Quality Improvement in Healthcare

Experiences from two longitudinal case studies using an action research approach

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ABSTRACT

The Swedish healthcare system, although being one of the more efficient care systems in the world with good medical outcomes at a moderate cost, faces tremendous future challenges. An ageing population with more patients suffering from multiple diseases together with accelerating medico-technical developments is putting increasing pressure on the system. The quality and safety of the system has also been called into question. Improvement science, where quality improvement theories and practices are continuously being translated to a healthcare context, has emerged as one possible solution to these challenges. However, there is need for a further theoretical and practical development of the field.

The purpose of the thesis is to explore quality improvement initiatives in healthcare systems, suggesting alternative ways of improving quality and efficiency in healthcare organizations. The empirical material draws on leveraging events during two long-term improvement initiatives in the healthcare system of Skaraborg in the Western region of Sweden. The author, working as a development director at the Skaraborg hospital group (SkaS), played a major role in both cases as an inside action researcher. The first case addresses a decade of development efforts that sought to improve care for elderly people in West Skaraborg. The second case explores how quality management ideas at SkaS were used to improve quality, efficiency and safety in hospital care from 2006 to 2008.

The results of the research draw special attention to the importance of moving beyond the established static, linear step-for-step models for quality improvement, instead embracing a more open and processual view on improvement. The thesis proposes that practices and theories from the action research (AR) field in this respect are useful complements to the emerging field of improvement science. AR practices entail an approach that enhances joint learning and reflection in iterative action-reflection cycles. Further, drawing from the vast repertoire of AR practices, cognitive, structural, networking, and procedural learning mechanisms are vital

ingredients for quality improvement in complex healthcare systems. Learning mechanisms connect all parts of the system but they also support individual and organizational learning and action through new vocabularies, frameworks and concepts, procedures and tools.

SUMMARY IN SWEDISH

Det svenska hälso- och sjukvårdssystemet är ett av de mer effektiva systemen i världen med goda medicinska resultat till en rimlig kostnad. Trots detta står hälso- och sjukvården i Sverige inför gigantiska framtida utmaningar. En åldrande befolkning där alltfler patienter lider av multipla kroniska sjukdomar tillsammans med en accelererande medicinsk-teknisk utveckling ökar hela tiden pressen på systemet. Även säkerheten och kvaliteten i det svenska hälso- och sjukvårdsystemet har kommit att ifrågasättas. Teorier och praktiker inom området kvalitetsutveckling har vuxit fram som en potentiell möjlighet att hantera dessa utmaningar. Idéerna har också bidragit till framväxten av ett eget vetenskapligt fält – förbättringskunskap – där dessa teorier och praktiker kontinuerligt översätts till en hälso- och sjukvårdskontext. Fältet är i ständig utveckling och det finns ett behov av att ytterligare utveckla den teoretiska och praktiska kunskapen om förbättringar i en hälso- och sjukvårdskontext.

Syftet med denna avhandling är att undersöka olika kvalitetsutvecklingsinitiativ i hälso- och sjukvården för att därmed också föreslå alternativa angreppssätt för utveckla kvalitet och effektivitet i en hälso- och sjukvårdsorganisation. Det empiriska materialet bygger på avgörande händelser under två långsiktiga förändringsprocesser inom delar av hälso- och sjukvårdsystemet i Skaraborg i Västra Götaland. Avhandlingens författare, som arbetar som utvecklingschef på Skaraborgs sjukhus (SkaS), hade en central funktion under bägge processerna, samtidigt som han verkade som aktionsforskare inom de aktuella organisationerna under projektens gång. Det första fallet beskriver olika utvecklingsprojekt under en tio-års period i Västra Skaraborgs, där ambitionen var att förbättra den nära vården för äldre. Det andra fallet undersöker hur idéer inom kvalitetsutvecklingsområdet användes för att förbättra sjukhusvården på SkaS mellan 2006 och 2008.

Forskningsresultaten uppmärksammar betydelsen av att se bortom linjära steg-för-steg modeller för kvalitetsförbättring och istället anta en mer öppen och processuell syn på förbättring. Avhandlingen föreslår att praktiker och teorier från aktionsforskningsområdet kan utgöra ett värdefullt komplement i den pågående utvecklingen av förbättringskunskapen. Praktiker inom aktionsforskningen stimulerar särskilt till lärande och reflektion i repetitiva aktions-reflektions cykler. Kognitiva och strukturella lär-mekanismer samt lär-mekanismer associerade till nätverk och procedurer används ofta inom aktionsforskning, och kan också vara värdefulla tillskott i förbättringsförsök som bedrivs i komplexa hälso- och sjukvårdssystem. Lär-mekanismer knyter samman alla delar av systemet samtidigt som de stimulerar till individuellt och organisatoriskt lärande genom att erbjuda nya vokabulärer, ramverk, begrepp, procedurer och verktyg under förbättringsarbetet.

ACKNOWLEDGEMENTS

LIST OF PUBLICATIONS

This doctoral thesis includes an extended summary of the following six papers, which are appended in full.

Paper I   TOWARD A SUSTAINABLE HEALTHCARE SYSTEM: TRANSFORMATION THROUGH PARTICIPATION

Lifvergren, S., Docherty, P. and Shani, A.B. (Rami) (2011)

Published in *Organizing for sustainable effectiveness,* Mohrman, S. and Shani, A.B. (editors), Vol. 1, pp. 99–125. Emerald, Bingley, UK.

Paper II   THE PATH TO SUSTAINABILITY IN HEALTHCARE - EXPLORING THE ROLE OF LEARNING MICROSYSTEMS

Lifvergren., S, Andin, U. Huzzard, T., and Hellström, A. (2012)

Published in *Organizing for sustainable healthcare,* Mohrman, S. and Shani, A.B. (editors), Vol. 2, pp. 169–197. Emerald, Bingley, UK.

Paper III   LESSONS FROM SWEDEN'S FIRST LARGE-SCALE IMPLEMENTATION OF SIX SIGMA IN HEALTHCARE

Lifvergren, S., Gremyr, I., Hellström, A., Chakunashvili, A. and Bergman, B (2010).

Published in *Operations Management Research*, Vol. 3, pp. 117-128.

Paper IV   IMPROVING IMPROVEMENT BY REFOCUSING LEARNING: EXPERIENCES FROM AN – INITIALLY – UNSUCCESSFUL SIX SIGMA PROJECT IN HEALTHCARE

Lifvergren, S. and Bergman, B. (2012)

Published in *Healthcare, Total Quality Management and Six Sigma*, Aized, T. (editor), pp. 23-40. Intech, Rijeka.

Paper V   PROCESS MANAGEMENT IN HEALTHCARE – INVESTIGATING WHY IT IS EASIER SAID THAN DONE

Hellström, A., Lifvergren, S. and Quist, J. (2010)

Published in *Journal of Manufacturing Technology*, Vol 21, pp. 499-511.

Paper VI   FIRST-PERSON ACTION RESEARCH THROUGH SELF- AND CLOSE-UP ETHNOGRAPHY: RESISTING THE LATEST N-STEP MODEL FOR QUALITY IMPROVEMENT.

Lifvergren, S. (2013)

Working paper.

CONTRIBUTIONS IN THE APPENDED PAPERS

Paper I

I was the project manager of the Örjan network in this study. Together with Marianne Alärd I collected most of the data. The data was then transcribed by me and analysed together with Professors Docherty, Huzzard and Shani. Professor Docherty and I were the main authors of the chapter.

Paper II

I collected the qualitative empirical material in this project together with Professor Docherty. Dr Andin collected the quantitative data. Dr Chakunashvili analysed the quantitative data regarding symptom scores. I transcribed and analysed the qualitative material. The paper was co-written by the all the authors but Professor Huzzard and I wrote the major part of the chapter.

Paper III

I was in charge of the Six Sigma programme as development director at SkaS (Skaraborg Hospital Group). I managed the support to the projects and the network meetings together with co-workers at the development support section at SkaS. I collected the major portion of the qualitative and quantitative empirical material together with Dr Chakunashvili in collaboration with the project managers. The analysis was performed together with Professor Bergman, Dr Chakhunashvili and Dr Hellström. I co-ordinated the writing of the paper together with Dr Gremyr and I was also the main author, writing about 75% of the text.

Paper IV

I carried out the data collection and analysis together with Dr Chakhunashvili and Dr Hellstrand. I wrote the chapter myself with inspirational input from Professor Bergman.

Paper V

Dr Hellström, Dr Quist and I planned the study. Drs Quist and Hellström carried out the interviews and the transcription of the empirical material. The analysis was carried out jointly. Drs Quist and Hellström wrote the major part of the paper and I contributed with 25% of the text.

Paper VI

I planned and carried out the project. I also collected and analysed all the data myself. I am the sole author of the paper.

Other publications from the author within the healthcare field

Conference papers

Lifvergren, S., Chakunashvili, A. and Bergman, B. (2007). A large scale Six Sigma programme. *QMOD-conference, Proceedings,* Helsingborg.
(This paper was further developed to become Paper III in the thesis)

Lifvergren, S., Chakunashvili, A. and Bergman, B. (2007). Improving Warfarin treatment. A study using the Six Sigma methodology. *QMOD, Proceedings.* Helsingborg.

