study

Eva Lindberg, Department of Public Health and Caring Sciences, Uppsala Science Park, Uppsala University, SE-75183 Uppsala, Sweden

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List of Papers

This thesis is based on the following papers, which will be referred to in the text by their Roman numerals.


II. Lindberg, E., Henriksen, E., Rosenqvist, U. Clashes between understanding and doing. Leaders Understanding of Intensive Care During a Period of Reorganising. *International Journal of Health Care Quality Assurance*

III. Lindberg, E., Rosenqvist, U. The flexible working time model. A Successful Adaptation to Diminishing Resources but also a Threat to Quality Improvement and Staff’s Wellbeing. *Scandinavian Journal of Management*


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# Abbreviations

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<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>Complex Adaptive System</td>
<td>CAS</td>
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<tr>
<td>Continuous Quality Development</td>
<td>CQD</td>
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<tr>
<td>Intensive Care Unit</td>
<td>ICU</td>
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<tr>
<td>New Public Management</td>
<td>NPM</td>
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<tr>
<td>Nine Equivalent Man Power Score</td>
<td>NEMS</td>
</tr>
<tr>
<td>Organisational Creative Questionnaire</td>
<td>OCQ</td>
</tr>
<tr>
<td>Sense of Coherence</td>
<td>SOC</td>
</tr>
<tr>
<td>Total Quality Management</td>
<td>TQM</td>
</tr>
<tr>
<td>Workload in Lund Sweden</td>
<td>VTL</td>
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</table>
Acknowledgements

Writing a thesis today is not one man’s or woman’s job; rather, it requires teamwork. I had the fortune to be accepted in an exceptional research group. Without my colleagues, this thesis would not have been written at all – I will come back to all of you to express my gratitude later in this acknowledgment. However, there is one group of persons who have been more important than any others; they are the team of palliative care at the hospital in Gävle, especially MD and consultant, Lars Gustafsson, and physiotherapist, Helena Kempe. Lars and Helena: you have helped me back on my feet and back to my computer just in time to accomplish my doctoral thesis. For this, I am immensely grateful.

Professor Urban Rosenqvist: It is not until last year that I understood that you are leading our research group through our own understanding. This is something unique. Walking in old footpaths is not the strongest side of your character; you are always coming up with something new. When you read my thesis, in the final phase, you suggested that I should turn it upside down. Write the thesis, not with the traditional design, but in the same way that I had discovered the results! Until now, not one thesis in the medical faculty has been written the way you suggested. I did not dare to do it either. But I am sure that in years to come your suggestion will become the traditional way! Urban: thank you for letting me be a doctoral student in your group. Thank you for being kind, warm and friendly in our relation and while you guided me through the confusing first years.

Inger Holmström and Jan Larsson: I have enjoyed our small group work. The job has never been a burden when working with you. It has been more like an exciting series of discoveries through the confusing jungle of intentionality, noema and noesis. You have given me much: understanding, knowledge, friendship and help with my thesis. I really hope that we will have the opportunity to continue for many years more. Thank you, Inger and Jan.

Eva Henriksen: I enjoyed our collaboration when we wrote the second paper together. You were the first PhD student in the group that I meet and you introduced me to the world at the university. You have also been encouraging in the final phase. Thank you Eva. Ulrika Winblad Spångberg: I
have always considered you as the most “scientific” of us in the research group. You have always been a watchman for the logic in the aim and research questions. You have done that really well. You have also always been helpful, ready to read and suggest changes in the way of thinking or writing. Thank you Ulrika. Thank you also too many more persons in the research group that I have not mentioned by name. As mentioned above, writing a thesis is a teamwork born during seminars, literature seminars, meetings in the research group, discussion, thinking, trying to express oneself, more discussion and so on… Thank you everybody.

Sometimes, especially in the final phase of writing, it felt strange that life outside my own brain continued as normal. Some people have kept reminding me of that. Of course, I am very happy to have friends and relatives far away from the world of science. My mother and father, Olaus and Inga-Britt Boström: you care for me as a person and daughter regardless of education. Thank you for being what you are, trustworthy regardless of subject. Thank you for taking care of my Samoyed dog Ricko so many days in the final stages of wringing. Helena, Pasi and little Jonathan: you remind me of what is important in life. My brother and his family, Denor and Monica Sjölundh, Robin and all other friends; I will never forget that you have been the perfect balance to an academic life in Uppsala. Thank you everybody. Steve Scott Robson London UK have done all the proof reading with excellence, to him I am grateful.

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To the leadership and intensive care staffs who work so hard when taking care of the very sick ICU patients. Thank you for sharing your experience and participating with such an enthusiasm.


Tidigare studier har visat på liknande problem som finns på IVA. Generellt sett har både sjukvården i stort och IVA med stor framgång lyckats genomföra enormt avancerade förändringar. Alla dessa tekniska innovationer rymmer inom det mekaniska systemets funktionsram. Exempelvis har IVA, under studieperiodens gång övertagit dialysbehandlingen av IVA patienter med njursvikt; sjuksköterskor och undersköterskor hanterar och övervakar dialysapparaterna (vilket är avancerat). Men när det gäller förändringar, exempelvis att införa ett
kvalitetssystem, som ryms inom det komplexa adaptiva systemets funktionsram, då har flera studier visat stora svårigheter, liknande dem vi erfor på IVA (Gann and Restuccia 1994; Garpenby 1996; Erlingsdottír 1999; Skålen 2002). Huruvida, dessa svårigheter är faktiska eller består i metodologiska problem, (dvs. Det är svårt att bevisa förändringar i ett så komplicerat system som hälso- och sjukvården) har också studerats (Shortell, Bennett et al. 1998). Allvarliga försök att övervinna de metodologiska problemen har dock gjorts bl.a. genom att skapa en modell över den medicinska processen och definiera kvalitets begreppen (Donobedian 1968)


På nästa sida presenteras en sammanfattande bild över de tre första studierna.
Figur 1. Betrakta den överta texten i varje kolumn som en rubrik. I den vänstra kolumnen framkommer de tre olika fenomen som på organisations-
nivå kan påverka händelseförloppet på en avdelning, den högra kolumnen
beskriver motsvarande fast på individnivå. Dessa båda kolumner är en kort
sammanfattning av den teoretiska bakgrunden.

<table>
<thead>
<tr>
<th>Organisatoriska funktioner som påverkar händelseförlopp</th>
<th>Mekaniska system</th>
<th>Komplexa system</th>
<th>Individuella funktioner som påverkar händelseförlopp</th>
</tr>
</thead>
<tbody>
<tr>
<td>System av meningar</td>
<td></td>
<td></td>
<td>Uppfattningar</td>
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<tr>
<td>Komplexa system</td>
<td></td>
<td></td>
<td>Menings-stäpande</td>
</tr>
<tr>
<td>Mekaniska system</td>
<td></td>
<td></td>
<td>Perspektiv</td>
</tr>
</tbody>
</table>

Vården i det mekaniska systemets domäner karakteriseras av:
- Akutvård
- Hög teknologisk vård
- Kort vårdtid
- Förråtsgbara händelseförlopp
- Ingen korrelation till ökande sjukfrånvaro (studie III)

Vården i det komplexa systemets domäner karakteriseras av:
- Rehabilitering
- Minimal teknologisk vård
- Vårdtid > 5 dagar
- Oförutsägbara händelseförlopp
- Korrelerat till ökande sjukfrånvaro (studie III)

Personalen uppfattar IVA som: (Studie I)
- Hektiskt, oförutsebar och mångtydig
- Rymmer en dikotomi i fundamentala värden
- Potent men också farlig

Ledningen uppfattar IVA som: (studie II)
- Utvecklingsarbete står i motsatsförhållande till daglig drift
- Ständiga störningar
- Hektiskt

De två kolumnerna i mitten visar: 1. Att mekaniska system och komplexa system fungerar sammanflätade på IVA. 2. Under rubriken "Vården karakteriseras av": beskrivs hur dessa system fungerar enligt resultatet av mina studier (studie III). De två pilarna i mitten riktar sig dels mot personalens förståelse av hur IVA fungerar (studie I) dels hur ledarna upplever sitt ledarskap (studie II)
INTRODUCTION

The subject for my thesis springs from a position I held from 1995 to 2000 with the purpose of implementing a quality system in a clinic of anaesthesiology. The thesis is limited to the experiences made at the intensive care unit (ICU), which is one of five units. My role was to define the different components of the system, support the management group in working in line with the system and introduce the system to the group of staffs. During the project we encountered considerable problems, mostly, connected to the following part in the process of management (and Continuous Quality Development (CQD); the ‘leaderships possibilities to receive information about the ongoing everyday care (e.g. incident reports), reflect upon the content and act to change or develop the point under consideration. Our driving force was not strong though; occasionally, the new implementation even stopped. Why was this? … This is the point and perspective from where my doctoral work begins.

When our difficulties had grown to such an extent that we couldn’t overlook them, I started to search in the literature for an explanation. My first impression was that a lot of the health care literature showed implementation difficulties (Erlingsdottir 1999; Van Royden, Gabrowski et al. 1999; Skålen 2002; Winblad Spångberg 2003). My second contact with the field of theoretical background was a thesis written by Sandberg (1994). He wrote: “The staff members’ actions are based on the workers’ way of making sense of their work”. He continued: “Human competence is constituted through the workers’ way of experiencing or conceiving their work”. Sandberg (1994; 2000) on one hand he opened my eyes to the whole world of phenomenology/phenomenography, and on the other hand the significance of the concept of understanding. Weick (1988; 1995) has written about sense-making and stated that human actions in general are based on sense-making in their present moment of experience. Sensemaking, or making sense and meaning in life, can be seen both from an individual and a collective perspective; and leadership, from this point of view, can be seen as management of these systems of meaning (Smircich 1982; Ericson 2001). What actually occurs in the daily reality of organisational life is a result of
the process of the individual as well as of the collective sense-making process (Sims 1986). By this time I had understood that the individual person, the functioning of the group and the impersonal system (e.g. routines) were, decisive for the ongoing everyday care. Because the literature on organisational research (including CQD) is so vast, it was necessary to delimit the focus of the thesis at an early stage. Agent is a central sociological term, when considering the perspective of sensemaking and driving forces behind actions; it is defined as “anything that can cause an event in a social environment” (Sztompka 1991). To be able to proceed with the writing I selected three agents, or group of agents, which, according to Weick (1998) and Sandberg (2001), seems to have a main role in the process under consideration:

Table 1 shows the framework for the theoretical and empirical standpoints

<table>
<thead>
<tr>
<th></th>
<th>Understanding</th>
<th>Knowledge</th>
<th>Prerequisite</th>
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<tbody>
<tr>
<td>Individual</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Group</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>System</td>
<td>×</td>
<td>×</td>
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The point of departure for the thesis is that the promoters and barriers for an implementation are to be found in inadequate knowledge, inadequate understanding and/ or inadequate prerequisites among the three agents: individual, group and system.

Aim

The main aim of this study was to search for promoters and barriers for a specific part of in management /and CQD, namely to understand why the implementation of quality programs is difficult in health care organisations.

Specific aims

- To explore how the individuals understand their work and work tasks. (Study I)
- To explore how the leadership understands intensive care and management. (Study II)
- To explore the ”groups collective understanding” of the ICU by modeling seminars (Present thesis).
- To investigate the workload over time and relate it to the sense of coherence (SOC) and stress coping organisational climate and the
working condition such as the relation between; the number of patients on the ward related to staff available. (Study III)

- To formulate a theoretical model that describes a quality system from the perspective of phenomenology and complex system (Study IV)

Disposition of the thesis

The present thesis concerns an ICU during four very active years of hard work and several demanding organisational changes. It is designed as a case study using triangulation in the meaning of Denzin and Lincoln (2000); who states that triangulation can be used to identify the different ways that the phenomenon is being seen. The theoretical point of departure is the nine aspects of the three agencies presented in Table 1. These theoretical backgrounds determine the methodology; for example, human action is put in the centre of organisational development and the understandings that are held by the group of staff can be understood by a phenomenological approach. I have used she when I refer to a person without taking gender under consideration. When referring to the implementation process I use the concept “strategic change”... and when referring to the ongoing work on the unit “intensive care” I use the concept: “ongoing every day care”. I use the concept system when referring to operation that drives the ongoing everyday care”. The concept “production” is used for; the number of patients, number of patients admitted ≥ 5 days and number of staff involved in the direct caring per day and year. Throughout the thesis I have assumed that CQD is a way of conducting management. My theoretical standpoint are based on a so called non dualistic ontology, which briefly means that we can not separate the soul and body on the one hand and not our self from experience in the outer world. I.e. we create and being created in the same process. Perhaps the most well describing view of the meaning of a non dualistic approach is the Theory of Social Becoming (Sztompka 1991) on page 15.

To assist the reader the first chapter contains the theoretical framework, which can be understood as my initial theoretical pre understanding. The second chapter contains the described case and in the third chapter the result; is presented; each study ends with an interpretation of the result intertwined with theoretical standpoints. These notions are picked up “along the way from the theoretical starting chapter to the ending discussion chapter” where they will be used in the closing conclusions. Thus, I have tried to identify the notions throughout the thesis that will, at the end, constitute the common thread. Chapter 7 contains a theoretical study based on the common thread,
where I propose a quality system as a panoptic that might help the management to deal with the growing difficulties.
2. THEORETICAL BACKGROUND

From reading about organisational development I have interpreted a tendency, implicit definition or prerequisite of success to be when one can influence the staff’s actions in a desirable direction. In a deductively designed project the desirable direction is defined “above” or outside the system. In the inductively approaches (as in the present study) the desirable direction is defined within the group or system and the crucial point here is to motivate the staff to be docile to those ideas. The potential field of knowledge for my thesis are therefore theories about interpretative organisational theories, adult education, sociology and management.

From the vast body of literature in the field of organisation I have, based on my theoretical standpoint, selected literature viewing the organisation basically from an interpretative perspective. Complex adaptive system and “the learning organisation” are the two models used. From pedagogy I have selected theory of action, adult education, and motivation (attractor pattern), sensemaking and reflection. Consistently, the following theories are omitted: e.g. Evaluation, Organisational and managerial cognition, Organisational psychology, including psychology of perceptions; (short notions in the text will motivate why these theories are omitted) only briefly have I have touched on the field of NPM, the theory of institutionalization and the broad writing on quality management.

2:1. Organisational theories in modern perspective

This theoretical chapter presents some of the modern organisational perspectives; a description of some different attempts to increase effectiveness by changing the organisation. Total Quality Management (TQM) and techniques belonging to the “quality trend” are also described briefly. A second ambition is to determine whether the difficulties we met at the ICU are general for other organisations or not only just local problem at the ICU.
Modern views on organisations

A modern organisation is to be understood as a social system and as such, it is far more complex than the early rational models for organising human activity. For example, it is not always true that planning and decision-making precede actions or that experts and managers think, plan and decide while the workers do the working. Through the years, from the early attempts in the industrial period until now, many initiatives has been taken, in public as well as private sector, with the hope of increase the effectiveness and profit of the organisation. New Public Management (NPM) is an umbrella term representing some of these attempts. NPM stands for different organisational ideas (one of these ideas is TQM and incentives of change in the public sector, aiming at an increase in effectiveness by imitate the private sector (Ferlie, Asbrune et al. 1996) All of these attempts have shown difficulties and only a few projects have reported some success (Bejeroth and Erlingsdottir 2002).

The New Institutionalism is a theory that briefly studies how NPM ideas are encountered by the system. This theory is defined by Mayer (Meyer, Boli et al. 1994 page 10.) as:

We see institutions as cultural rules giving collective meaning and value to particular entities and activities, integrating them into the larger schemes … Institutionalization… is the process by which a given set of units and a pattern of activities come to be normatively and cognitively held in place, and practically taken for granted as lawful.

One main argument why organisations are institutionalized is that they need legitimacy from the organisational field. There is a problem connected to institutionalization called loose coupling (Weick 1976; Maguire 2002), which broadly means that the formal structure of the organisation is affected by the rules and ideas (e.g. CQD) but that the actor’s real action and thought schemes are not (Skålen 2002). Several other researchers have also pointed at problems when implementing these modern models. For them, these ideas rather seem to institutionalise the formal structure, but do not reach and have influence on the actor’s real actions (Brunson and Olsen 1997). In this paragraph the theories of NPM and The New Institutionalisation has briefly been presented. The phenomenon called loose coupling has some of its meaning in common with the ICU’s problems and it is a notion that will be discussed further in chapter 5. The New Institutionalisation and NPM theories have been used in implementation studies, without being able to elucidate forces behind the actor’s actions. Therefore I omitted this theory in favour of a “social becoming” approach.
Continuous Quality Management

In this paragraph CQD and its related concepts are presented. Working with the quality aspect of the enterprise arose in the late 50ties. This organisational trend has, many names: e.g. CQD, Quality Assurance, and Total Quality Management (TQM). The health care organisation has applied the “quality trend” since the beginning of the 90s (Gann and Restuccia 1994). TQM, which is the origin of the trend, is an organisational philosophy, i.e., a set of values and quality control (QC) tools\(^1\) all of which put into focus the quality of the enterprise (Deming 1984). There are a number of quality systems that have developed out of the TQM concept\(^2\). These quality systems are built based on a set of guidelines about how to plan, intervene and evaluate the work being carried out in an organisation. Quality of health care in Sweden is regulated by the Act of Quality System in Health and Medical Care (SOSF 1996:24). The act demands a thorough organisational change in favour of the aspects of quality instead of the production aspects. Implementing a quality system in line with such demands is an extensive strategic change. Such a change can, in principle, be conducted either deductively or inductively. In the deductive approach, the components of the system are completed beforehand and the concept of quality is defined and operationalised. The implementation process implies an organisational change towards these predetermined characters. In the inductive approach, there is no predetermined system to adapt to; instead, the strategic change and the implementation process go hand in hand (Kazdin 1998). The member of the staff defines the concept of quality and completes the system (Ericson and Öhrström 1999).

This chapter was aimed at framing the thesis and showing that we were not alone when experiencing difficulties with the implementation process. However, it has still not specifically touched the heart of the matter. We had the ambition to create our own quality system based on the starting point in problems and needs arising in the ongoing everyday care. A main driving force in such an approach is probably reflecting upon “yesterday’s experience” as a point of departure for “today’s action”. Engage in this main driving force are at least two different organisational levels; man vis-à-vis system and within each of the individuals involved; thoughts vis-à-vis actions.

\(^1\) For example, Ishikawa diagrams and Pareto charts, which are two of the basic seven QC tools, tools used for organization-wide quality improvement activities.

\(^2\) For example, the ISO 9000, The European Quality Model, the Organizational Audit, and the BS 7850.
2:2. Man vis-à-vis system

This chapter describes the driving forces on the interface between man and the system. What are the driving forces that keep the processes running and thereby the actor’s acting? This question had a central role in ICU’s problems with the implementation. Most of the staffs and the leadership wanted a quality system, they saw the rational behind and expressed that the inductive idea was attractive. But, it did not just happen. We could not reach the agents actions. So is it possible to elucidate and have an impact on the driving forces. From the early sociological perspective, the relation between the individual and totality was described either from an individualistic- or structuralistic standpoint. The pure individualistic standpoint stems from Sartre’s existentialism and alleges that the ‘individuals or ‘actors thinking and acting decides how the organisation develops. The structuralistic standpoint, on the other hand, means that the organisation consists of different structures (e.g. social system and, professional…), and that these structures form the individual’s actions and thinking. The structures are like non individual phenomenon which, decides forms and makes border for the individual’s way of thinking and acting. (Gilje and Grimen 1992).

One line of development from this dualistic standpoint, which is represented by the sociologists Pierre Bourdieu and Anthony Giddens, attempts to bridge over the division between individualism and structuralism (Hellqvist 1997). Giddens (1984) for example, unites individualism with structuralism through the for the humans’ central tendency to create ideas in their everyday life.

The routine (whatever is done habitually) is a basic element of day-to-day social activity… The term “day-to-day” encapsulates the routinized character which social life has as it stretches across time and space (Giddens ibid page 23).

Bourdieu (2001) refers to the concept of habitus, fields and capital when addressing the question of how human actions are regulated. According to Bourdieu, actors are rather more strategic and practical than conformists about external sets of formal rules. The idea of habitus holds that society shapes individuals through socialization, but that the very continuity and existence of society depends on the ongoing actions of individuals. In this chapter the concept of capital and field are described. The concept of habitus is described further in the chapter below. The disposition of habitus functions like an underlying grammar that both structures language use and permits virtually unlimited forms of innovative expression. However, according to Bourdieu, there is more to human action than disposition.
formed in the past. Dispositions require resources; individuals are motivated by valued resources, what Bourdieu calls *capital*, to enact practices. There are different kinds of capital. E.g. economic, cultural, social and symbolic, which being the principal ones – that are unequally distributed across the social classes. Individual’s habituses are formed by the amounts of capital. For example, people with greater capital holding will (by habitus) have higher expectation for careers outcomes than those with less capital. Habitus generates actions not in a social vacuum but in a structured social competitive context, which Bourdieu calls *fields*. From this point of view the organisation is a complex arrangement of many fields, such as economic, legal, religious, political and professional fields. Neither habitus or capital nor fields can alone, explain human conduct. Rather, it is the intersection of the three that gives regularity or unpredictable conduct (Swartz 2002).

Sztompka (1991) is another sociologist who has explored the relationship between individual forces and forces belonging to the system.

*Figure 2. The Model of the Theory of Becoming*

<table>
<thead>
<tr>
<th>Totality</th>
<th>Structures</th>
<th>Operations</th>
</tr>
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<tbody>
<tr>
<td>Reality</td>
<td>Agency</td>
<td>Praxis</td>
</tr>
<tr>
<td>Individuality</td>
<td>Agent</td>
<td>Actions</td>
</tr>
</tbody>
</table>

The line at the bottom of the figure presents the two modes of existence of social reality. The mode of Potentiality and mode of mode of Actuality. The former is potent inherent tendencies (e.g. seeds, abilities, power) the latter are unfolding capacities of the former; conduct, development, processes etc. Four concepts make the cornerstone of the model; Structures and agents and Operations and actions, the operations of structures (functions of society) are treated as emergent with respect to actions taken by agents. Without agent there would be no structure. The relation between agent and action are covered by mobilization. Praxis is where operations and actions meet...
Sztompka argues that events are the basic and fundamental components in a social reality (an organisation). Hence, society consists of actual events in the present where a collective pattern of activities meets individual activity in practice partly due to the organisation’s potential character in the form of objectified structures and individuals or groups’ given knowledge, motivation or interests. The operations consist of actual events in the present, where collective patterns of activity meet individual’s actions in praxis and the organisations potential in characterised form of objectified structures and individual’s or group’s inherent knowledge motivations and interest. Thus, agency refers to the capacity of society as such to conduct praxis and produce events. Agency consists of, for example, individuals’ and groups’ body of knowledge, motivation and interests that, altogether, constitute the potentiality of future events (Sztompka 1991).

Summary and conclusion

In this chapter some driving forces have been described as unconscious, for example’s Bourdieu concept of habitus and Gidden´s view on routines. There are nothing saying that unconscious driving forces is exclusive for health care; instead, these findings are supported by a trend in society (or at least in the public sector) where there seems to be strong unconscious driving forces, which are difficult to handle. Sztompka’s descriptions of agency are on the other hand of a conscious process. Sztompka’s model is important to my thesis. The model of a quality system in chapter 7 is inspired by the vertical line Reality, Agency and Praxis. Sztompka’s model is also a good example of a theory based on a dualistic ontology According to Senge (1995) learning; individually and organisationally are in the midst of the conscious driving forces. Hence, ‘The learning organisation’ describes the unutterable metaphor for a well functioning organisation used on ICU when the implementation of the quality system started. Senges (ibid) model for the learning organisation is therefore described in the next chapter.

2:2.1. The Learning Organisation

The learning organisation is one organisational model that inherently aims at reaching an impact on the agent’s actions. Learning occurs both on an individual and an organisational level, and it is believed that those organisations that learn can manage the change process more effectively than those who do not (Cullen 1999). A learning organisation comprises five disciplines; personal mastery, mental models, shared vision, team is learning and system thinking. Senge (1994) considers that system thinking is central
to the learning organisation model, where all organisation members develop an understanding of the whole rather than just fractional parts of the organisation in terms of structures and processes, thinking and behaviour. Processes of sense-making and collective negotiation of meaning are integral aspects of organisational learning.