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(This paper was further developed to become Paper V in the thesis)

Gremyr, I., Chakhunashvili, A., Gideberg, A., Gustavsson, S., and Lifvergren, S. (2009) Design for Six Sigma in Healthcare: Identifying Critical-to-Quality Characteristics, *The 12th QMOD International Conference, August, Verona.*

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Hellström, A., Lifvergren, S., and Gustavsson, S (2011). Transforming an organization so that it is capable of sustainable development – the integration of improvement knowledge. *Proceedings to the EurOma conference, Cambridge, July.*

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Articles

Yet, B., Bastani, K., Raharjo, H., Lifvergren, S. and Bergman, B. (2013). Decision Support System for Warfarin Therapy Management Using Bayesian Networks. *Decision Support Systems*, Vol. 55 No. 2, pp. 488-498.

List of tables and figures

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1 INTRODUCTION

In this chapter, the challenges facing healthcare systems in general and Sweden's healthcare system in particular will be presented. One of the proposed solutions to meet these challenges will then be outlined, followed by an overview of the results so far achieved from using these approaches. By drawing from the challenges, the chapter then continues with a presentation of the research questions and the proposed contribution of the thesis. The chapter ends with an outline of the thesis.

1.1 Healthcare challenges

The healthcare systems of today face gigantic challenges (Dent, 2003). Several reports indicate that today's healthcare systems are not sustainable (Cederquist and Hjortendahl Hellman 2005; Institute of Medicine, 2001, 2000; OECD, 2007; SKL, 2005; WHO, 2000). People are getting older, and increasing numbers of patients are suffering from multiple illnesses that require extensive specialist care as well as more resources. At the same time, new and expensive drugs and treatments are being introduced at an accelerating rate, leading to increasing healthcare expenditures. Simultaneously, as the proportion of the elderly in the population increases, the number of taxpayers decreases. In addition, increasing staff shortages in the health profession is becoming a disturbing reality in many countries (WHO, 2000).

Healthcare systems are thus encountering an increased demand for high quality care while the resources they can command from society are decreasing. These factors have led to increasing healthcare costs and cost containment pressures (OECD 2007; WHO 2000). "*Healthcare systems must deliver more with less, amidst profound changes in the populations that need to be served, and changing healthcare priorities.*" (Mohrman et al., 2012, p. 4, emphasis in original). At the same time, the efficiency of the systems is more or less impossible to assess according to several reports (Cederquist and Hjortendahl Hellman, 2005; WHO, 2000). In addition, there is increasing evidence that healthcare systems in the United States as well as in Europe are suffering from poor quality and safety (Andersen, 2004; IoM, 2001; 2000). Several studies in the U.S. indicate that as many as 100,000 patients die per year due to poor safety and bad execution in the American system (IoM, 2000). More recently, using a literature review of four studies in the U.S. where the Global Trigger Tool[1] (GTT) was used to identify patient

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[1] GTT, the Global Trigger Tool, is a method to retrospectively review a random sample of patient records using "triggers" (or clues) to identify possible adverse events (IHI, 2007).

harm associated with hospital care, James (2013) estimates that as many as 200, 000 to 400,000 premature deaths a year are preventable.

1.2 The Swedish healthcare system and its challenges

1.2.1 The Swedish healthcare system

In Sweden, as in many other countries in the European Union, the healthcare needs of all legally registered citizens are provided for by the state. The Government and the Parliament have the overall political responsibility for healthcare, while 20 counties/regions and 290 municipalities bear the operational responsibility for citizens' care. The regions and municipalities have a mandate to tax the population through employee and employer salary-based taxes. Primary- and hospital healthcare are organized at the regional level and after-care services at the municipal level. The regions and counties are responsible for the overall specialized and primary healthcare delivered to all their citizens within the geographical area. The municipalities, in turn, bear a responsibility for after-care services including home care and care of the elderly in nursing homes. All in all, healthcare answers for around 9.5% of the gross domestic product in Sweden (OECD, 2013).

Sweden's healthcare system is recognized as one of the better systems in the world with good medical outcomes at a reasonable cost (Norbäck and Targama, 2009; SKL, 2005; OECD, 2007). Several studies during the 2000s indicate that Swedish healthcare is also efficient compared to other European countries and to the United States (SKL, 2007, 2005). For instance, in a comprehensive report published by SALAR, the Swedish Association of Local Authorities and Regions, in 2008, indicators, indices and results from three international healthcare comparisons for the period 2005 to 2007 were assessed and compiled against national data. The overall assessment showed that medical outcomes are among the best in Europe at a relatively moderate cost using a reasonable level of resources (SKL, 2008). These results seem rather stable: in 2011 Sweden had the 8th longest life expectancy and the second lowest infant mortality rate in Europe at 9.5% of GDP (OECD, 2013). The most recent Euro Health Consumer Index (Health Consumer Powerhouse, 2012) put Sweden at the 6th best position in Europe using a composite index compiled from measures of patient rights and information, accessibility, medical outcomes, prevention, range of services and pharmaceuticals. The same report ranks Sweden, together with Norway, as number one in terms of medical outcomes.

1.2.2 Swedish healthcare challenges

Even so, the problems outlined above are equally present in the Swedish care system. These problems are, however, far from new in the Swedish context. The challenges started to emerge already during the 1970s when the unlimited expansion of the Swedish care system was not possible anymore due to lower levels of economic growth and limited resources (Eriksson et al., 2013; Hallin and Siverbo, 2003). However, due to an decelerating population growth versus increasing healthcare costs and decreasing tax bases – a downward spiral – the challenges are now more imminent than ever. For instance, in 2002 Sweden had the oldest population in Europe with more than 5% of its citizens being 80 years of age or older whereas birth rates are relatively low (Kanavos and McKee, 1998; SKL, 2005). At the same time, Sweden is at the forefront of medico-technical developments (Hallin and Siverbo, 2003) making it possible to deliver more treatments to the growing population of patients with multiple and chronic diseases. The question of how to deliver high quality, equal and efficient care to the Swedish population is therefore one of the most central issues facing the future development of the Swedish welfare system.

The shortcomings in the Swedish care system specifically concern three interlinked areas; i) poor *efficiency and productivity*[2] in the system resulting in poor accessibility including long waiting times (Cederquist and Hjortendahl Hellman, 2005), ii) lack of integration and coordination especially of *care for elderly* patients with chronic multiple diseases and/or tumour diseases (Anell, 2005) and, iii) poor *patient safety* (Soop et al., 2009).

A comprehensive report from the Swedish Ministry of Finance concludes that it is unlikely that the current development rate regarding productivity and efficiency is sufficient to meet the future challenges that the Swedish healthcare system faces (Cederquist and Hjortendahl Hellman, 2005). It is not even possible to get a comprehensive and clear-cut picture of the efficiency or productivity of the counties and regions in Sweden. Further, there are no concrete and measurable goals from a patient perspective, a prerequisite for assessing and monitoring the efficiency of the system (ibid.).

An assessment as long ago as 1996 by The National Board of Health and Welfare showed that *care for the elderly* was still disintegrated, poorly coordinated and not delivered based on the needs of the patients (Socialstyrelsen, 1996). Another investigation, which included a survey of all

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[2] Efficiency is defined as the amount of resources used to reach goal fulfilment in a clinical context whereas productivity is the rate of output given the rate of input per unit (Cederquist and Hjortendahl Hellman, 2005; WHO, 2008).

counties in Sweden in 2002 showed that the development of integrated care[3] for the elderly was highly prioritized by two thirds of the respondents (Åhgren, 2003; response rate 90%;). Still, 70% of the counties did confess that the development or establishment of pathways from a patient perspective was limited (Anell and Mattisson, 2009; Åhgren, 2003). Two reports from "The Integrated Care Project", initiated by the Swedish Association of Local Authorities and Regions (SALAR) in 2005-2006, described lessons learned from experiences of the improvement of integrated care for the elderly in 14 counties (SKL, 2007; 2006), but it is unclear whether any outcomes from a patient perspective had been reached.

Additionally, a study in 2003 and 2004 (Soop et al., 2009) showed that *poor patient safety* prevails in Sweden as well. Reviewing a representative sample of medical records from 1.2 million hospital admissions, the study revealed that 12.3% of the admissions had adverse events of which 70% were preventable. Extrapolated to all the 1.2 million admissions, the calculated estimation of preventable adverse events amounted to 105,000 representing 630,000 extra days of hospitalization. Drawing from the findings of James (2013), no study using the Global Trigger Tool on this scale has yet been completed in Sweden.

In summary, although Sweden has a well-developed healthcare system compared to other countries, many shortcomings regarding efficiency, productivity, integrated care and patient safety still prevail. Furthermore, due to demographic challenges together with accelerating medico-technical developments, several challenges seem to stand out: Swedish healthcare must improve the efficiency and safety of the system through continuous quality[4] improvement and management. The challenges are especially prevalent in the care of the elderly with chronic and/or multiple diseases.

1.3 The proposed approaches to handle healthcare challenges

A number of initiatives, reforms and re-organizations have been initiated or proposed during the last few decades to meet the challenges facing the Swedish healthcare system. According to Eriksson et al. (2013), four trends can be discerned throughout this development from the 1960s until today.

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[3] Care that is intended to fulfil healthcare needs that are i) common in the population, ii) common to the individual patient and, iii) reasonable to provide locally based on national economy premises (Beställarnätverket, 2001).

[4] Quality is defined as: "*The quality of a product is its ability to satisfy, or preferably, exceed the needs and expectations of the customers*" (Bergman and Klefsjö., 2012, p. 22.).

Followed by a brief overview of the 1960s through the late 1990s, a more detailed description of the approaches during the 2000s is provided.