When studying organisational change and aspects on how to reach impact on its development, which according to Bourdieu and Giddens also might be steered by unconscious driving forces, the organisation may be viewed as a Complex Adapatic System (CAS). This is presented in the following chapter as the second and last organisational model used in this thesis.

2:2:2. Complex Adaptive System

An context supporting the learning of the individuals as well as the organisations learning, must comprise a “system thinking” among the individuals (Cullen 1999). The organisational perspective most integral to the learning organisation is therefore probably the perspective of CAS. A “system” can be defined by the coming together of parts, interconnections and purposes. While the system can be divided into parts, which are interesting in and of themselves, the real power lies in the way the parts come together and are interconnected to fulfil a particular purpose. A health care system consists of various parts e.g. clinics and hospitals that are interconnected via patients and information’s to fulfil a purpose e.g., improving health (Plsek 2000). A CAS is defined as a system of individual agents (e.g., anything that can cause a event; such as people and groups the body of knowledge, motivation and interests of people or a group), where the agents have the freedom to act in unpredictable ways and their actions are interconnected such that one agent’s action changes the prerequisite and conditions for other agents (Plsek and Kilo 1999; Plsek and Greenhalgh 2001). Generally, a theory about organisations consists of two different types of systems. Mechanical system, which is the older; and complex system, which is a rather new way of looking at the health care organisation (Plsek 2000). Both are described in the chapter below together with a well describing figure; “the zone of complexity” (Stacey 1996).

Complex Adaptive System versus Mechanical System

The paradigm of science for the last several hundred years have been the one of reductionism, that is, further study of the part of the system will lead to deeper understanding and predictability. This kind of thinking has also been
applied in organisations and is as deeply rooted there as in health care. Mechanical system thinking has been shown to work well in many health care-related situations and through this paradigm health care has achieved wonderful progress (Plsek 2000). The “zone of complexity” is a metaphor and a central concept within complexity science. Its meaning is complex but can be simplified and illustrated by the following extremes: On the one hand, planning and structure produce a stable situation with a high level of predictability; on the other hand, while no planning and low structure yield a chaotic situation with little or no predictability. The zone of complexity is presented in the figure below.

Figure 3 illustrates the zone of complexity.

Many medical situations (e.g., caring for a very ill person at an intensive care unit (ICU)) end up in a stable, planned, structured and predictable situation, and it is in such situations that health care has attained considerable success. Questions about management or financing, on the other hand, are not placed in the chaotic extreme’s but somewhere between chaos and structure: a zone labeled the zone of complexity (Stacey 1996)

Mechanical system thinking (as intuitively used in the health care organisation) seems to allow only these two possibilities (according to the model above); it is necessary to plan and control or there will be chaos. Complex adaptive system thinking allows for a third possibility: the zone of complexity. There are many issues in the health care system that lies in the zone of complexity. These are issues for which there are only modest levels of certainty and agreement. For example what is the best way to deliver
primary care? How do we finance elderly care? Caring for ICU’s patients needing rehabilitation from the fifth day is a result in this thesis that will further be discussed as belonging to the zone of complexity (chapter 5).

Describing the organisation as a complex adaptive system (as opposed to [simple] mechanical system) has become of current interest during the past decades. This perspective is shown to be fruitful especially in the context of change. In this perspective an ICU can serve as an illustration of a micro system within the complex macro system of a hospital, and where different organisations and financial incentives must co-ordinate resources and reach common goals (Plsek 2000; Plsek and Wilson 2001).

Behaviour in a CAS emerges from interaction among agents and is inherently unpredictable (Zimmerman 1999), a circumstance that constitutes a condition for leadership. A detailed planning process, for example, will not work; instead, leaders need to focus on fostering relationships and creating conditions for creativity (Burns 2001). Three core concepts reflecting good leadership are vision, motivation to change and understanding the unit’s relationship to the constituents it serves (Warden 1999). Further, managing complexity implies rethinking about what is meant by the organisation, especially the nature of hierarchy and control, and to be open to new metaphors that can facilitate processes of self-organisation (Morgan 1996). Attraction pattern is an important concept when studying a complex system. Such a system is inherently self-organising towards different attractions. Therefore change in a system is not so much about overcoming resistance as it is about creating attractions. In a large complex system as a hospital, a numerous of changes occurs daily “without resistance”. People make small changes in their routines, etc. (Plsek and Kilo 1999). All of these changes occur because somebody is attracted to the idea.

**Summary and conclusion**

Evaluation of NPM projects as well as results from studies in the field of institutional theory confirms the difficulties we experienced at the ICU. Namely, the intention of our quality improvement project, which was: “Reflections on today’s experience as the starting point for tomorrow’s actions”, was not a strong enough driving force in the ongoing everyday care.

Thinking in organisations is not rational and planed rather; it consists of social processes aiming at understanding and creating meaning in what’s happening in the surrounding. Some of these processes are conscious and
planned (e.g. sense-making, discussed in next chapter, is both conscious and unconscious and habitual actions are unconscious). Times, and volume of capital, along with disposition shape possibilities for individual action within the border of their specific field. These kinds of actions, e.g., habitus and routines... seem to be strong and unconscious driving forces. The next chapter deals with the relation between ideas and actions on the individual level. “From resistance to change to attraction” might be central to our problems at the ICU. The topic will therefore be discussed further in chapter 5.

2:2. Ideas vis-à-vis actions

In the previous chapter the interface between human and system was explored together with two different modern organisational models that might meet the increasing demands on a well functioning system. Some driving forces, on the social and organisational level, were described. Here I will move to a more specific level: the relationship between ideas and actions within the individual. For an example, is it possible to specifically explore when the driving forces that influence actions are conscious or unconscious or both? Is it possible to describe the relationship between ideas and actions at all? And, of course, – what is having an impact or steering the individual’s actions in the everyday care?

Older hierarchical rational models of organisations contain two assumptions between ideas and actions: “Ideas and actions are consistent” and “ideas control actions” (Brunsson 1993). It is also assumed that individual’s foster a number of relatively stable and specific preferences which, together with their notions of what the situation is like, will guide their actions. Rationality, which is the historical foundation for organisations, presupposes that there is a consistency between people’s ideas and actions, and that it is the ideas that control actions. This conception, of the way ideas and action relate for the individual, is called the soul and body model. This model is often transferred and applied in describing or prescribing the way a group of people behaves. Using this model when organising work has lead to a division between thinkers and doers Thus, it is one task to provide the ideas; it is another to act. This is a phenomenon that has constituted organisations throughout the history. Recent research, however, has shown difficulties when applying this body and soul model to organising human work (Schön 1987; Sandberg 2001). – and certainly its is not compatible with a CAS or a Learning organisation.
When Sandberg (2001) questioned the preferences for the rational model, he found evidence that the ‘workers understanding about her work and work tasks was decisive for how the tasks where carried out. He also showed that although workers had the same work, they understood their (all had the same) work task in different ways, and that they acted according to their understanding. Some of all actions take place without being preceded by a systematic thinking, whereas some actions are preceded by thinking. In other words, it seems that some of the actions an individual or a group has carried out during a working day are unconscious, and some are conscious and planned. According to our observations and those of other researchers, when implementing a change in any kind of organisation (e.g., (Erlingsdottir 1999; Ericson 2001; Skålen 2002) the unconscious actions strongly influence the operations. There are different ways of describing this influence, i.e., that some actions are preceded by thinking, whereas others are not. During my studies I have found two trustworthy ways of describing the relation under consideration:, the concept of habitus, which was mentioned above: and sense-making (Weick 1995; Bourdieu 2001p 53). Bourdieu defines and explains how unconscious actions arise (ibid p. 53).

Habitus is a system of durable, transposable dispositions, structured structures predisposed to functioning as structuring structures, that is, as principles which generate and organize practices and representations that can be objectively adapted to their outcomes without presupposing a conscious aiming at ends or an express mastery of the operations necessary in order to attain them.

Habitus (always operating according to amount and type of capital and within the borders of the field the individual has grown into) generates perceptions, expectations, and practices that correspond to the structuring properties of earlier socialisations. Therefore, an individual’s habitus is an active residue of her past in the present that shapes her perceptions, thought and bodily component. Habitus-generated reactions is generally not consciously reflective and they have a collective nature in that they bring the past into the present. Habitual behaviour is a strong force, energy saving for the individual (Swartz 2002).

However, our actions are very often conscious. The process behind these actions can be understood by the perspective of sense-making, which is another line of development in organisational research. What actually occurs in the daily reality of organisational life from this standpoint is a result of the process of the individual as well as of the collective sense-making process (Sims 1986; Ericson 2001).
In general, sense-making means that the individuals bring order and control to their everyday lives. To create meaning is often described in terms of the individual ‘taking stock’ and reflecting, with a view to creating an ordered existence, i.e., an order that the individual can understand (Ericson 2001). Weick (1995) stated that sense-making can be both a conscious and an unconscious (even a retrospective) process. Much of what people encounter, in this case people at work, is unproblematic and “normal”. Because a person in this situation does not need to think about what she does, sense-making can be said to occur automatically, i.e., without reflection. To understand the individual’s and the organisation’s actions, Weick (ibid) has studied conscious sense-making from a social-psychological perspective. To be able to create meaning there are three prerequisites (p.110).

A cue in a frame is what make sense, not the cue alone, or the frame alone. In other words, the substance of sense-making starts with the three elements: a frame, a cue and a connection… the combination of past moment + connection + present moment of experience creates a meaningful definition of the present situation… Frames tend to be past moments of socialization and a cue tends to be a present moment of experience. If a person can construct a relation between these two moments, meaning is created.

From this perspective the individual can consistently create meaning in her life when she can understand “present experience” from her frame of reference. Present experience” is a complicated matter. The reality can not be inherently meaningful, but, must assign meaning by the persons who exists there. Weick’s (ibid) term cue is to be understood as “a ”…present moment of experience” (Ericson 2001). Thus, if a cue will be considered as a cue at all, somebody must choose to make it a cue. Ericsson (ibid) expresses this as follows:”…as if there exists a constant background surge consisting of a number of latent cues surrounding the individual, and from where she can choose and create cues”.

Thus, the individual can pick a fragment from the background surge and create a cue that may be possible to assign meaning. The parts of the background surge that are not picked – (that is most probably the greatest part), will not either be a cue, and a meaningful question to be considered.

The members of an organisation “…spend considerable time negotiation among themselves an acceptable version of what is going on” (Weick 1995 page. 6). Thus, the individuals create and recreate meaning in a constant ongoing process. The “reality” constructs constantly by the members of the organisation. It is the individuals need for meaning in her life and creating this meaning that are driving force in this process.
This special perspective that is an example on the dualistic ontology, will be discussed further and in more detail in the result chapter as sensemaking and managing not only is to be seen as an individual process in that an organisation consists of several mutually dependent individuals, where thinking and action are shown to be a collective phenomenon (Langfield-Smith 1992).

The concept; “frame of reference” above, might be compared to the concept of conception, that will be discussed in the next chapter.

**Understanding, phenomenology and phenomenography**

The concept of conception and conceiving represent the character of sensemaking. To conceive something means to make sense, and when the individual make sense between himself and the world around, she will, at the same time shape the frame from where she can build her knowledge (Uljens 1989). The concept of understanding has a similar meaning as conception. The term conception is above all used in the field of phenomenography (Marton 1994; Marton 2000; Dahlberg, Drew et al. 2001; Larsson, Holmström et al. 2003), which theoretically is close to my thesis, sharing the same ontology. Further in present text I will use the concept understanding.”

Understanding contains two different aspects; *What and How*. The what-aspect is directed on the object for the thinking, which can be of either physical or psychological nature. The what-aspect is limited by the intentionality which means that the act of thought is limited it is the limitation that leads to the how-aspect. The how-aspect is therefore the process that leads to the what-aspect. Or in other words; it is how we look upon something that decide what we see (Sandberg 1994).