1.3.1 From the 1960s to the late 1990s

The first trend dominated from the 1960s until the early 1980s when healthcare development was characterized by expansion due to economic growth. Thus, major growth in the Swedish healthcare system took place between the 1960s and the early 1980s when the share of healthcare costs of GDP increased from 4.7% to 9.4% (Hallin and Siverbo, 2003). Hierarchical structures including centralization, planning, control and bureaucratization were the main organizing principles for managing and coordinating an increasing amount of rescources spent on healthcare (Eriksson et al., 2013). Since then, the proportion of GDP devoted to healthcare expenditure in Sweden has remained at a fairly stable level of around 8-9% (Norbäck and Targama, 2009). Thus, the subsequent trends have been more oriented towards improving the efficiency of the system rather than expanding it. More recently, other approaches, although overlapping, can be identified from the 1980s and thereafter (ibid.): The second wave during the 1980s and 1990s was dominated by *decentralisation and management by objectives*. During the third trend, *privatization and market centred solutions* were at the forefront of reform and improvement initiatives.

1.3.2 Early 2000s and onward – the emergence of improvement science

Since the early 2000s, a focus on processes, integration and value creation through quality management has been the overarching logic of different improvement initiatives. Industrial quality management ideas have emerged as the most popular solution to the challenges, inspiring the development of a new scientific field - improvement science – where quality management theory, practices and methods are continuously being translated to a healthcare context (Batalden and Davidoff, 2007; Batalden and Stoltz, 1993; Berwick, 2008; Perla et al, 2013). Thus, a strong emphasis has been put on quality and process management as a way to improve the efficiency and safety of Swedish healthcare system. The focus is on creating value for the customer of the care system – the patient.

The Ministry of Finance as well as the Swedish Association of Local Authorities and Regions (SALAR) have thus argued that a hitherto unexploited but fruitful potential for the further development of the healthcare system must be utilized for a more efficient use of its resources (Cederquist and Hjortendahl Hellman, 2005; SKL, 2007). The recipe is quality management; through the implementation of continuous improvement and quality management ideas the healthcare system will, it is

argued, be more sustainable and thus able to cope with the future challenges. Re-organizations and changed structures will not be sufficient to cope with future challenges. Reports from the county of Jönköping as a leading example of quality improvements from a patient perspective (ibid.), point to a potential of 30 billion SEK in net cost savings over a ten-year period for the entire country if quality management strategies are implemented on a large scale. Further, these results can only be reached if structures and processes inspired by continuous quality improvement have a larger spread throughout the entire healthcare system. Cederquist and Hjortendahl Hellman propose that the Swedish healthcare system must be capable of ongoing improvement, innovation and development, i.e. a quality management perspective. Areas that are specifically targeted for improvement are patient safety, accessibility, an increased patient focus, and improved efficiency and efficacy (Cederquist and Hjortendahl Hellman, 2005; SKL, 2007). Further, the integration and co-ordination of care for the elderly is also highlighted.

The reports also point to the quality registers as a unique phenomenon of Swedish healthcare that can be used to inspire quality improvement initiatives all over the country. Individual physicians initiated many of these registers already in the 1970s (ibid.). To date, the number of registries has continuously grown, currently covering 58 different medical disciplines. The content of the registries is continuously developed and contains data regarding structure, processes and outcomes including diagnoses, interventions, outcomes, lead times and patient satisfaction in the various medical disciplines. Since 2006, SALAR and the The National Board of Health and Welfare (SoS, 2013) have published a selected number of quality indicators from the registries compiled with data from the National Death Cause Registry – "Open Comparisons" – every year. The number of indicators in the "Open Comparisons" is currently 159. The intention is to present and compare healthcare quality and efficiency between healthcare organizations and units all over the country (SoS, 2013).

Several policies and associated legislation to improve integration and collaboration between the three care providers were also introduced during the 2000s. One official report (SOU, 2000:114) suggested that counties and municipalities should be able to form common commissions to improve long-term collaboration. The purpose of this plan was also to encourage and support already ongoing development efforts that sought to improve the integration and coordination of care delivery to elderly patients. In 2003, new legislation also proposed that municipalities should establish an individual care plan for elderly patients at the hospital as soon as they were estimated to be ready for discharge. In the middle of the 2000s, attention was also put on the poor productivity in Swedish healthcare resulting in

poor accessibility and long waiting times for seeing physicians as well as surgery and diagnostic procedures (Anell, 2005; Cederquist and Hjortendahl Hellman, 2005). In 2005, a government bill allocated resources to the counties and introduced the "National Care Guarantee" (Budget proposition, 2005). According to the guarantee, every citizen should be offered a first visit to a physician within 90 days and then treatment within another 90 days.

1.4 Outcomes of the proposed approaches

As pointed out in the report from the Ministry of Finance (Cederquist and Hjortendahl Hellman, 2005) there are a few examples of successful systems transformation in the Swedish healthcare context. In the County of Jönköping, a long-term approach including a wide array of approaches have been used for systems transformation – patient-centredness, systems thinking embracing a clinical micro-systems perspective, safety analysis models, epidemiological and outcomes research, collaborative inter-professional and chronic care models, adult learning models including iterative PDSA-cycles for rapid change – (Andersson-Gäre and Neuhauser, 2007). A large number of improvements in access, process redesign, teaching patients with chronic conditions self-management skills, radiology has resulted in supply times and patient safety improvements, to mention a few examples. (Ovretveit and Staines, 2007).

Carlhed et al. (2006), addressing poor adherence to national guidelines for acute myocardial infarction, used an open multifaceted quality improvement-oriented intervention and real-time feedback from a web-based national registry in 19 hospitals. The study showed that the 19 hospitals had significantly better adherence to national guidelines compared to 19 other hospitals that did not participate in the study.

However, many more reports describe severe difficulties when translating quality improvement efforts to a healthcare context. In many cases, no improved outcomes from a patient perspective are attained and successful improvements are, at best, locally applied, not involving the entire system (Anell and Mattisson, 2009; Norbäck and Targama, 2009; Olsson et al., 2003; Thor, 2007; Åhgren, 2003; Øvretveit, 2009; 1997).

For instance, in a national survey including hospital and primary care centre managers in Sweden (response rate 49%), results indicate that most improvement efforts did not concern the patient at all but rather dealt with working environment issues from the co-worker's perspective. Moreover, the results from the efforts were to a large extent unknown or not even

measured (Olsson et al., 2003). Thor (2007) reports on a 42% success rate in 67 improvement projects in a Swedish university hospital during an extensive quality management programme. Norbäck and Targama (2009) describe experiences from the development of a quality management system for continuous improvement in a Swedish middle-sized hospital. Although the programme resulted in a comprehensive view among managers on the ongoing development of the system, many physicians showed resistance to the changes and improved outcomes from a patient perspective have so far not been reported.

The results of quality management efforts to improve integrated care are equally contestable. In a survey of all the counties in Sweden in 2002 (Åhgren, 2003; response rate 90%;) 70% of the counties responded that the development or establishment of pathways from a patient perspective was very limited (Anell and Mattisson, 2009; Åhgren, 2003). "The Integrated Care Project", initiated by the Swedish Association of Local Counties and Regions (SALAR) in 2005-2006, sought to improve integrated care for elderly in 14 counties (SKL, 2007; 2006). However, according to the concluding report, it was unclear whether any outcomes from a patient perspective had been reached at all.

International experiences from quality management efforts to improve healthcare processes are equally discouraging. Boaden et al. (2008), reviewing more than 200 white and "grey" papers concerning improvement initiatives to improve healthcare conclude that, although there is evidence of some successful efforts in piecemeal applications, no reports testify to a successful transformation of an entire system. Further, focus in most reports is on methods and techniques rather than on the processual aspects of adopting new mental models for improvement and learning within the actual organization. In two large literature reviews on quality interventions in a European context, Øvretveit concludes that improved results from a patient perspective were not measured or described and, further, the costs or net-cost savings from the different interventions were not assessed (2009; 1997). Further, there is also a large gap between evidence and what is actually delivered to patients in the healthcare services. The evidence-based medicine movement has put emphasis on the application of clinical guidelines (based on available research evidence) in patient care pathways as a way to improve healthcare quality (Grimshaw et al., 2004; IoM, 1992;). The outcomes from these efforts are variable, which, according to some researchers, to a large extent depend on implementation difficulties (Balas and Boren, 2000; Garpenby, 2000; Grimshaw et al., 2004). For instance, in a systematic review of 235 assessments of guideline dissemination and implementation strategies in a healthcare context, Grol and Grimshaw conclude that no specific approach to improve care practices stands out

compared to others and that the effects from different efforts are, in most cases, mixed (2003). Several recent, comprehensive reports also suggest that the adoption of new knowledge is an extremely complex process dependent on a multitude of variables and that such attempts very often fail (Greenhalgh et al., 2004; Hellström, 2007; 2006).

In summary, most healthcare systems face extraordinary challenges due to an increasing proportion of the population in retirement together with a rapid introduction of new treatments and techniques. Simultaneously, today's care systems are struggling with low efficiency, poor safety records and a lack of integration from the patient's perspective. Many stakeholders propose that quality management and improvement are promising solutions to these challenges. However, a multitude of research reports show that most quality improvement applications in the healthcare context are not successful. This suggests that important knowledge gaps in the scientific as well as in the more practice-oriented literature persist on the application of quality improvement initiatives in a healthcare context. These problems form the backdrop against which the research questions and the proposed contribution of this thesis are presented.

1.5 Research questions and contribution of the thesis

1.5.1 Purpose and research questions

Industrial quality management ideas have emerged as a possible solution to these challenges, also inspiring the development of a new scientific field - *improvement science* – where quality management theory, practices and methods are continuously being translated to a healthcare context. The *purpose* of the thesis is to explore quality improvement initiatives in healthcare systems. More specifically, the ambition is to explore whether these initiatives can be used to improve healthcare processes in integrated elderly care as well as in a hospital setting. Moreover, the ambition is not only to present the nature and content of these efforts, but also to reflect on how different organizational interventions in the systems have been organized, as well as to chronicle the actual structures Mc Auliffe, processes and outcomes of the interventions. The thesis thus seeks to enhance our understanding of quality improvement initiatives in a healthcare context, looking beyond the traditional n-step models with their associated methods and tool, instead focusing on the dynamic learning processes always inherent in larger improvement initiatives in complex systems.

The thesis suggests a view on healthcare systems as being genuinely complex; an image of the director giving orders and co-workers following

the orders and where quality improvement initiatives can be planned in detail is thus questioned. Instead, the thesis rests on a processual, dynamic view on organizational life where interactions between co-workers can be looked upon as continuously ongoing conversations where learning and common understanding plays a central role to encourage coordinated action. Thus, learning and shared understanding can be seen as pivotal factors for change, leading to integrated action and improvement. Subsequently, the thesis seeks to answer the following *research questions*:

What positive and negative mechanisms for change can be identified in the quality improvement cases presented in the thesis? How can negative mechanisms be prevented and positive mechanisms be encouraged?

How can experiences and lessons learned from the cases be used to identify supporting and facilitating mechanisms for quality improvement efforts? If so, how can these mechanisms be added to the conceptual healthcare framework of improvement science?

1.5.2 Proposed contributions

Drawing from the case experiences, the intention of the thesis is to suggest ways to improve future healthcare quality improvement initiatives. From a *practical point of view*, the thesis aims to contribute to the understanding of complex change processes and propose how quality improvement can succeed in a healthcare context. A framework for quality improvement initiatives in a healthcare context as well as a conceptual model for the development of integrated care for the elderly with chronic diseases is also suggested. From a *theoretical point of view*, the thesis seeks to contribute to the expanding field of improvement science, emphasising the importance of a complex systems view on improvement where learning and reflection plays a central role. It is argued that methods and practices from action research might be fruitful for this purpose. The ambition is thus to explore the basis for a closer integration between action research and improvement science. Finally, it is suggested that using different AR *practices and methods* when trying to improve complex systems might be a fruitful way to move forward. Moreover, self-ethnography is proposed as a rewarding method for first-person oriented reflexive practice.

The research presented in this thesis rests on two longitudinal case studies where the problems and subsequent questions depicted above stand at the forefront of the inquiry. The case research is inspired by a pragmatic approach proposed by Fishman (1999) and by action research approaches (Bradbury and Reason, 2008; Coghlan and Brannick, 2010; Greenwood and Levin, 2007; Reason & Bradbury, 2001). The author has been an inside action researcher in the two cases, both of which sought to solve critical

problems in healthcare processes using ideas from the quality management field. In the first case, the author had the initial role of being a project manager but he later took on the role as an improvement facilitator. In the second case, the author worked as a development director at the Skaraborgs Hospital.

1.5.3 Two case studies using an action research approach

In action research, as opposed to more traditional research, the vital question is "…*how we go about generating knowledge that is both valid and vital to the wellbeing of individuals, communities, and for the promotion of larger-scale democratic social change.*" (Brydon-Miller et al., 2003, p. 11). Thus, the ambition is to create communities of inquiry involving researchers and practitioners on an equal footing with the intention to jointly generate actionable knowledge of relevance to local practices as well as to "third persons" outside the system (Bradbury and Reason, 2008, Coghlan and Brannick, 2010). Action research is research *with*, not research *on*. Subsequent to one's initial interaction with actors in the field, action research questions can vary over time as they emerge from important problems within a system. On the other hand, research questions that evolve from such a process are mostly very relevant to the involved organisations.

The empirical material draws from two cases in the former county of Skaraborg in the Western Region of Sweden. In *Case 1, The development of integrated care in West Skaraborg* (Papers I and II), leveraging events in a development journey that sought to improve care for the elderly in West Skaraborg from 2001 to 2012 is explored. As in other parts of Sweden, the care providers in West Skaraborg were confronted with challenges regarding poor integration of care for the elderly in 2001. Several improvement efforts in the late 1990s had failed; from a patient perspective care was poorly integrated and badly coordinated. Subsequently, the hospital, the six surrounding municipalities and the primary care function in West Skaraborg formed a development coalition to address these issues (Paper I). Further and based on experiences from the joint development of integrated care, the stakeholders of the coalition went on to design, implement and evaluate a care model for elderly people with multiple diseases (Paper II).

In *Case 2, Quality improvement at the Skaraborg Hospital group,* Papers III, IV and V attend to the development, implementation and outcomes from a quality programme at the Skaraborg Hospital Group (SkaS) between 2005 and 2008. In this case, the challenges facing the national care system were equally relevant to the hospital group. Several care processes were in need of improvement from a medical point of view. Patient safety issues had begun to emerge in other care processes. Long waiting times signalling poor productivity and efficiency were still evident in other processes. To meet

these challenges without a substantial increase in the amount of allocated resources, quality improvement ideas from the industrial sector were translated and applied to improve efficiency, quality and safety in the care processes (Papers III and IV). Organizing along patient care processes to manage and improve quality and patient safety were other key ingredients of the programme (Paper V). In Paper VI, a first-person action research perspective is used to critically reflect on the design, implementation and outcomes of the two programmes.

1.6 Outline of the thesis

In *Chapter 2,* the different theories that underpin the research efforts in the thesis are presented. The chapter starts with describing important steps in the development of improvement science, where quality management and improvement ideas from industry and other sectors have been continuously translated to a healthcare context. A current snapshot of theories, practices and tools within the improvement science field is presented next. The chapter then continues with an account of the action research (AR) practices and associated theories that have inspired the research process. Special attention is given to theories of individual and organizational learning, as well as how various learning mechanisms can enhance these. Focus is also put on theories that facilitate the understanding of improvement interventions in a complex healthcare context, such as complex responsive process theory. The chapter concludes with a brief overview of experiences from earlier AR interventions in a healthcare context.

The overall research strategy is presented in *Chapter 3*. After describing the ontological and epistemological position of the thesis, an overview of key characteristics when doing AR in one's own organization are presented. These perspectives not only entail first-, second- and third person AR, but also pose special challenges and difficulties that can emerge during an insider research process. The pragmatic case study-method that underpins the research efforts is then presented, followed by an overview of how quantitative and qualitative data collection and analysis were carried out. The chapter ends by presenting what constitutes rigorous AR including validity and reliability, and how these criteria have been met during the research process.

Chapter 4 gives a more detailed account of the various AR practices used during the research activities presented in each paper. Moreover, the qualitative and quantitative methods for data collection and data analysis will be presented for each paper.

In *Chapter 5*, the two cases on which the research rests are presented in more detail (Papers I-V) including a critical reflection on the events in the cases (Paper VI). The context of each case will be described, including an account of the events that led up to the initiatives before each case, followed by an overview of the cases including the position of the papers vis-à-vis each case. Finally, the purpose, results and contributions for each paper are presented.

In *Chapter 6*, the common themes in the appended papers are presented. Attention is first directed towards key leveraging events in the cases, where a particular focus is put on underlying processes and structures and the results these led to. Next, the cases will be analysed using an action research lens displaying the key learning mechanisms during the process, as well as providing a more critical perspective on the improvement efforts.

In *Chapter 7*, drawing from the purpose and the research questions of the thesis, the potential gaps in improvement science to which the thesis aspires to contribute are elucidated. The next section summarizes the overall findings and conclusions of the research. During the subsequent discussion, conclusions and suggested contributions of the thesis to theory, method and practices within improvement science are proposed. Drawing from the discussion, the main conclusions and contribution of the thesis are then presented in *Chapter 8*, before finalizing the thesis with some suggestions for future research directions in *Chapter 9*.

2 THEORETICAL INSPIRATION

In this chapter, beginning with a historical overview of the more important steps in the emergence of improvement science, an outline of the main theoretical and practical elements of the field will be presented. The chapter will then continue with some suggestions on the further possible development of improvement science. It is argued that healthcare systems are inherently complex and that approaches and practices from action research (AR) can be a fruitful complement to the current theories and practices of improvement science. The chapter therefore continues with an overview of approaches and practices in AR especially pertaining to learning, systems improvement and large systems meetings before finalising with some examples of AR approaches in a healthcare context.

2.1 Towards a science of improvement

The Institute for Healthcare Improvement, IHI, has played a vital role in the translation of quality management ideas to a healthcare context (Boaden et al., 2008). It is an independent, non-profit organization that was created in 1991. The mission of the organization is to contribute to the transformation of the world's healthcare systems by developing and spreading several improvement concepts globally (IHI, 2008). IHI also manages recurrent international conferences on quality management and patient safety and it also runs a large healthcare improvement network in which Sweden plays an important role. Already in 1990, the founder, Donald Berwick (Professor and also a paediatrician) reported on the first attempts to translate quality management ideas from industry to a healthcare context – the National Demonstration Project (Berwick et al., 1990). The ambition was to apply industrial quality management ideas in 20 American healthcare organizations in order to improve quality and patient outcomes. Although many lessons were learned during the project no distinct improvements in patient outcomes were reached (ibid., 2000).