According to the above paragraph; *understanding is the relation between the individual and a specific aspect of her lifeworld*. This perspective of lifeworld has similarities with Husserls and the phenomenological lifeworld perspective (“The world that you se when you are looking out of your own eyes; your very own life experience”), Intentionality and life-world are also

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3 Intentionalitet (av lat *intendere*poin at, turn to). Intentionality is specifically used about awareness., It is a state of awareness, which is; being aware of something. Within phenomenology: 1) Intentionality is pointed at an object (idea, physical thing a purpose et)
2) It is separable that the awareness are pointed at and the very awareness. Sandberg, J. (1994). Human competence at work. *Inst för pedagogik.* Göteborg, University of Gothenburg.
the main concept in the phenomenological method (Van Manen 1990; Giorgi 1997; LeVasseur 2003).

**Understanding as a prerequisite for acting**

What does it mean to *understand* something? The lifeworld refers to our "own world", our own concrete daily reality that always are present and functions as appoint of departure for our thoughts and actions (Dahlberg, Drew et al. 2001). As human we always live and act within our lifeworld, we judge, acts and develops feelings within the lifeworld. According to competence at work; it is within the workers lifeworld as she can on the hole understand something as being her work. The figure mentioned below aims at further elucidates the concept of understanding:

*Figure 4* The conceived object

What do you see when looking at the figure? If you see an umbrella, then you can start thinking about umbrellas, its construction, history, usefulness etc. But, studying the figure a little bit closer you can see that it also looks like a three dimensional cube. Such a cube would lead to completely different understanding (Sandberg 1994).

The figure above bear upon to illustrate that understanding (in this context) precede reflection about the meaning we give the object. It is only when seeing the object as an umbrella that we can develop knowledge etc about umbrellas. What we see in the figure, an umbrella or a three dimensional cube, are inseparable both from our self and from the figure. In daily experience we usually give the meaning we understand to the object for our understanding, but that is not the way it goes, if sensemaking, shall be possible at all, a activity from a human (a subject) is needed. Without a subject the meaning "umbrella" should never appear, but on the other hand without an umbrella meaning should neither be created. (Sandberg 1994). It is here that my thesis borders to organisational cognition, which states that the object already exists in the mind and when you meet a new experience you either assimilate it or accommodate it (Eden and Spender 1998) – in opposite to phenomenology, which states that the object is created in the
moment when the individual meets the object that is if the object is new for you otherwise you create the meaning at the moment when you see the object (or experience). The former theory have a dualistic ontology wile the latter have a non dualistic. This is a important point for my interpretation and the underlying condition for the model presented in chapter 7.

The members of an organisation "spend considerable time negotiating among themselves an acceptable version of what is going on" (Weick 1995 p. 6). Thus, the individuals create and recreate meaning in a constant ongoing process. The “reality” is constantly constructed by the members of the organisation. It is the individual’s need for meaning in her life and creating this meaning that are driving forces in this process.

This special perspective will be discussed in more detail in the discussion chapter (p. 39) because sense-making and managing are not only to be seen as an individual process in that an organisation consists of several mutually dependent individuals. Thinking and action are shown to be a collective phenomenon (Langfield-Smith 1992).

**Summary and conclusion**

Unconscious actions are energy saving for the individual. We have so many experiences and sensory impressions during, for example, a workday that it would probably be impossible and painful to aware of all these experiences and impressions. Therefore we do not become conscious of objects that are familiar to us. Habitus with a function symbolized what the grammar is for the language, within its border of capital and field on one hand, and standardisation and routinisation on the other, are useful description of driving forces behind the unconscious actions. Reflection about what is happening in our own life and in the organisation preceding actions are the conscious driving forces and a way of dealing with a process of organisational change and problems. Thus, people’s understanding about themselves, their role in the organisation and their work tasks can be interpreted as a base for actions in an implementation process.
3. METHOD

My doctoral work has been designed as a case study, which is defined as a study of a specific, unique, bounded system. A case study is both a process of inquiry and the product of that inquiry. By definition there exist three types of case studies: 1) In an intrinsic case study the interest is first and foremost to obtain more knowledge about the specific case, 2) in an instrumental case study the case is mainly used to facilitate our understanding of something else, and, 3) a collective type can be seen as an instrumental case study extended to more than one cases (Denzin and Lincoln 2000). My case can be defined as an instrumental case because I am interested in to contribute to the general understanding of organisational learning as well as quality development.

3.1. The case’s historical background and the physical setting

The hospital is a medium-size hospital (länssjukhus) in the middle of Sweden opened in the early 20th. In September 1997, its services were merged with a smaller nearby hospital. All staff members at both hospitals were dismissed and all positions were open for new hiring. Most of the staff was subsequently re-employed. The “new” hospital has about 15% fewer beds and 10% lower budget than the two earlier hospitals put together. The hospital serves about 500,000 inhabitants. The ICU has 10 beds, with mean bed occupancy of about 85%. The intensive care service was general in the sense that advanced thoracic surgery, neurosurgery and neonatal intensive care were not provided. The hospital had a separate emergency medical ward for patients who did not require respiratory care. Patients in need of intensive care have, or are threatened by failing vital functions such as respiration, circulation, kidney functioning or consciousness. Quantitatively most of the care is monitoring and supervision after major surgery (e.g. abdominal and aorta surgery). About one third of the patients have medical diseases (e.g. sepsis or chronic respiratory failure). The recovery unit is a subsection of the
ICU for patients after minor surgery. The leadership of the ICU (including recovery unit) is divided between two intensive care nurses who are heads of the department. Two consultants are responsible for the medical development and one consultant as an operations manager (verksamhetschef). The ICU is a section of the clinic of anaesthesiology that employs about 20 anaesthesiologists.

Financial cutbacks were urgent at the ICU, and were a frequently discussed topic. The literature describes that major financial cutbacks and downsizing have generally been shown to cause a plethora of organisational problems (Luthans and Sommer 1999; Kivimäki, Vahtera et al. 2000). The Staff budget is about 80% of the total budget. Therefore financial cut downs in the staff budget is most efficient. This can be done either by discharge parts of the group of staff or, increase the flexibility and efficiency between staffing and workload. Per definition, there are three different types of working time; first, there is direct patient time, which is working time that is spent in caring for the patient. The second type is indirect patient time, which is defined as working time that is spent in preparing and finishing tasks that belong to direct patient time. The third form of working time is remaining time, which is time that is not connected to patient care, including education and time spent on reflection and evaluation. The choice of strategy at ICU for downsizing was to implement a new form of working operating system aiming at increase the direct patient time and decrease the indirect and remaining time. The working time system was functioning as follows.

The new working operating system was implemented in February, 1998. In the new directive the workers arrange their own schedule and can reallocate capacity by modifying the schedule to meet the workload on the ward. The system consists of a “time bank” operating as follows: When workload is low, the person leaves his or her work, putting the remaining work hours in the time bank. When workload increases, the person is asked to return to work. The individual is free to put his or her time in the bank. The working operating system is very well functioning. From the staff’s point of view; one year after the implementation, 97% of the staff reported that they wished to retain the time bank system. The ICU reached the retrenchment by increase the time spent for direct patient care at the expense on indirect patient time and remaining time. All type of sick leave and other short leave are financed within the system (by the function of the timebank).
3:2. Informants through whom the case can be known

The hospital’s ICU has approximately 80 employees, of whom about 60% are intensive care nurses and about 40% are assistant nurses. In addition, one physiotherapist and one or two anaesthesiologists are staff members on a daily basis on the ward. The staff turnover rate was low: five to six people leave the ward each year and five to eight are employed (Table 2). The staff’s mean age is high and they have a long working experience (Figure 5).

*Figure 6* show the distribution of respondents’ age and working time.

The Differences are most probably due to the research design. From this follows a low staff turnover, which confirms the result in the Table below. In 2001 the mean age was 47 years and mean working time was 17 years.

Table 2 shows the increase in number of patient and staff available.

<table>
<thead>
<tr>
<th>Year of investment</th>
<th>Staff on payroll</th>
<th>Number of staff leaving job per year</th>
<th>Number of staff employed per ICU per year</th>
<th>Number of patients at the patient staying 6 days or longer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>94</td>
<td>6</td>
<td>8</td>
<td>2334</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.70%</td>
</tr>
<tr>
<td>1999</td>
<td>94</td>
<td>6</td>
<td>6</td>
<td>2455</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.90%</td>
</tr>
<tr>
<td>2000</td>
<td>95</td>
<td>5</td>
<td>7</td>
<td>2641</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.10%</td>
</tr>
<tr>
<td>2001</td>
<td>95</td>
<td>5</td>
<td>5</td>
<td>3910</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.50%</td>
</tr>
</tbody>
</table>

About 15 people employed on the ward were on long-term sick leave or on leave for other reasons (e.g., studies, and parental leave). The number of patients staying on the ward for five days or more has increased from 1.7% to 3.5%.
3.4. Collection of data by triangulation

Triangulation has been generally considered as a process of using multiple perceptions to clarify meaning and verify repeatability of an observation or interpretation. (Denzin and Lincoln 2000). The three methods for triangulation in my study are: Thematic interviews with the staff and leadership, conceptual modelling in a sample of two different groups and finally descriptive and statistical correlation of variables showing workload, staffs condition, stress coping. Problems concerning combining qualitative and quantitative data are discussed topic (Sandelowski 2000; 2001). In my thesis these two different kinds of data are used in the order to clarify the phenomenon under study, and they are not used in the same study.

3.5. Data collection and analysis

The sample

A sample of 13 people was purposefully selected, by me and a nurse responsible for the quality system on ICU, for the interview study (study I), and, together with the group of leaders, to participate in the conceptual modelling seminar. The selection of participants was based solely on finding all variations in how the staff members conceptualised their work tasks. All the participants had been working more than 10 years in health care and between 3 and 25 years in intensive care. Their age ranged from 30 to 55 years. The respondents participated voluntarily, were able to withdraw at any time from the study and were guaranteed confidentiality.

Interviews

The sample participated in an interview and the group of leaders participated in another interview. Both interviews were open ended with three main questions: 1) What are your most important tasks? 2) What is difficult in your job? And 3) When do you think yourself that you have done a good job? Trough seeking descriptions of concrete situations, the focus was maintained on the experience and not how they would like things to be, or thought they ought to be. A further technique to keep the attention on experience is what and how questions rather than why questions (Sandberg 1994). By using this technique we hoped to reduce a serious problem connected to interviews and theories of action described in Hellgren and
Löwstedt (1997) namely: Theories of action are not always concordant to espoused theories. The former seems to be more resistant to change than the latter. A consequence of this is that something that is described as changed might not be so in the performance of actions (Argyris 1976).

The interview studies has been analyzed thematically, according to Patton (1990) and Bowling (1997). This approach includes identifying, coding and categorising patterns or themes that emerge from the interviews. First, all interviews were transcribed verbatim. The interview transcripts were then read in their entirety in order to obtain a general sense of the respondents’ concepts and understanding of their position of leadership in the ICU, their role and intensive care as such (Study I, II). This step could be compared with naive reading of the text. The transcripts were then re-read, and significant statements or words and descriptions were extracted and organised into quotes and files: for example, management, leadership (Study II), the patient, and the situation near the patient (Study I), etc. The quotes were then grouped and reduced to four themes. As a final step in the analysis, we read all quotes again, now guided by the question: “How does the respondent describe the themes?”

The conceptual modeling seminar

The main aim of the conceptual modelling seminar is to describe central concepts, their relationships and their problems understood by a group of people (Carlson 1990; Henriksen and Rosenqvist 2001). The work process can be described in the following way (Henriksen 2002):
1. The participants write down an unlimited number of words or concepts on separate pieces of paper that conceptualise their understanding of the phenomenon or subject. The papers are then taped on the wall for everyone to see. (This step can be compared to group brainstorming).
2. The words on the wall are than grouped into themes or subject areas. Participants discuss each word or concept and theme and come to an agreement about definitions; for example: what the group means by terms such as “patient”, “quality of care” and “security”. It is important that the group reaches a common definition of words.
3. Concepts were joined by writing verbs, which were then taped on the wall to makes meaningful sentences. For example:

The seminars were held at two different occasions, with 10 people in each seminar. The group of leaders were divided equally between the two occasions. The participants were divided into three subgroups each day. The first group where asked to concentrate on the concept of intensive care:
“What is intensive care”. The, the second group concentrated on problems strategies for problem solving, and the third group concentrated on objectives.