In their seminal article from 1993, Paul Batalden and Patricia Stoltz suggest a *framework for continual improvement* in healthcare (1993). Traditional improvement within healthcare had long depended on professional knowledge, which includes knowledge of *subject* (i.e. anatomy, microbiology, accounting), knowledge of *discipline* (i.e. nursing for nurses, paediatrics for paediatricians, finance for financial officers) and the shared *values* within healthcare. In the framework, Batalden and Stoltz suggest that traditional "professional knowledge" must be combined with what they refer to as "improvement knowledge". The body of "improvement knowledge" originates from Edwards Deming's system of profound knowledge and consists of four elements (Deming, 1994): knowledge of the system, knowledge of variation, knowledge of psychology and theory of knowledge itself (Figure 2-1):
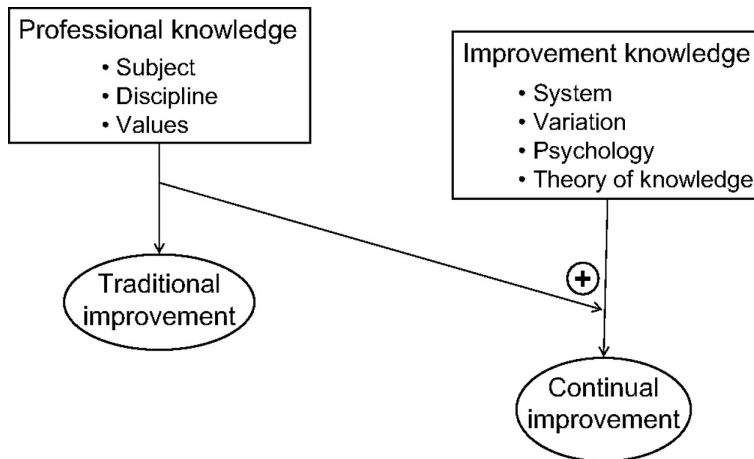
Figure 2-1. The components of professional knowledge and improvement knowledge, and the linkage between the two bodies of knowledge that makes continual improvement possible (from Batalden and Stoltz, 1993).

The components of improvement knowledge can be understood as follows:

- Knowledge of the system: To see the organization as a system of production with interdependences between people, processes, products and services that have a common purpose.

- Knowledge of variation: Realizing that variation is present everywhere – in products, processes and people. It is fundamental to understand variation synchronically and over time i.e. diachronically (Bergman, 2013) in order to recognize and use observed differences for the purpose of improvement. Inspired by Shewhart, Deming also underscored the importance of distinguishing common from assignable (special) causes of variation since they require different types of actions (Deming, 1994; 1986).

- Knowledge of psychology: The importance of understanding the psychology of work, what motivates people in their working life, workplace design, and also the psychology of change (i.e. the different dynamics within a work system and the way people respond to the idea of change).

- Theory of knowledge: Understanding how we learn as individuals and as organizations; understanding how knowledge can be built by linking theory and action is fundamental for continual improvement. The Plan-Do-Study-Act cycle (PDSA), which was developed by Deming based on ideas from C I Lewis and Shewhart, is an example of building knowledge: testing a theory by action, measuring the effects, learning from the results and perhaps revising the original theory (Deming, 1986).

Deming, in turn, was greatly influenced by Walter Shewhart (Deming, 1994; Shewhart 1939; 1931). Indeed, many ideas in Deming's framework can be traced back to Shewhart's writings from the first part of the 20th century. Shewhart introduced a processual as well as a statistical view on quality improvement. He stressed the importance of improving the *process* in which products are manufactured by removing assignable causes of variation. This should be done in order to satisfy human wants which, according to Shewhart, was the alleged object of industry. Processes are thus stable and predictable – in statistical control – if only common cause variation is present. He also devised the control chart as a tool to statistically monitor processes. Moreover, based on ideas from C I Lewis, a philosophy professor at Harvard, he laid the foundation for the PDCA-cycle (Plan, Do Check, Act) for continuous improvement with his specification-production-inspection cycle (Bergman and Mauléon, 2009; 2007; Lewis, 1929).

In 1996, Langley et al. were the first to use the phrase "the science of improvement", continuing on from Deming's building blocks for profound knowledge (Langley et al. 1996; Perla et al., 2013). They also suggested principles for successful improvement; a focused aim combined with ideas for change that are tested and adapted in iterative feedback cycles before a wider implementation in the system concerned. In the early 2000s, IHI together with the Institute of Medicine published two seminal books on healthcare quality, "To Err is Human" and "Crossing the Quality Chasm" (IoM, 2001; 2000). The former report put the global limelight on patient safety issues, claiming that as many as 98,000 Americans die each year due to medical errors in the hospitals (IoM, 2000). In the latter report, goals (performance expectations) for the American healthcare systems from a customer's perspective are formulated as well as a set of rules guiding patient-clinician relationships (IoM, 2001).

In 2003, in part building further on ideas from Langley et al. (1996), IHI introduced the *Collaborative Breakthrough Series* as a practical model for quality improvement initiatives in healthcare (IHI, 2003). According to the model, teams from different organizations get together to approach the same quality problem. Each team formulates the focus and goals for the improvements and then uses iterative PDCA-cycles to test interventions, simultaneously measuring the outcomes of the tests. The teams meet three times during the overall project time to learn from each other as well as from external experts.

At about the same time, Batalden and co-workers (Batalden et al., 2003; Nelson et al.; 2007) introduced the clinical microsystem framework. Although originating from industry, these theories and practices continue to build on earlier ideas from improvement knowledge and breakthrough series

as well as on two studies of successful microsystems in the U.S. (Mohr and Donaldson, 2000; Nelson et al., 2007). According to the framework healthcare systems are composed of micro-, meso- and macro-systems. The microsystem, which also involves the patient, is the most vital part of the system. The overall quality of the system can never supersede the quality that is delivered by the individual microsystems within the wider meso- and macro-systems. The microsystem has sufficient capacity and resources to carry out its tasks and to continuously improve the quality of its work. Both Batalden et al. (2003) and Nelson et al. (2002, p. 474, emphasis in original) provide a definition of microsystems:

"A clinical microsystem is a small group *of people who work together on a regular basis to provide care to discrete* subpopulations of patients. *It has clinical and business aims, linked processes, and a shared information environment, and it produces performance outcomes. Microsystems evolve over time and are often* embedded *in larger organizations. They are* complex adaptive systems*, and as such they must do the primary work associated with core aims, meet the needs of internal staff, and maintain themselves over time as clinical units."*

The healthcare system can thus be perceived as an inverted pyramid where interconnected microsystems provide care to the patient along the care process at the top of the (inverted) pyramid. The meso-systems – clinical programmes, clinics and clinical support departments – support the microsystem. The macro level – senior leaders of the organization at the bottom of the pyramid, in turn, supports the meso-systems. The microsystem is thus embedded in the whole organization and the mission of the meso- and macro levels are to support the microsystems.

Avedis Donabedian – a physician active during the 1960s and the 1970s – proposed a multi-dimensional perspective on healthcare quality, thereby inspiring a system's view on healthcare improvement (Boaden et al., 2008; Donabedian, 2003). He developed the *structure-process-outcome (SPO) model,* which is still frequently used to analyze the structure, process and outcomes of interventions and micro- meso- and macro systems levels (2003). "Structure" is meant "*to design the conditions under which care is provided*" (ibid., p. 46). Examples include material and human resources, the presence of teaching and research; performance reviews etc. "Process" signifies "*the activities that constitute healthcare – including diagnosis, treatment, prevention, and patient education…*" (ibid.). Finally, "outcomes" measures are the resulting states from care processes, both technical (for instance absence of complications) and interpersonal outcomes (patient satisfaction).

2.2 Improvement science – a snapshot of the current state of knowledge

The continuously expanding body of quality management knowledge, and not least the translation of these theories to a healthcare context, has made it difficult to develop coherent theories and models for quality management. At the same time, an agreement upon quality management theories and models in the scientific community is an important prerequisite for the further development of actionable knowledge of relevance for the practitioner (Cole and Scott, 2000). Several researchers point to the difficulties when trying to understand different organisations' applications of quality management ideas. Most "popular" descriptions of quality management concepts are very prescriptive and normative (Collins, 2001; Kotter, 1995), and the content and interpretation of a concept also seem to differ from one organization to another. Organizations interpret and translate the concepts according to their previous experiences, culture and so on (Boaden et al., 2008; Øvretveit, 2009; 1997), often with the ambition of mimicking other organizations (DiMaggio and Powell, 1983). Moreover, even in scientific articles, the definitions of for instance TQM, Six Sigma and Lean are ambiguous and far from comprehensive (Boaden et al., 2008; Hackman and Wageman, 1995; Pettersen, 2009; Schroeder et al, 2008; Watson and Korukonda, 1995).

Dean and Bowen (1994) suggest a framework for deciphering and sharpening theories on quality management (the authors use the expression "total quality") by elucidating the characteristic *principles, practices and techniques* of total quality. *Principles* signify shared values that should underlie and inform everyday actions in the total quality work. According to Dean and Bowen, the core philosophy of total quality rests on the principles of customer focus, continuous improvement and teamwork. Each principle is then implemented through a series of *practices*, for instance commonly used activities to solve problems or to always take care of improvement opportunities within the organization; direct customer contact and process analysis. Finally, the practices are supported by various *techniques*, for instance customer surveys, flow charts and statistical process control. The purpose of the framework is two-fold (ibid.). Firstly, when studying empirical material, the framework makes it possible to go beneath the many acronyms (for instance Lean, Six Sigma, TQM etc.) in quality management efforts to better observe, interpret and decipher what actually goes on; what principles, practices and techniques are advocated, to what extent are they used and what results are achieved (Hackman and Wageman, 1995)? Second, quality management as it is practiced within an organization is genuinely cross-functional as contrasted to the different fields of management theories

that are discipline-bound. Applying this framework to improvement science helps identify the current understanding of the field but also leaves room for greater elucidation of potential contributions to the field.

Drawing from the continuous development of the field, several authors have made attempts to summarize the cornerstones or foundations of the emerging science of improvement, for instance Perla et al. (2013), Batalden and Davidoff (2007) and Berwick (2008). However, it is evident that a conceptualization of the current state of improvement science can only be a snapshot of a continuously evolving scientific field.

Perla et al. (2013) suggest seven philosophical and theoretical foundations on which improvement science rests. They stress the importance of learning cycles and testing for the development of actionable knowledge, thus lifting forward the strong connection to conceptualistic pragmatism where the contexts of justification and discovery are equally important (Lewis, 1929). Further, the science of improvement embraces a combination of logic and psychology, where operational definitions are important in order to employ Shewhart's theory of causal systems. Subsequently, Perla et al. (2013) argue that systems theories must inform improvement science.

Batalden and Davidoff (2007) define quality improvement " *...as the combined and unceasing efforts of everyone — healthcare professionals, patients and their families, researchers, payers, planners and educators — to make the changes that will lead to better patient outcomes (health), better system performance (care) and better professional development (learning)-*" (ibid., p. 2). They propose a somewhat similar framework where five knowledge systems are involved in improvement: generalizable scientific evidence (1), particular context awareness (2), performance measurement (3), plans for change (4) and execution of planned changes (5). A simple formula is used to illustrate how these domains interplay (Figure 2-2);

<div align="center">

Generalizable scientific knowledge (1)   + (4)   Particular context (2)   = (5)   Measured performance improvement (3)

</div>

Figure 2-2. The combination of different knowledge systems to produce improvement (from Batalden and Davidoff, 2007, p. 2).

Drawing from the formula and its associated knowledge systems, several domains of interests (or "principles" using the words of Dean and Bowen, 1994) together with tools and methods are suggested, see Table 2-1:

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Table 2-1 Domains of interest ("principles") with associated tools and methods (adapted from Batalden and Davidoff, 2007, p. 3).

Domain of interest (principles)	Tools and methods
Healthcare as processes within systems	Flow and cause-effect diagrams, narrative examples, case examples
Variation and measurement	Data recorded over time, data analyses using control charts and run charts
Customer/beneficiary knowledge	Measurements of illness burden, functional status, quality of life; recipients' assessment of the quality of their care
Leading, following and making changes	Building knowledge, taking initiative or adaptive action, reviewing and reflecting; developing both leadership and follower-ship skills
Collaboration	Managing conflict, building teams and group learning; acquiring specific communication skills
Social context and accountability	Documenting unwanted and unnecessary variation; widespread public sharing of information
Developing new knowledge	Making small tests of change (PDSA cycles)

Contributing to the epistemology of improvement science, Berwick (2008) also suggests a wider range of methodologies. A focus on the ways in which specific social programmes actually produce changes as well as in what contexts and to what outcomes they lead are crucial ingredients in an improvement science methodology. Thus, statistical process control, time series analysis, simulations combined with ethnography, anthropology, and other qualitative methods are more suitable to inform us about mechanisms, contexts and outcomes than randomized controlled studies. Further, Berwick advocates a more pragmatic approach where iterative PDSA-loops for continuous improvement play a central role and where the objectivist view on knowledge production in social systems is played down in favour of the involvement of co-workers and managers for the continuous co-creation of new knowledge.

2.2.1 Potential developments of improvement science

Obviously, some of the challenges facing the further development of improvement science concern epistemological issues where advocates of the traditional natural scientific paradigm question the rigour and validity of research on social systems change. The challenge is thus to account for the co-creation of actionable knowledge in systems were co-workers and researchers together seek to improve a particular situation, simultaneously contributing to the body of generalizable and transferrable knowledge. Yet other important areas of development concern the connections and interplay between the different principles, in particular how theories on

complex systems and learning can be combined to expand on new ideas for improvement. There are few examples of how this is actually done and how inspiration from theories of learning and systems can be used to encourage actions and practices for desired outcomes. In addition, a critical and self-reflective aspect of improvement practices is seldom presented, or used as an approach for learning and improvement.

However, many of these issues are at the core of the action research (AR) knowledge domain, which perhaps explains why it is notable that experiences from the AR domain are never or very seldom referred to or explored in the continuous development approaches of improvement science. In this thesis an action research approach is used: it will be argued that practices and methods from the AR field can contribute to the further development of improvement science. In particular AR offers a means both for facing up to the epistemological challenges facing improvement science, and concerning the connection between learning and complex systems and reflexive practices. Hence, a description of action research practices and methods as well as their connection to learning theories and systems theories will now be provided followed by some examples of earlier applications of AR in a healthcare context.

2.3 Action research

Action research can be seen as a family of research approaches united by values and principles with associated research practices. Two developmental tracks of AR can be distinguished, represented by the Northern and the Southern hemisphere (Bradbury and Reason, 2008). The AR in this thesis is inspired by practices developed in the Northern hemisphere, originally developed by Kurt Lewin around the time of the Second World War. According to him, AR concerns itself with two questions: " *…the study of general laws of group life and the diagnoses of a specific situation*" (Lewin, 1946/1948, p. 38). Secondly, to really make a change in different social situations, Lewin also stressed the importance of working with groups in intergroup relations in order to continuously interpolate between action and planning in iterative, continuously more informed spirals of action and reflection: "*Rational, social management, therefore, proceeds in a spiral of steps, each of which is composed of a circle of planning, action and, fact-finding about the result of the action*" (ibid.). Simultaneously, he stressed the importance of evaluating the outcome of the action in order to learn: "*In a field that lacks objective standards of achievement, no learning can take place. If we cannot judge if an action has led forward or backward…//, there is nothing to prevent us from making the wrong conclusions and the wrong work habits*" (ibid., p. 35).

More recent definitions of AR state that it is an approach to inquiry where the researcher(s) engage in collaborative communities with practitioners in which "…*qualities of engagement, curiosity and question posing are brought to bear on significant practical issues*" (Bradbury and Reason, 2008, p. 1.). "*It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and their communities*" (Reason and Bradbury, 2001, p. 1). The research is conducted 'with', not 'on'. Or, as put by Bradbury & Reason, "….*it is a practice of participation, engaging those who might otherwise be the subjects of research of interventions to a greater or less extent as inquiring co-researchers*" (2008, p. 1). In other words, AR can be seen as "…*both taking action and creating knowledge or theory about that action*" (Coghlan & Brannick, 2010, p. ix).

Researchers and employees/practitioners are part of a participative community in which all members are equally important in terms of generating actionable knowledge. Therefore, practitioners are considered to be co-researchers. Iterating action reflection loops are central to the knowledge generating process (Aagaard Nielsen and Svensson, 2006). Using different modes to describe different approaches to research, mode I symbolizes more traditional research whereas approaches informed by mode II is used in AR (Table 2-2).

Table 2-2 Different modes when undertaking research (adapted from Gibbons et al., 1994; Aagaard Nielsen and Svensson, 2006).

Different research models	MODE I	MODE II
Steering mechanism	The academic discipline	Problem based, multi disciplinary
Authorisation	Professional rules	Scientific/societal rules
Objectives	New theories	Usefulness
Type of knowledge	General	*Specific*
Time perspective	Long term	*Short term*
Responsibility	The scientific community	A societal responsibility
Actors	Researchers	Participants and researchers
Relationships	Hierarchical	Equal
Work forms	Planned, predetermined	Flexible, interactive
Approach	Closed	Open
Physical proximity	Distant	Close
Relations	Object relations	Subject relations
Strategy	First discovery then application	Simultaneous discovery and application

Subsequently, AR puts a focus on many of the challenges that face the further development of improvement science. Joint learning for the development of the system concerned is at the forefront where iterating improvement cycles are used for action and reflection. However, from the author's experiences, some of the mode II approaches can be questioned (italized), for instances the perception that knowledge is specific. As portrayed in the thesis, the author's standpoint is that many different knowledge domains are needed for mode II types of research and that the ambition indeed is to analytically generalize or transfer knowledge from one context to another. Further, drawing from the empirical material underlying the conclusions of the thesis, a long-term perspective seems vital for a successful application of AR practices.

2.3.1 Theories of individual and organizational learning in AR

The core idea of these theories is that individual and organizational learning are prerequisites for organizational change. Moreover, organizations can learn, as collective entities, but this requires individual learning at first (Argyris and Schön, 1978; Huzzard and Wenglén, 2007; Kolb 1984; Shani and Docherty, 2003). According to Docherty (1996), individual learning can be understood as *"a permanent and stable change of external or internal behaviour, conceptions, knowledge or intellectual proficiencies"* (p. 6). Argyris and Schön (1978) maintain that there are different modes of individual learning, single – and double loop learning, where the former refers to our adaption of activities without questioning our taken-for-granted assumptions, and the latter signifies the alteration of our preconceptions in order to act or behave in new ways (ibid. 1978; but also Argyris, 2001).

Crossan et al. (2011; 1999) provide a '4 I' framework that links individual learning – insights (Intuition and Interpretation), through networks of collective or group learning (Interpretation and Integration) until the new knowledge produced meets a senior management group whose decisions make important changes in the organization (Integration and Institutionalization); this is termed 'organizational learning'. The framework rests on several premises. Firstly, there is a tension between what is institutionalized i.e. exploited, versus new ideas and insights, i.e. explored. What is institutionalized might thus obstruct new and innovative ideas. Moreover, the framework is multilevel and connects the micro-, meso- and macro-system levels by connecting individual learning to group and organizational learning. Furthermore, the four processes in the framework can be linked to different organizational levels; intuition and interpretation at the individual level, interpretation and integration at the group level and, integration and institutionalization at the organizational level. Finally,

learning at the organizational level can be perceived as more than the sum of individuals and is institutionalized in the form of nonhuman elements such as products, processes, rules, routines, systems, structure, and strategy (Crossan et al., 2011,p. 450). Other researchers have added the dimensions of power and politics to enhance the framework. Lawrence et al. (2005) propose that organizational power and politics can explain why some ideas are institutionalized and others not, and also argue that the political dimension of organizational life should be studied and understood further not least for the leverage of organizational learning. According to Lawrence et al. (ibid.) different power and political forces are active in all of the four different processes.