**Quantitative data**

Three questionnaires were sent to the active ICU staff on four occasions in May each year between 1998 to 2001. Staff members on long-term sick leave (longer than three months) or absent for other reasons, which was about 10% of the group, were excluded. The only inclusion criterion was that the nurses had regularly worked on the ward for the past three months. The response rate was between 88 %-97 %. The questionnaires were:

*The organisational climate*

(Ekvall 1996), have constructed an instrument that measures the level of innovativeness respective stagnation in an organisation. The instrument which comprises 50 statements covering 10 dimensions of work climate: challenge, freedom, idea-support, trust, dynamism, playfulness, debates, conflicts (counter indicative), risk-taking and idea-time. The statements are related to the capacity of the organisation for change and innovation is stable over time and closer to the reference values as measured at an organisation with an innovative climate as opposed to an organisation with a stagnated climate

*The stress profile*

The stress profile questionnaire (Setterlind 1995) consists of 23 symptom constructs: 12 psychological symptoms (e.g., sleeping problems, anxiety and cognitive problems) and 11 physical symptoms (e.g., headache, musculoskeletal symptoms). The respondents rated each symptom on a 5-point scale ranging from 0 (never) to 4 (very often).

*Sense of Coherence (SOC).*

The SOC was design to give a total score for sense of coherence (Antonovsky 1996) and includes 29 items measuring three components: comprehensibility, manageability and meaningfulness. Each of the 29 items was rated on a 7-point scale ranging from 1 (never) to 7 (very often). Thus, a respondent’s score may range from 29 to 203: the higher the score the stronger sense of coherence. The mean value in a healthy Swedish population was found to be 151 ±18 (Langius and Björvell 1993).
Workload: data was collecting from the production data base at the ICU. This data base has a registration rate of 97%. Data are registered three times daily.

Nine Equivalents of the nursing Manpower use Score (NEMS)

The NEMS is a therapeutic index measuring nursing workload at the ICU level (Miranda (1997). It consists of nine items (e.g., basic monitoring, mechanical ventilatory support and multiple vasoactive medication). The value is determined and registered three times a day with a range 1-3, with one being a low level of intervention and 3 a high. The value presented is the sum score per day.

Vårtyngd i Lund (Workload pressure as described in Lund, Sweden) VTL

VTL is a Swedish scoring technique designed to assess the workload at ICUs. The VTL consists of 10 dimensions (e.g., Respiration, circulation and fluid balance). The 10 dimensions are scored on a 3-point scale, with one being a low level of intervention and three being a high. The value is determined and registered three times a day with a range of 1-3 and the value presented is the sum score per day.

Apart from the workload measures following data were also collected from the production database: number of staff engage in caring for the patient three shifts per day, number of patients admitted totally and for 5 days and longer.

Data about staff on sick leave are registered at the hospitals environmental department. The above mentioned data collection gives 10 different variables listed below.

Studied variables

1. The individuals understanding of work,
2. The leaderships understanding of intensive care and management
3. The groups understanding of work, thematic, quality of care
4. Sense of coherence on group level
5. Prevalence of stress related symptoms
6. Sick leave
7. Workload
8. Organisational climate
9. Number of patient admitted, a) per day, b) 5 days and longer
10. Number of staff per day.
The Statistical Package for Social Sciences (SPSS) version 10.1 was used. The parametric variables (CCQ, SOC, VTL, NEMS, number of patients admitted to the ward per day, number of patients admitted to hospital for more 5 days or more, the averaged number of resident hours per day, the number of staff and persons on sick leave) were approximately normally distributed and to determine statistical differences were tested in unpaired (two-tailed) t-tests and with Pearson’s correlation coefficients. The nonparametric variables (symptoms, age and time of employment) were tested by Mann-Whitney U test, chi-square statistic and Somers' D Coefficient.

3:6. Ethical considerations

None of the studies have been examined by an ethical committee. the reason for this is that the project started as a developmental work at the clinic and after about three years it gradually became a research project. The principle of autonomy and integrity are the dominant ethical points in study I and II, as those studies includes individual’s informants. The respondents were informed that their participation was voluntarily, that they could withdraw at any time and that their individual answers were anonymous. In the conceptual modelling, two groups each comprising 10 people. In this study integrity is crucial. The employees worked together with the leaders in a way that unmasked their opinions about the workplace and management specifically and generally. I believe that the way the study was conducted (please se page 22) protected the individual’s integrity. Everybody wrote different objectives, concepts or problems on a piece of paper that lately was later put on the wall. Thereafter the topic was discussed without knowing who had proposed the topic telling who wrote it. Finally, in study IV the entire total group of staff answered three questionnaires every year during four years in row. Their voluntary participation was explained in the cover letter.

3:7 My own role as a researcher

I am a RN nurse educated in intensive care and I have been employed at the hospital for 24 years, most of these years I worked at the smaller hospital. When the hospital merged I was hired as a quality secretary at the clinic of anaesthesiology that employees about three hundred persons. I new most of
the intensive care nurses and assistant nurses that was selected for the study by name but had no closer relation to any of them. As the interviews were focused on the respondent’s everyday work, practically and not valuably I believe that my own experience as an ICU nurse was positive. The interviews with the leadership was carried thru by a PhD student in our research group, because I felt that my appointment at the time was to close to the management group. At the time when the data were analysed I had left the clinic for an appointment as a PhD student.
4. RESULT

The theoretical notions underpinning the first study sees the individuals as potent agents, who do not behave in a system, but act according to their understanding and in line with their process of sense-making. Thus, how do the staffs understand intensive care as such and their work tasks?

4:1. The staff’s understanding of intensive care

The sample of 12 respondents who participated in the interview study is described in Chapter 3.

The range of conceptions of intensive care was expressed from three perspectives, which are presented below together with one or two statements motivating the theme. The field of ICU is:

Turbulent and ambiguous

“I work with many different tasks at the same time. Sometimes two patients have urgent needs at the same time, with relatives sitting beside both patients’ bed!”

“The difficulty with colleagues in that we perform work very differently.”

Contains a dichotomy

“... we can help the patient survive in that we have the skills, knowledge and technology, but sometimes it is the ‘wrong’ patients that we try to help: the very old patient, for example. We (prolong their suffering?make them suffer) instead of letting them die naturally.”

Powerful but also menacing.

“The core intention of intensive care is to support the vital functions -- breathing, blood pressure, etc. -- that are not possible to maintain in any other ward.”
“…we also take care of extremely difficult pain problems…”

“…patients in an ICU are in exceedingly threatening situations, situations where they often cannot defend themselves; it is my task to protect them and speak on their behalf….”

The respondents characterise their work, work environment and daily routines as often being urgent, intense, unpredictable, equivocal and highly demanding. In all of the interviews the participants expressed their strong need to be in control of the situation. Although the interviewed personnel experience this turbulent environment differently, the turbulence is an obvious component of the protocols. Some of the participants are satisfied when they are successful in dealing with the urgent and intense task, whereas others express strong fear of failure. Apart from this common response, there is another response expressed by the participants that is nearly as common. This includes the presence of varying opinions and volition that exist within and among the differing groups of professions. The various areas of diverse opinions and intentions can be anything from how to plan the day to defining the patient’s specific needs or a decision about how curtains should be hung in the staff’s room.

The subgroup ambiguous is less explicit but still present in each and every interview protocol. The findings supporting the presence of organisational ambiguity are, first, the different opinions that created such strong and intense feelings and, secondly, the dichotomy in fundamental values. Ambiguity refers to a lack of clarity or consistency in reality, causality or intentionality (McCaskey 1982). Ambiguousness is experienced, for example, when there are multiple conflicting interpretations of the same situation, when contradictions and paradoxes appear, when there is a poor understanding of cause-effect relationships and when there is a diverging value orientation (Weick 1995).

The situation at the ICU when ambiguities are present is also common for all respondents; they mentioned the very situation when one, or more, of the patients had overcome the acute period and was in a rehabilitation phase. When the respondents talked about an acute situation where the patients are found to be in a life-threatening situation, the communication within the team functioned perfectly and often without a need to talk: “everybody knows what to do”…a situation described as encouraging, satisfying but at the same time very demanding. When I heard the staff talk about these two situations (1, when they cared for acute patients and 2, when they cared for patients that had passed the acute phase and needed rehabilitation, for
example weaning of the ventilator) it was almost as if they described two different units or two different jobs.

The staff’s understanding of their work tasks

The staff’s understanding of their work tasks also includes three different ways of understanding.

Managing the health status of the patient

I am satisfied when I feel I have the situation under control and, by that, I mean, for example, when I can foresee the risk of complication....”

“make sure that the equipment is functioning properly, supervise the patient’s condition and foresee complications, diagnose and prescribe and execute the prescriptions.”

“Intensive care is contingent on the notion that everybody knows what to do in all of these critical situations.”

Understand the patient’s needs

“... first of all, trying to determine the needs of the patients. The ICU patients cannot even tell us what they want; they cannot express their needs and certainly they cannot defend themselves if they disagree with what is going on regarding their treatment.”

Making certain that team work functions smoothly and efficaciously

Common to all participants is that they envisage their primary task as managing the patient’s health status. This goal is seen as an individual task as well as a collective one. Depending on the professional affiliation of the caregiver, managing the health status of a patient can be achieved on the individual level in a different way.

Summary and conclusion

This study has shown that intensive care most probably is inherently ambiguous. The findings supporting this view are, first, the awareness of the dichotomy within the fundamental values of intensive care and, second, the presence and frequencies of the varying opinions among the personnel as expressed in the entire interview protocols. The deviating opinions and endless discussions are, according to this standpoint (prevalence of organisational ambiguity) a consequence of ambiguousness. Whether the
urgent and turbulent surface is due to this ambiguity is still a question to address. The ambiguity probably causes some of the staff’s processes of sense-making to be obstructed. Because the process of sense-making on the organisational level has the same function as on the individual level, the organisational creative power is also most probably obstructed. When finding this severe situation, the natural questions would be: What about the leadership? How do they deal with ambiguity? In the next study these questions are put to the entire leader group, that is three nurses and three anesthesiologists.

I noticed one more, very interesting connection between the different themes, i.e., different ways of understanding. Also, everybody who had the third understanding had the second understanding. Nobody had the third understanding but not the second but everybody who had the third also had the second. This means that the findings present themselves in a kind of hierarchy. If this way of interviewing gives reliable findings using what and how questions and focusing on the practical work tasks might lead to a possibility of raising these kinds of data from the nominal level to the ordinal level! This is an important notion that will come back in Chapter 5.

4:3. Being a leader at the ICU
Six persons have a leadership responsibility on the ICU. When asked about their understanding of their work and essence of care, their answers could be grouped into four different themes.
Table 3. The quotes grouped by the question: What kind of phenomena do the respondents include in their understanding of the task as a leader?

<table>
<thead>
<tr>
<th>Participants’ understanding of Leadership</th>
<th>Participants’ view on the procedures and structures</th>
<th>Participants’ understanding of their own role as a leader</th>
<th>Participants’ understanding of the outside world</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are informal leaders and much envy toward those who ‘stick out’</td>
<td>Some staff members find it easier to stand outside the processes or decisions than to participate</td>
<td>I am always interrupted by something</td>
<td>There is insufficient technical and environmental support for me as a leader</td>
</tr>
<tr>
<td>I should be able to participate and have an impact on development</td>
<td>High pace, constant stress and a large need of competence development</td>
<td>In the long run I can’t stand this stress and hectic tempo</td>
<td>There is much collegial support among the anesthesiologists and they see each other in their leisure time</td>
</tr>
<tr>
<td>I never manage to finish what I have planned</td>
<td>We have no time to reflect on our standpoints and performances in relation to our knowledge</td>
<td>We never have the time to coordinate our standpoints before important meetings</td>
<td>You find informal leaders everywhere. This is always the case in workplaces dominated by women. I have a feeling that men are more straightforward</td>
</tr>
<tr>
<td>I stand alone</td>
<td></td>
<td>The staff may gladly take initiatives but in the end, I decide</td>
<td></td>
</tr>
<tr>
<td>Women do not want to be managed or led by women</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have no training to be a leader</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

We identified four themes describing the respondents’ understanding of their work and their operations. The first theme reflects the respondents’ understanding of the function of leadership and management (e.g., there are informal leaders and much envy toward those who ‘stick out’). The second relates to their understanding of structures and processes (e.g., it seems that developmental work was perceived as stealing time from daily work). The third theme concerns their own role as leaders (e.g., “I feel that I am always interrupted by something”). The fourth deals with the respondents’ surroundings (e.g., “There is insufficient technical and administrative support for me as a leader”).
As a second step we analyzed how the leaders described the themes found in the above table:

Table 4 The quotes grouped by the question: How are the phenomena described in accordance with the synthesis of the respondents understanding?