2.3.2 Learning mechanisms

Shani and Docherty (2003; Docherty and Shani, 2008) propose the use of learning mechanisms to promote the preconditions designed to encourage and facilitate individual-, collective- and organizational learning. Three main categories of learning mechanisms are defined; cognitive, structural and procedural. *Cognitive mechanisms* are the bearers of language, concepts, values, symbols, theories and frameworks. They are involved in the common thinking, reasoning and understanding of organizational phenomena. Cognitive mechanisms might be explicitly expressed in the values, strategy and policies of the organization and, ideally, underpin the practice-based learning processes at different organizational levels. *Structural mechanisms* are organizational infrastructures that encourage practice-based learning, for instance lateral structures that enable learning of new practices across various organizational units. Finally, *procedural mechanisms* concern the routines, methods, and tools that support and promote learning, for instance the introduction and, eventually, the institutionalization of a new problem-solving method. Coughlan and Coghlan also propose that collaborative action learning in networks can be viewed as a fourth learning mechanism – *network learning* (Coughlan and Coghlan, 2012). This mechanism is, however, closely linked to the structural learning mechanism.

Networks can be defined as inter- and intra-organizational relations and nodes between organizations or organizational units (Docherty et al., 2003). Docherty et al. propose a model for home-and-away learning (Figure 2-3) in transformative, learning networks. From an intra-organizational point of view, a co-worker involved in improvement activities on his or her own unit might regularly meet other improvement facilitators from other units. Here, lessons learned are shared and brought back to the workplace. Thus, an iterative learning cycle takes place linking 'home with away'. The same principles apply to inter-organizational network learning apart from the fact that the away-arenas connect members of several organizations in shared learning platforms. A continuous interplay between home-and-away learning

is necessary to encourage iterative action-reflection loops at home as well as when being away.
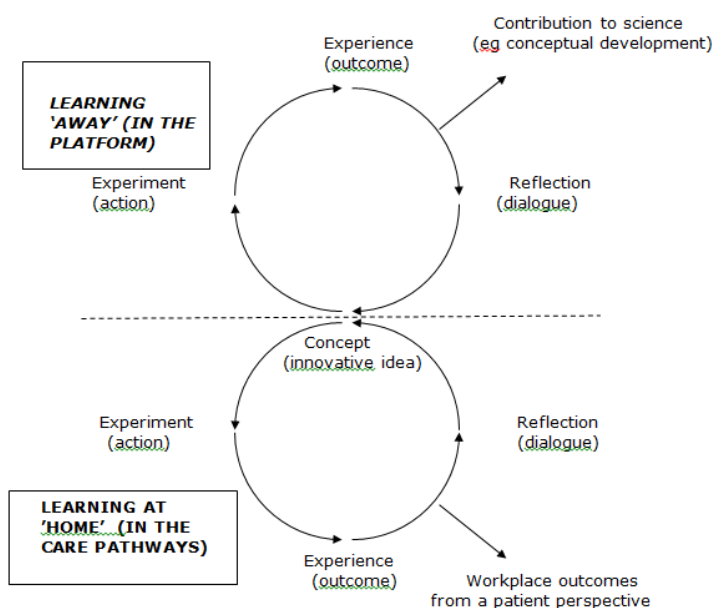
Figure 2-3. Home-and-away learning, a structural learning mechanism. (From Docherty et al., 2003).

2.3.3 Theories of systems in AR

Many improvement initiatives in organizations fail due to an exaggerated belief in the n-step model for changing the system. The approach entails a rational, predetermined recipe for accomplishing change following a set of pre-planned steps that are implemented in a top-down fashion. The attempt very often fails or, even worse, leads to changes in directions not at all desirable (Alvesson and Sveningsson, 2008; Behr and Noria, 2000; Beer and Eisenstat, 1990; Dawson, 2003; Duck, 1993). The underlying view of these improvement attempts often rests on a linear and static understanding of systems; people do as they are told, A leads to B and the system continuously oscillates between a frozen and a non-frozen state. Instead, Alvesson and Sveningsson (2008, p. 8) advocate a complex systems view on organizational change which entails:

"…applying an understanding of a complex and chaotic organizational reality. Unforeseen consequences of planned organizational change, resistance, political processes, negotiations, ambiguities, diverse interpretations and misunderstandings are part of this."

Indeed, Glouberman and Mintzberg (2001a; 2001b) argue that healthcare systems are among the most complex organizational systems to be encountered, where the interplay between four different "worlds" or logics/mental models, the 4 'C's, can be seen as the foremost explanation of

this complexity. *Cure, Care, Control and Community* represent four worlds inherent in the healthcare system where *Cure* signifies specialisation and expertise together with a medical responsibility and a mission to diagnose, treat and cure the patient (a physician's perspective). *Care*, in turn, represents a focus on integration and collaboration, emphasising care for the patient as a whole individual but also focusing on the system surrounding the patient to improve the integration of services (a nurse's perspective). *Control* entails a focus on governance and management to allocate and distribute resources for the care provided (represented by administrators and managers). Finally, *Community* signifies the political ownership of the care system, representing the community and its citizens, prioritising and setting the overarching goals of the system (politicians, owners and steering committees). According to Glouberman and Mintzberg (2001b) sustainable change in healthcare systems can only be accomplished through a fruitful collaboration between the four worlds where co-operative networks tear down the barriers between the different worlds. Hellström et al. argue that a patient perspective can be seen as a potent unifier in the development of these worlds and networks (2013).

From an AR perspective, Ison (2008) as well as Coghlan and McAuliffe (2003) suggest that systems thinking is an important prerequisite for successful AR practices, moving beyond a view on systems as being static, instead embracing a view where relations, understandings and actions – representing different worlds – within and between systems are constantly changing in a never ending process. To further build on an open and dynamic view of systems, Stacey (2003) proposes a complex responsive process view on systems. This perspective involves relational psychology where consciousness is developed through a continuous conversation with the self and people in the environment. Voices, symbols and emotions are continuously used in this process (Mead, 1967; Stacey, 2003). The same pattern appears in a work system where interactions between co-workers, within groups or between groups, can be seen as ongoing conversations where relations are created and create one another. The conversational symbols (texts, talks, body language or emotions) create new patterns, some of which will survive and become *'the attractor'* for joint interpretation and action, thus organizing experiences in certain directions, possibly contributing to the emergence of new practices and activities (Stacey, 2003). The survival of new concepts is to a high degree dependent on the culture, history and politics of the actual organization (Alvesson and Sveningsson, 2008; Child 2005; Dawson, 2003; Stacey, 2003) or, in the words of Crossan et al. (1999), what is already institutionalized in the organization. From a complexity point of view, change thus emerges and is most often beyond the realms of detailed planning. A purposefully critical and reflexive approach can create new attractors where new patterns of ideas and actions

emerge; de-construction is followed by re-construction in potentially innovative ways (Aagaardh Nielsen and Steen Nielsen, 2006; Alvesson et al., 2008).

A complexity view on systems also entails different approaches and practices to involve the entire system. There is a rich tradition of large systems practices in the Northern hemisphere perspective on AR. Combining network learning practices (as described above) with iterative large systems meetings is advocated to promote change in large complex systems (Aagaard Nielsen and Svensson, 2006; Gustavsen et al., 1998). The ambition is to encourage democratic dialogues involving all stakeholders, thus inspiring the emergence of actionable knowledge for the improvement of the system. In a Swedish context, these meetings have most often been termed dialogue conferences where the principles for the dialogues have been based on equal possibilities for all parties in the system to participate and where all participants have an equal voice. The purpose of the dialogues is often to generate a shared platform for change where decisions and plans for joint action and follow-up can evolve (Drewes Nielsen, 2006). Appreciative inquiry (AI) is a similar approach for large meetings, which has been developed by Cooperrider and Srivastva, (1987). In AI, participants from the system meet to develop a common understanding of the possibilities within the system. Using a 4-D cycle (Discover, Dream, Design, Deploy) different ideas for what might be are turned into a design that is then deployed for the flourishing of the system (ibid.).

2.4 Action research for healthcare quality improvement

There are many examples of AR seeking to improve healthcare systems as well as participative AR that is more targeted toward improving care for selected patient groups. From a system perspective, Revans (1972) combined concepts of self-development with actions for change to promote action learning already in the 1970s. Based on pragmatic philosophy, action learning states that all meaningful knowledge is both for the sake of action and for the joint development of the system. Thus, action learning is concerned with how to help people, co-workers and managers, to learn how to solve problems. These ideas were applied to a hospital already in the early 1970s, arriving at the conclusion that we should make "…*better use of the human resources that the hospitals have at their disposal*" (Revans, 1972, p. 124). Coughlan and McAuliffe propose principles and practices, inspired by organizational development ideas, to improve healthcare processes (2003). Buchanan et al. (2007) describe experiences from the NHS Plan, a national policy-driven initiative seeking to modernize British healthcare from a

patient's perspective during the first part of the 2000s. Many of the ideas in the plan were adopted from IHI, e.g. iterative PDSA-cycles in Breakthrough Collaborative series. A number of specific outcome targets were also developed to inspire the sharing of best practices in collaborative networks. A central collaborative research group supported the initiative. Whether sustainable changes within the care system were reached is debatable although some successful improvements are described. Buchanan et al. (ibid.) point to a number of factors that make sustainable change in a healthcare context difficult: the complexity of the system involving many different stakeholders and professional working groups with different interests and cultures as well as the complexity of the innovations themselves – often multifaceted combinations of new tools, policies and approaches. Moreover, the complexity of the healthcare system makes linear cause-effect relationships questionable. Buchanan et al. instead propose the concept of conjunctural causation where outcomes are dependent on a multitude of factors at different levels of analysis, interacting over time. Thus, the importance of local knowledge to understand what to look for is emphasised. In addition, the spread of best practice is questioned. On the contrary, most new ideas and innovations must be adapted and negotiated locally for a successful adoption.