<table>
<thead>
<tr>
<th>Disintegration of system parts</th>
<th>Development in contrast to daily work</th>
<th>Operational disturbances</th>
<th>Hectic work management</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are informal leaders</td>
<td>It seems that development projects steal time from daily work</td>
<td>There are always problems arising that interrupt my planning</td>
<td>I ought to have time to participate and have an impact on the development, but I don’t</td>
</tr>
<tr>
<td>and much envy toward those who ‘stick out’</td>
<td>There is an imbalance between administrative and medical work</td>
<td>I never get the time to finish what I intend to do</td>
<td>We have no time to reflect on our standpoints and performances in relation to our knowledge</td>
</tr>
<tr>
<td>Some staff members find it easier to stand outside the processes or decisions than to participate</td>
<td>Developmental projects take time from medical work today but perhaps in the future developmental projects will benefit medical work</td>
<td>I am always interrupted by something</td>
<td>High pace, constant stress and an enormous need for competence development</td>
</tr>
<tr>
<td>There is a struggle for power between units and professional groups</td>
<td>There is insufficient technical and administrative support</td>
<td>I feel that my job largely lacks planning and order</td>
<td>In the long run I can never stand this stress and hectic tempo</td>
</tr>
<tr>
<td>The doctors are not natural members of a staff</td>
<td>Through development and streamlining we hope to find scope for development work in the future</td>
<td>I have no training to be a leader</td>
<td></td>
</tr>
<tr>
<td>I stand alone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women do not want to be led by woman</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

When viewing the quotes from the perspective of how the themes were described, we could identify four categories. The category hectic enterprise contained a majority of the quotes and referred to such things as heavy workload, stress and expressions of feelings of insufficiency. Disintegration of different components in the system refers to, e.g., conflicts between individuals and professional groups, or feelings of insufficient technical or administrative support. Operational disturbances pertain to such matters as interruptions in planning or work processes. A conflict between different ambitions was expressed by development work in contrast to daily work.

Summary and conclusion

It seems that the leaders are stuck in the hectic environment of the ICU. The ICU as a dichotomous enterprise was not considered in any of the interview protocols. The ambiguity, which was identified in the interviews with staff (Study I), was not considered by the leaders. The leaders conceive fragmented pieces of the ICU’s operations. From a theoretical perspective,
one might say that the de habitus-inspired forces and Gidden’s theory of structuration and later routines sweep over the ICU surface. Thus the unconscious and often group-driving forces, together with the system’s self-striving striving to adapt to changing demands, are the mightiest hindrance forces on the leadership’s possibilities to be in the front of the development. At the same time the present study confirms the findings in Study I; that both the individual’s and the organisation’s sense-making processes are obstructed. Thus the organisation’s systems of meanings are seriously disparate (Ericson 2001). The conflict between developmental work and the ongoing everyday care might be because the leaders, in their mind, manage a learning organisation whereas the system, in times of diminishing resources, adapts towards characters of standardization.

To get more proof about my own ideas we did so-called modeling seminars where the six leaders and the respondents from Study I participated. The total groups were divided into two subgroups so the seminars were held at two different occasions.

4.3. Conceptual Modelling

Twenty respondents participated in conceptual modeling (e.g. ABC seminar) held on two different days (ten persons each day divided into two subgroups). The participants consisted of the leaders and the sample from Study I.

Four different subgroups came to the same conclusion about their strongest need of improvement, which was

having time for reflection about the patient’s status at mid day and at the same time evaluate the morning’s round

Result

The group of 20 influential persons, including the leadership, decided to change a routine and implement a midday visit by the anesthesiologist and physiotherapist. All were agreed upon the need for this organisational change to slow down the operations as well as how this change should be implemented. However, they did not succeed in implementing this change
and thus they were unable to slow down the hectic surface and have an impact on the everyday care.

Summary and conclusion

These seminars showed a consciousness among the staff as well as the leaders about the status on the ICU, namely that the leaders were suffering from an overly heavy burden. The profound ambiguity and obstructed sense-making process was not a subject for discussion. This chapter is included in the thesis just to show that although 20 of the most influential persons wanted to implement a rather small change in the operations, they were unable to do so. They did not have an impact on the system behind the everyday care. This is a notion that will be discussed further in Chapter 5.

4:4. Workload, staffing, and financial cutbacks

The ICU met the demands of downsizing by an increase in the staff’s direct patient time and decreases in the indirect and remaining time. Whether this strategy was successful as determined by the present study is ambiguous. (The result in the present study is ambiguous to if this strategy is to be considered successful or not). The organisational climate did not change during the four years; on the other hand, all ten dimensions of the organisational climate have a significantly higher association to SOC than to any of the production parameters.

During the four years study, the workload VTL, NEMS, number of patients and patients staying at the ward for ≥ 5 days or longer, per staff and shift, increased by 20%. This is in contrast to the organisational climate, prevalence of stress related symptoms and SOC, which did not change over time. The stress variables are generally lower than the Swedish population (n=10 000) (Setterlind 1995) and SOC are generally higher than the Swedish population (Langius & Björvell 1993).

It is possible to define two different and obvious circumstances on the ICU: one is present when enough (of the 10 beds) of the patients are admitted from the 5th day and the other circumstances are present when not enough of the patients have been admitted for 5 days or longer.

When enough patients have been admitted ≥ 5 days, the working condition strongly correlates to an increased sick leave.
The measure of workload called NEMS (nine equivalents of manpower score) also correlates to patients admitted ≥ 5 days and increased sick leave, whereas the measure VTL (Vårdtyngd I Lund [workload as measured in Lund Sweden]), does not correlate to any of the two. NEMS includes caring topics to a higher level than VTL. VTL measures more medical interventions, even though the borders between caring and medical topics at an ICU are not strict.

Neither NEMS, nor VTL correlates to organisational climate. The individual SOC correlates strongly to the organisational climate and psychological stress-related symptoms.

Sick leave

Four variables showed an increase in sick leave: 404 % in the total amount of sick days, 158 % in the numbers of persons who reported sick and 147 % in short sick leave (1-7 days). The number of persons reported on longer sick leave (> 90 days) increased, from 1 person in 1999 to 8 persons in 2001. From this follows that I have a result saying that the experience of stress related symptoms did not increase whereas the sick leave did, an important topic that will be further discussed in Chapter 5.

There is a separate unit for the working environment at the studied hospital, which compiles the statistics for sick leave for the whole hospital. The ICU had the second highest level of sick leave of the hospital’s 55 units. This result differs from earlier concordant research stating that an increase in stress-related symptoms correlates to sick leave. On the other hand, this follows a general trend in the Swedish society, namely, increasing sick leave is noticed in the private as well as the public sector.

There was no association between SOC and age, professional category and working time, symptoms related to stress or organisational climate. There was a strong association between SOC and psychological stress-related symptoms (p<0.01) and between SOC and all 10 dimensions of organisational climate (p<0.01). SOC, CCQ and stress-related symptoms did not associate to any of the five production variables. A significant correlation was obtained between NEMS and number of days of sick leave (p<0.05), but the correlation between VTL and number of days of sick leave was not significant (p =0.131). Sick leave days and patients admitted more than one week on the ward were strongly correlated (p<0.01), whereas the relation between patients admitted on the ward for more than one week and
long-term sick leave was not significant (p<0.61). These data are summarized in Table 5 below.

Table 5. Summary of the above showed data: workload per staff and year, amount of patients and sick leave.

<table>
<thead>
<tr>
<th>Year</th>
<th>NEMS per staff and year</th>
<th>VTL per staff and year</th>
<th>Amount of patients admitted per staff and year</th>
<th>Patients admitted ≥ 5 days per month</th>
<th>Number of sick days per year</th>
<th>Number of persons having sick days per year</th>
<th>Number of events in the duration 1-7 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>9.1±4.3</td>
<td>6.31±2.5</td>
<td>4.84±2.2</td>
<td>3.5±1.7</td>
<td>725</td>
<td>36</td>
<td>51</td>
</tr>
<tr>
<td>1999</td>
<td>14.17±3.9</td>
<td>8.58±2.3</td>
<td>3.55±0.9</td>
<td>4.0±2.1</td>
<td>1290</td>
<td>39</td>
<td>51</td>
</tr>
<tr>
<td>2000</td>
<td>16.70±4.3</td>
<td>9.78±2.4</td>
<td>3.28±0.9</td>
<td>4.7±1.3</td>
<td>2303</td>
<td>46</td>
<td>76</td>
</tr>
<tr>
<td>2001</td>
<td>17.58±4</td>
<td>10.60±2.4</td>
<td>3.21±0.7</td>
<td>5.4±2.2</td>
<td>3961</td>
<td>57</td>
<td>75</td>
</tr>
</tbody>
</table>

All variables in the table increases over the years except amount of patient admitted per staff and year, which decreased.

**Summary and conclusion**

At first it seems to be successful to increase the flexibility between workload and staff available as the ICU did by changing the working operating system. The “production” increased by 20 % over four years whereas organisational climate, prevalence of stress-related symptoms and SOC remained stable. Table 5 shows compensation; in 1999 the amount of patients per staff was about 5 while in 2001 the staff had about 3 patients each.

The most problematic findings might be that the prevalence of stress-related symptoms did not change whereas four different variables of sick leave increased by 150-400%. A rather new way of describing the phenomenon and speculation is presented in the next paragraph.

Traditionally, stress as defined by Karasek (1970; 1990) is experienced when the demands increase above the capacity of coping. SOC has been shown to be an effective coping strategy when experiencing a stress-related situation. The population in this study had some higher SOC than the “normal population” (Langius and Björvell 1993) a situation that complicates the interpretation. A finding from Study I is that organisational ambiguity is strong especially when there are “long-term admitted” patients on the ward.
Further, those situations are associated with strong and negative feelings and frustration common in all interview protocols. This is a fact that might support the following notion. When a complex situation or phenomenon, placed in the “zone of complexity” (page 10), is managed as if it is a rational mechanical situation, the staff’s process of sense-making is obstructed.

Sense-making with its emerging result is to be understood as the individual’s and the organisation’s creative power (Weick 1988) (Study IV): what happens to the individual if the creative power is obstructed at work? Together with the organisation’s creative power! I do not think this situation is unique for the ICU; but perhaps the individual reacts not by an increase in the sympathetic nervous system followed by stress related symptoms, but by a subdue that later leads to sick leave – without traditionally symptoms of stress? For me, this sounds as a serious problem that will be discussed further in chapter 5.
5. Discussion

The results presented in this thesis have been presented to the staff and leadership at the ICU several times, and at different stages during the four-year study period. All of the staff who reacted to these results have confirmed the results “it is our unit you are talking about”. Naturally, there were some staff who did not react and I know nothing about their opinion.

5:1. Method discussion

The thesis contains two studies with an explorative design and qualitative data analysis. In these studies, validity and reliability are not useful concepts. Instead the methodological consideration can be pursued by three other concepts: credibility, transferability and dependability (Guba and Lincoln 1989).

Credibility concerns how well the constructed themes of understanding reflect the respondent’s real understanding. In Study I and II, the different ways of understanding were evident early in the analysis. Besides, all of the staff at the ICU unanimously agreed to our findings, which points to an acceptable credibility.

Transferability is thought of as parallel to generalisability in the positivistic paradigm. Our study was conducted at an ICU. The real dichotomy, caused by the difficult medical reality and powerful methods, might not be as obvious in other parts of the health care system, nor would the ambiguity and the understanding potent but also menacing Disparate meanings about the future perspective, however, have been identified in other health care organisation (Ericson 1999; 2001), which makes the principle discussed, transferable to other parts of the health care system, even if the factual content might differ. My opinion is that an ICU serves as a very well example, because of its hectic and turbulent operations, it is an environment
turning every organisational phenomenon to the edge, which makes principles obvious and easier to discuss.

Dependability refers to the conventional criterion of reliability; i.e., the stability of data over time. First, to what extent is the analysis of data established, trackable and documented as a process? Second, to what extent is the data presented confirmable?

Each interview (Study I II) was written out verbatim on 10-15 A4 pages. From this transcript just a few statements was selected to present the constructed categories. It is a complicated matter to choose the “right” quotes when presenting so few from so many quotes. We experienced that it was rather easy to see the respondent’s view and understanding when reading the whole protocol, but agreed that it was difficult to represent an individual’s whole understanding by a few patients. Regarding conformability the staff’s agreement about our findings supports the strength of the study. Together with the fact that all three studies in this thesis points in the same direction, suggesting trustworthy results. Furthermore: 1. The questionnaires and the registered data have a high response respectively register rate, 2. There is a strong internal consistency between the production variable, 3. The length of the data collection that was four years, these three notions together supports conformability.

Threats to trustworthiness

The staffs at ICU are a selective population. One notion supporting this view is that their level of SOC was higher than a study trying to define a normal population (Langius and Björvell 1993). Another study has shown that SOC is a strong predictor for future health (Suominen S. 2001). The ICU group of staff also experience fewer stress-related symptoms than an older but larger Swedish study (n=10 000) (Setterlind 1995). The ICU has a low staff turnover (about 9-10 %), high medium age (about 47 years) and long experience of working at ICU (about 17 years). To believe that the staffs who suffer from stress-related symptoms are “thrown out” of the system seems therefore less probable. One consequence of the staff being a selective group (higher SOC and lower stress related symptoms than the normal population) might be that they tolerate stress and a heavy work burden at a higher level than if they were not selected this way. But of course a slow selection e.g. 10 % of the staffs per year that do not cope with the circumstances and leave the ICU is possible.
It is likely that the financial reality at the ICU has an impact on the process that I have studied because financial cutbacks and downsizing in general have been shown to cause a plethora of organisational problems (Luthans and Sommer 1999; Kivimäki, Vahtera et al. 2000). Implementing a TQM project, in general, has also been connected with severe problems (Gann and Restuccia 1994; Erlingsdottir 1999; Skålen 2002). The ICU is a department with many co-operators, e.g. X-ray department, trauma unit and emergency department, and surgical and medical wards. I have not had control over these co-operators influence. One can only speculate on the impact these changes can have on the result of my study. Reducing resources might have an impact on sick absenteeism, and poor cooperation between the cooperating units might be a cause behind the hectic and turbulent surface. The cooperation often imply help from the ICU (preferable the anesthesiologist, by an acute blip. The cooperating might also imply that a patient in a very acute situation needs an ICU bed, resulting in another patient that has a bed being moved very hastily to the traditional ward. On the other hand, this situation described is what intensive care is all about.

The questionnaires used are answered using a Likert’s scale with five or seven points. According to the statistics textbook these are nonparametric data. Because many medical journals with referees accept them as parametric data, I also presented them as such data (Study III). Collection of the production data are registered continually; three times daily, and are presented as a mean value per year. The associations and correlations are done with questionnaires answered in May each year. This method for data collection may affect reliability, e.g. when the workload differs during the year. Therefore I measured the differences in workload and number of patients in May each year. I found that the workload and number of patients were significantly higher between May 1998 and May 1999 than May 1999 and May 2000; the production data in May 2000 were not significantly different from May 2001. From this I have interpreted that workload and production data follow the trend in the study and do not affect reliability. The stability of the data from the questionnaire and the unanimous finding from the different studies also support reliability.

5:2. Results discussion

Generally, my first impression when reading and writing the result chapter was that the ongoing everyday care is an automatic and self-perpetuating. It is unclear who is steering, what affects the system and to what extent
political decision has an effect. I know that the staffs who work at the ICU experience medical and nursing changes almost daily; e.g., they have recently taken over the dialysis from the dialysis department, which must be considered as a substantial change. I also know that the ICU is at the forefront of the development of intensive care in the country, especially regarding respiratory care. My aim was to study promoters and barriers for a specific part of management and CQD, which were the leader’s possibilities to implement a quality system and more specifically; how do they get information about the ongoing everyday care (e.g. incident reports), reflect upon the result and finally change or develop the point under consideration. The preliminary answer to this question is that they do not! Of course, leaders of such a well functioning department affect what is taking place! So – what does my results really mean? Well, I believe I have found a couple of important notions and ways of interpreting the result. The increasing trend in sickness absenteeism, for example, that was so clear in my study, is general for the whole society. This makes the problem severe, which in turn makes it worth trying even bold interpretation in the search for new ways of understanding. This is what I aim at here.

Two different organisational system intertwined

Study I and III clarified that the patients at the ICU were in two different stages during the treatment and recovery from the disease that they were admitted to intensive care for. At first the patient is in an acute phase and thereafter in a rehabilitation phase. Because of the construction of the production register, it was possible to define a mean braking point between these two phases and number of patients in each phase. The acute phase lasts for four days or less, whereas the rehabilitation phase lasts for 5 days or longer– named as acute phase or rehabilitation phase. For example, it seems that the whole unit are affected by the fact that patients in the rehabilitation phase or acute phase dominate the unit. My conclusion is that the rehabilitation phase functions according to a complex system and the acute phase according to a mechanical system.

A different organisational dimension –and its consequences at the ICU

The present study has revealed at least two, perhaps three, dimensions about the ICU, which are not original, namely, organisations have deeper dimensions according to the literature on organisational culture (Schein 1992). The surface, where the everyday ongoing care operates, is very hectic and turbulent, unanimously shown by staff and leadership in Study I and II.
Study I, but not Study II, also pointed at an ambiguity and dichotomy in fundamental values most probably operating in a deeper dimension. Study III supports the finding of ambiguity; here the ambiguity was associated to the number of patients in their rehabilitation phase. Ambiguity is an occasion for sense-making and implies that the assumptions for rational decision-making are inadequate (McCaskey 1982). A major problem associated with ambiguity is that additional information will not remedy the situation. Instead, an appropriate approach to deal with ambiguous situations is to seek activities that can enhance the individual’s awareness of the dominant values, conflicting interpretations of the situation, contradictions, paradoxes and the understanding of cause-effect relations (Weick 1995). If a work situation is characterized by ambiguity, what happens to the staff? The term ambiguity in practical working life implies that there is more than one alternative about how to carry out a specific work task. Furthermore, one specific task in a specific work situation can logically only be dealt with by one, of several, alternatives. The staff, whose understanding of the situation leads to another and according to their own understanding better performance, that they are hindered to carry out. - Or even worse, if they ought to carry out a work task that they understand is less good as their own alternative; please remember that in this study “carry out a work task” means to act or intervene towards a patient that, especially if they are in the rehabilitation phase, perhaps needs to be encouraged and motivated first. This scenario is probably present daily at the ICU and according to my finding the situation increases each year. How will these persons, whose understanding and work tasks are not considered, react? I suppose that the individuals differ. Sometimes you “win” and sometimes you “lose”, but in a situation that is prescribed by a doctor the staff are probably always the “loser”. Interpreting the situation as an occasion for sense-making means that her sense-making process is obstructed. Maybe neither the staff nor the leadership is aware of this obstruction. In Study I the obstruction presented its existence as frequently and tiring discussions; however it most often had a different cause than the scenario I have presented above.

The hectic and turbulent surface might to some extent be caused by the ambiguity and dichotomy in the deeper dimensions, but this is a question that needs to be further elaborated.

**Workload and sense-making**

Study III showed that production and workload - here the same as work tasks because VTL and NEMS are not judged values - increased by 20 % during
1998-2001. This was achieved by an increase in the flexibility between workload and staffing, which consequently increased the direct patient time in favour of indirect and remaining time. At the same time as the general production and workload increased 20%, the number of patients in the rehabilitation phase increased from 1.7% to 3.5% of the total number of patients. It might be during the indirect and remaining working time that a conscious sense-making is focus for the individual’s awareness. This is because during the direct patient time the intentionality of the awareness is directed towards the working task, especially in acute situations, and it is only what is in focus of the awareness that can be reflected upon and thereby create a meaning and start a process of learning (Marton 2000; Sandberg 2000). In this way it seems that the ICU is “biting its own tail”. Its staff are causing a situation that most probably would be best dealt with by increasing the process of conscious sense-making, at the same time as that process is limited by an adverse effect of increased direct working time (by the flexible working time system). Furthermore, the number of patient in the rehabilitation phase increases, while the patients in the acute phase decreases – a fact that also increases the need for a conscious sense-making. This would follow the hypothesis raised above that the situation around a patient in the rehabilitation phase functions according to a complex system.

If an individual works in a situation where she cannot create meaning about her work and work tasks, she is in a very difficult situation. First, she is in a state of cognitive dissonance (Festinger 1959), which means that although she believe something to be good, she is forced to do something else. In the study of Festinger (ibid) the individual had to change either her actions or her judgments about her actions. It is in itself impossible to remain in a dissonant situation without anxiety. According to Frankl (1972) life has to have meaning; meaning is created in the moment by the person and the person whose life is without meaning might find herself in an existential vacuum. In our society and culture, working life has a high importance for the whole life-world. Transferring these notions to my study; when the sense-making process is obstructed, the creative power is also obstructed. And secondly if this state occurs daily or extensively the organisational creative power might also be obstructed. Third, this state of obstructed sense-making process for the individual as well as the organisation leads to increased sickness absenteeism, not by first activating the stress system but by hampering its intuitive and creative power and in the end its sense of meaning – suddenly staff might find themselves in a existential vacuum with anxiety (not necessary experienced by the awareness) that will cause them to be sick. The latter point is supported by Study III where sickness absenteeism strongly associates to the number of patients in the
rehabilitation phase. The next chapter introduces the effects and presence of complex adaptive system at the ICU. The association between sickness absenteeism and number of patients in the rehabilitation phase might thereby be more understandable.

Mechanical system vs. complex system

Dahlgaard (2000) has written a thesis where he argues for a paradigm shift in managerial research (where my thesis belongs); the eastern philosophies of Confucianism, Taoism and Buddhism are proposed to be the root in the new paradigm. Furthermore, the elements of these philosophies are embedded in the Japanese practices of Company Wide Quality Control, a movement that later became TQM. Dahlgaard describes two different developmental lines through history: the ‘scientific’ and the ‘humanistic’. The scientific line can be traced back to scientific management of Fredrick Taylor; the humanistic line can be traced back to Mayo and the theory of human resources of the 40s by Weick and his sense-making to the theories of organisational culture and further to TQM. The scientific developing line consists of so-called “hard data” and the humanistic line consists of holism, staff empowerment, customer’s perspective. Let me try some ideas and thoughts rooted in my thesis and consider these two developmental lines and a possible future fusion. If these two developmental lines are the present status, and we are standing here looking into the future – which way are these developmental lines, born several decade ago, taking now?

I believe I have seen a possible future development of these two lines mentioned above, a future that contains a intertwining of them. If we take the two different phases in individual patient care and ongoing everyday care, the rehabilitation phase and the acute phase, as a point of departure, three of my studies point at a possibility of identifying two different systems intertwined on the ICU. The situation around a newly admitted acute sick patient functions as a rational and mechanical system (scientific line according to above) whereas the situation around a patient in the rehabilitation phase functions as a complex adaptive system (humanistic line). The staff and leaders are very successful in working in line with the mechanical system’s prerequisites when this is adequate, e.g. implementing dialysis on the ward, but unsuccessful in working in line with the complex system, e.g. implementing CQD. I propose that the leaders of health care in general project the mechanical system’s way of management onto situations needing a completely different approach and leadership. Situations belonging to a complex adaptive system function according to other prerequisites than a mechanical system. Therefore, many situations at the
ICU, and especially the situation around the caring for patients in their rehabilitation phase, belong to the complex system and there the zone of complexity. In the present thesis this can be considered the major problem and the main answer to my aim.

To discuss in terms of complex adaptive system and how such a system works and is managed is a rather new phenomenon in health care (Plsek and Wilson 2001) (Plsek and Kilo 1999; Plsek 2000; Plsek and Greenhalgh 2001). Such a system is nonlinear, self-organising, disorderly and uncontrollable. This explains why management of a complex system differs from that of a mechanical, linear and controllable system (Burns 2001; Plsek and Wilson 2001).

**Complex Adaptive system and standardisation**

From studies in complexity sciences it is clear that the system in itself has driving forces for natural adaptation. What direction will this self-organisation take in times of diminishing resources? This might be easier to understand by adopting a metaphor; a human body (which is a complex adaptive system on several levels) that does not get enough energy will change its physiological functioning to a state of starvation, that is use as little energy as possible. Perhaps it is the same with a self-organised complex health care system in times of diminishing resources. Perhaps the system gets ready for starvation and therefore saves as much energy as possible. I wonder whether standardisation is not the most energy-saving way of functioning for a complex system intertwined with a mechanical system. If so, starvation of the complex living biological body of a human has similarities with standardisation in an organisation with diminishing resources. Are the different units at the hospital (the loosely coupled parts of system) forced towards a state and a functioning of standardisation because of diminishing resources? If this way of thinking has any ground in reality, a learning organisation is probably impossible to reach.

**Leadership and loosely coupled system**

The leadership seems to be the group of staff suffering most from the hectic, turbulent and, from my own interpretation, self-organising surface. The result of the second analysis (How the themes were described) in Study II, identified a fragmented unit together with a disparate system of meaning (Ericson 2001).
The concept of loose coupling, experienced in several studies (Henriksen and Rosenqvist 2002; Maguire 2002), which was first mentioned by Weick (1976), might be used as another way of confirming the findings in my thesis. The structures and higher levels of the hospital are affected by directives from, e.g., the county council, but the staff’s actions are not. One cause of loose coupling in the present study might be that the leaders and staff on the units are bound by unconscious forces striving for adaptation to diminishing resources e.g. by increasing standardisation.

Both Anthony Giddens and Paul Bourdieu were most active in the late 70s and early 80s, but still the theory of structuration and Bourdieu’s capital and field are probably applicable in an organisational study in the 21st century. The theories of these two sociologists mean that the social system constituting the organisation is fragmented by different structures of fields (the structured are loosely coupled). Today, we might call the structures: professional groups, different units or organisational levels, and different ambitions within the working group, but the fragmentations at the ICU, in my opinion, seem to be as strong as in the writing of Giddens and Bourdieu. The leaders were probably guided by the metaphor of the learning organisation, according to the policy programme for the hospital. They expressed a very heavy burden of “we should be doing developmental work but…” If my interpretation is correct, the leadership can with clear conscience abandon the ambition of developmental work; instead, they have to start at the other end. The forces of adaptation towards standardisation are probably too strong to even try to defeat.

**Conclusion and further research**

Two different organisational systems function in an intertwined manner at the ICU: a mechanical system that functions very adequately in the acute phase and a complex adaptive system that functions less adequately in the rehabilitation phase. Health care has reached tremendous success through the mechanical systems, and this is the system that the staff and leaders are most aware of. The leadership might make the mistake of projecting the same way of managing the complex system as they so successfully do with the mechanical system. This might be the turning point for the future functioning of the ICU. Indeed, this is the main point of my thesis. If the leaders manage to, on the one hand, be aware of the different systems and on the other hand manage the complex situations more adequately, – finding the natural attractors in the complex system as they so successfully have done in the mechanical situation – they might be able to create a highly successful future.
The unconscious driving forces (e.g. attractors in the acute situations) are so strong that the unit has to create concrete situations in time and space for a conscious sense-making process. This point concerns everybody, but perhaps the leadership mostly because they need to be in the front of development regardless of which system is active. According to my interpretation, acute situations are not problematic. Instead, it is the rehabilitation phase that causes obstructed sense-making, increased sickness absenteeism, frustrated leaders and because of the hectic surface, the impossibility to implement a system for CQD. There are two questions that need to be further investigated. First, why are stress-related symptoms not associated to increased sickness absenteeism? Second, are VTL and NEMS valid measures of the real workload? The answer to second question is that they are probably not. The real workload measures in the present study are the number of patients in the rehabilitation phase, because the ICU staffs do not experience the acute patients, not the rehabilitation patients, as a heavy burden. The number of rehabilitation patients strongly correlates to the rate of sickness absenteeism among the staff. I believe the burden of the rehabilitation patients can be reduced if the staff and the leadership together become aware of the two different systems and how to handle their combined effects. The last chapter in my thesis presents a quality system that takes these difficulties as a point of departure and make a suggestion for further studies within a quasi-experimental design to determine the effects of implementing such a system.
6. A proposal of a quality system from the point of view of sensemaking, learning and complex system.

What is for sure is that an ICU is a complex unit with forces striving in several directions. Is it possible to manage complexity? In this chapter I will present a quality system taking the theoretical standpoints in this thesis as a point of departure. The main source is the Sztompkas (1991) Theory of social becoming (page 15), Eriksson’s (2001) the theory of a Meaning status in a group and Weicks (1988; 1995) concept of sensemaking.

6:1. Sense-making in organisations

From a sense-making perspective, the organisation is structured by the sense-making process and enacted by its various members (Weick 1988). Such an affirmation has clear sociological meaning: social reality is never a steady state. It is a dynamic process that occurs rather than exists. Accordingly, human conduct is in a perpetual state of becoming (Sztompka 1991). Organisational processes have been described as follows: action drives processes but processes cannot be explained merely by reference to individuals or collective agencies. Because actions are embedded in contexts, their information, insight and influence are limited. Yet, the dual quality of agents and context must always be recognized. Contexts are continuously shaping and are continuously being shaped. Actors are producers and products. The legacy of the past is always shaping the emerging future (Pettigrew 1997). The shaping of the organisational future cannot be seen only as an individual process in that an organisation consists of several mutually dependent individuals, where thinking and action are shown to be a collective phenomenon (Langfield-Smith 1992). Organisations exist as systems of meanings, which are shared to varying degrees. A sense of commonality, or the taken-for-granted ness aspect, is necessary for continuing organised activity so that interaction can take place
without constant interpretation and reinterpretation of meaning (Smircich 1982). To manage a complex organisation it is therefore necessary to understand how these systems of meaning are constructed and deconstructed by its members. Four ideal types of meaning have been identified in strategic change. These ideal types can be used to describe the “meaning status” of a group. The four ideal types are disparate, collective, fragmentary and enclave meaning. Disparate meaning originates when the group are heterogeneous in their interpretation and understanding of reality, collective meaning on the other hands is present when the understanding is homogenized. Fragmentary meaning is a state where the bracketing degree of the group is low and the understanding heterogeneous and enclave meaning occurs when understanding is homogeneous in combination with a low bracketing degree. There are four types of transformation from one ideal type of meaning to another. The processes of transformation include homogenisation -- when meanings are transformed from disparate to collective types -- and heterogenisation -- when the transformation changes in the opposite direction. Transformation from a low-bracketing degree of the cue under consideration to a higher degree is called concentration; the reverse transformation is referred to as diffusion (Ericson 2001).

6:2. Quality Improvement in Complex Systems

Depending on the complexity in the organisation of health care (Plsek 2001), these organisations are highly disparate in their systems of meaning; in terms of effectiveness within any organisation, there are many diverse objectives. Thus, an organisation is in need of successfully reaching a divergent set of objectives to make decisions about courses of action. The concept of meaning status in the group is useful not only in strategic change situations but also in managing complex systems through a quality system. If so, the vital dimension and the core objective of a quality system ought to support and enhance the awareness of all of the disparate meanings (future-perspective), stimulate reflection upon them and transform them into a collective meaning status (presence) to make effective decisions and a successful adaptation to change. This specific part is derived from Sztompkas model of social becoming (page 15). Supporting the process of reflection on the meaning of the future, which would be the same as seeking the awareness of the attraction pattern (Zimmerman 1999), ought to be the ultimate goal of a quality system. In this perspective the quality system becomes superior and common within the organisation. Figure 5 illustrates the setting of the meaning system and the quality system.
Figure 5. An illustration of the future and its disparate sets of meaning. The two-way arrow in the centre of the figure depicts the process of sense-making in which awareness and reflection upon all the disparate meanings in the system are realised. As a result of this process, a collective system of meaning is created and accepted as a base for effective decision-making and future actions.
Summary

The main aim of my thesis was to explore difficulties when implementing a system that supported Continuous Quality Development in an Intensive Care Unit. The ICU has a hectic and turbulent surface. Study I showed that one reason behind this turbulence is the presence of organisational ambiguity, probably at a deep organisational level. The staff also recognised that intensive care contains a dichotomy in fundamental values. These deeper functioning of ICU may be a contributory cause to the hectic and turbulent surface. The leadership seems to be the group that suffered most from the turbulent surface; they viewed the enterprise as fragmented and hectic. They also expressed a heavy burden of expectations to do developmental work, which was expressed as contradictory to the ongoing every day care. The first expressions of the result are a unit that seems to be out of control; nobody have an impact on what is taking place. However, I know from my own experience and other personal sources that this ICU functions very well and accepts medical and nursing intervention almost daily. Moreover, this unit is at the frontline of development of intensive care in the country, especially regarding respiratory treatment and care. This makes the result so far rather puzzling.

Interpreting the result from the first three studies makes it possible to understand that two different organisational systems operate in an intertwined manner on the unit. A mechanical system that is linear, reductionistic, predictable and rational operates when the patients are in an acute situation that, per definition by the registration data, continues for 4 days or less, whereas a complex adaptive system operates when the patients are in the rehabilitation phase for ≥ 5 days. A complex adaptive system is unpredictable, nonlinear and irrational. It might be that the leadership manages in such a way that they treat the complex adaptive system as if it functions like a mechanical system. I am unsure whether the leadership are aware of the existence and consequences of the two different systems. Interventions are successful on the unit in the realm of the mechanical system, but almost impossible in the realm of complex system or problems belonging to the zone of complexity. The latter became obvious when 20
influential staff participated in so-called modeling seminars. The seminars were arranged on two days for two different subgroups of 10 persons. The result was common for both groups. They needed to slow down the operations by inventing a midday round given time to reflect upon the patient’s status and effects of the morning ordinations. Although they all understood the need for this new round and all wanted this change, they were unable to implement it.

The workload and production data (number of patient, patient admitted for ≥5 days and number of staff occupied with direct patient care per three shifts per day) increased by 20% during the four years of study. This increase was possible because of a new flexible working operating system, which increased the direct patient time in favour of the indirect patient time and remaining time. The organisational climate, prevalence of stress-related symptoms and SOC remained stable regardless of the increase in workload. The sickness absenteeism has increased by 150-400% during the same period. These results are difficult to interpret. Some associations in Study III point at one reason, which might be that the staff’s process of sense-making are obstructed during periods when the complex adaptive system operates. An obstructed sense-making process might hamper a sense of meaning and the function of intuition. Perhaps an individual experiences sickness under these conditions without an activation of the stress system and thereby the stress-related symptoms.

The answer to my aim is that under the condition when the mechanical system operates on the ward, there are no problems to intervening changes. However, under circumstances when the complex adaptive system dominates, and the problem under consideration belongs to the zone of complexity, the situation seems completely difficult. Indeed, the situation might be as follows: The leadership are not explicitly aware of the complex systems functioning; therefore they project the way of managing the mechanical systems functioning even to problems belonging to the zone of complexity. If this interpretation is correct, the leadership cannot receive information or intervene to overcome a problem; rather, it is as if they talk the wrong language. One problem for the future is that situations belonging to the complex system are more numerous. For example, during my period of study patients in the rehabilitation phase have increased from 1.7% to 3.5% of the total number of patients.
References


A doctoral dissertation from the Faculty of Medicine, Uppsala University, is usually a summary of a number of papers. A few copies of the complete dissertation are kept at major Swedish research libraries, while the summary alone is distributed internationally through the series Comprehensive Summaries of Uppsala Dissertations from the Faculty of Medicine. (Prior to October, 1985, the series was published under the title “Abstracts of Uppsala Dissertations from the Faculty of Medicine”.)