Stebbins et al. (2009) describe 30 years of experiences using an insider action research combined with learning mechanisms to improve operations in the development of the Kaiser Permanente Pharmacy division. The combination of a long-term perspective, involving the co-workers concerned in the decision-making processes thus connecting different professions and organizational levels have led to significant results for all stakeholders involved.

Taking the perspective of the patient, Koch and Kralik (2006) have developed a fruitful participative action research framework for involving patients, especially with chronic diseases, in collaborative initiatives to improve their own life situations. Another approach is that of Bate and Robert who propose an exciting participative AR framework for involving patients in the improvement of the actual care system – experienced-based co-design (Bate and Robert, 2007). More recent initiatives describe second- and third person research involving patients in the improvement of their care (Adili et al., 2013a; 2013b; Trollvik et al., 2013) as well as how to use fist-person action research to cope with a chronic illness (Seifert, 2013).

3 RESEARCH STRATEGY

This thesis rests on two longitudinal case studies, using an action research approach. The ontology and epistemology of the research strategy will be described followed by an overview of the AR approach. The latter includes a description of the position of the research from an insider-outsider perspective, followed by a description of the first-, second – and third person perspectives in the research. This will be followed by a discussion of the qualitative and quantitative methods that have been deployed, more specifically interviews, focus groups, participative observations and different quantitative tools. The chapter will then cover the outline of the case studies and how empirical data was collected and analysed from a case study perspective. The framework will then be applied to the different papers in the thesis. Finally, the chapter concludes with comments on internal and external validity including transferability as well as on the contribution.

3.1 Ontological and epistemological standpoints

This thesis takes a realist perspective and rests on the presumption that there existed a reality before human beings were there to know anything about this reality (Hacking, 1999). Variation has been designed into the Universe through the Big Bang and is thus everywhere and anytime. Subsequently, variation exists in the room – synchronic variation and, over time, diachronic variation (Bergman, 2013). Mechanisms for evolution, for instance variation, interaction and selection, create deep patterns of relations between and effects on different phenomena in the world, about which we as humans continuously socially construct knowledge that informs our actions, and hopefully, leads to further usefulness and improvement (Axelrod and Cohen, 2000; Gergen, 2007; Stacey, 2003).

Subsequently, this standpoint recognizes that there is a continuously developing deep pattern inherent in natural phenomena, but the way we as humans perceive and make sense of these phenomena is to a large extent socially constructed, that is constructed in a social interaction with others and dependent on our background, gender, previous experiences, upbringing, current mental models and so forth (Barlebo Wennberg, 2001). Further, these social interactions lead to the development of common habits that eventually become institutionalized and thus part of a social reality, which, in turn interacts with new members of society, making them internalize these institutions (Berger and Luckmann, 1966). Equally, this perspective entails the viewpoint that scientific knowledge to some extent is always socially constructed and, thus, that scientific concepts are influenced by the naturally occurring deep patterns within them as well as social and subjective factors (Barlebo Wennberg, 2001; Gergen, 2007). Accordingly, in this thesis systems are viewed as interplays of complex responsive processes where consciousness is developed through continuous conversations with

self and other people. Interactions between co-workers, within groups or between groups are seen as ongoing conversations where relations are created and create one another (see also Chapter 2; Stacey, 2003). The conversations create new patterns, some of which will survive organizing experiences and thereby contribute to the emergence of new practices and activities.

Realism together with social constructionism invites a tri-lateral truth-concept; truth as correspondence, meaning and usefulness (Alvesson and Sköldberg, 2008). Truth as correspondence, i.e. the degree to which a statement corresponds to the phenomenon (the deep structure) determines how true the actual statement is. The corresponding truth concept is often connected to the natural sciences, reductionism and positivism, where correlations (correspondence) between observations and the underlying deep pattern represent the truth (Glantzberg, 2009). Truth as meaning refers to what a statement really means, the discovery of a more profound meaning or purpose, for instance the significance of a phenomenon. This is a hermeneutic approach, where the interplay between pre-understanding and understanding versus part and whole of a phenomenon leads to a more profound understanding of its very significance. According to Asplund (1970), this concept underlies the subjective truth concept that can never be questioned but can ultimately lead to an 'AHA'-experience for the individual being. Finally, the pragmatic truth concept, where the usefulness in bringing about improvement for social communities is focused; what is useful is true or, as put by Fishman (1999, p. 130): "*Rather, the pragmatic truth of a particular perspective lies in the usefulness in helping us to cope and solve particular problems and achieve particular goals in today's world*".

The different truth concepts might seem rather abstract at first sight, but they can be recognized in many everyday healthcare situations. To exemplify, building on real experiences of the author, three slightly exaggerated examples can illuminate the different concepts. Anna is a fictive patient, 32 years of age. She has developed severe cervical back pain during the last few weeks.

Truth as correspondence: Anna visits a doctor who examines her. He does not find any alarming signs or symptoms, but sends Anna to a CT-scan. The scan shows a highly attenuated dot corresponding to a smaller ligament in the neck. According to the doctor, this finding corresponds to an inflammation in the ligament. He prescribes an anti-inflammatory drug and Anna eventually recovers completely.

Truth as meaning: Anna visits a psychologist. The psychologist asks Anna about her entire life situation and Anna reveals that she is newly divorced

and that she also feels very stressed at work. She has difficulties finding any meaning in life. The psychologist suggests that Anna's life situation might be the cause of the back pain and therefore proposes a series of psycho-dynamically oriented therapy sessions. Anna eventually recovers completely.

Finally, *truth as usefulness*: Anna visits a physiotherapist. The physiotherapist gives Anna an action programme for strengthening the back. Anna eventually recovers completely.

There are no contradictions between the three perspectives, and they are all necessary ingredients in an AR strategy. In the thesis, a pragmatic case model inspired by Fishman (1999, see also Section 3.5) is used, positioning the thesis approximately as portrayed in Figure 3-1. Thus, to inquire in the cases what a phenomenon really means, why it is significant, how we can understand it and why we should improve it are important aspects of *meaning*. Simultaneously, how good or bad is the situation right now? How do we know that a change is an improvement? Subsequently, to what measures does the phenomenon *correspond* before, during and after repetitive loops of actions? Most importantly, are our efforts *useful* to patients, relatives, co-workers and other stakeholders in the system?
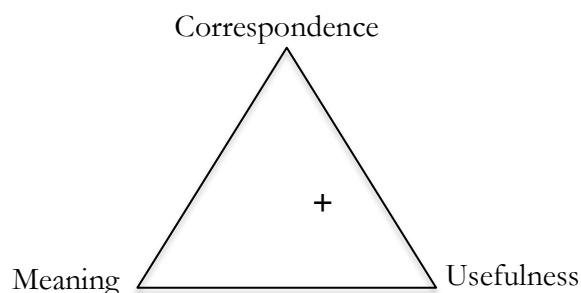
Figure 3-1. The trilateral truth-concept and the location of the thesis based on Fishman (1999; adapted from Alvesson and Sköldberg, 2008, p. 49)

3.2 Action research in the thesis

The author has been an inside action researcher throughout the research process, having had a role as project manager for most of the time in Case 1 and being the development director at the Skaraborg Hospital Group during Case 2. The ambition has been to solve critical problems concerning integrated care for the elderly and to improve quality and efficiency in healthcare processes in a hospital setting. The work forms have thus been flexible and interactive, involving co-workers and managers with a close relationship to the empirical material. The overall ambition has been to

create useful solutions for the improvement of the care processes concerned, simultaneously creating actionable and transferable knowledge of relevance for other parts of the system as well as for other systems. Accordingly, two longitudinal cases have been followed over time in the appended papers. In Case 1, *The development of integrated care in West Skaraborg*, Papers I and II cover leveraging events in a developmental journey concerning the improvement of integrated care in West Skaraborg between 2001 and 2012. In Case 2, *Quality improvement at the Skaraborg Hospital Group,* Papers III, IV and V attend to the development, implementation and evaluation of a quality programme at SkaS from 2006 to 2008. The case research is inspired by the pragmatic approach to case studies proposed by Fishman (1999). In paper VI, critical reflections on the cases are presented.

As previously described action research (AR) could be regarded as a family of approaches with associated practices. Bradbury and Reason define practices as *"…the key approaches to doing action research"* (2008, p. 235). A continuously growing set of practices have been described in the family of AR; action inquiry, action science, clinical inquiry, appreciative inquiry, action learning, learning history to mention just a few (Bradbury and Reason, 2008; Coghlan and Brannick, 2010). However, in this thesis the author has purposefully refrained from adhering to one specific practice, instead altering between different practices depending on what problem was at stake, what the context was, who was involved and so on.

Simultaneously, in both cases, repetitive problem solving in cross-professional groups has been carried out using action-reflection loops. More specifically, the iterative action-reflection loops (Lewin, 1946/1948) used in this research have been the PDSA-cycle (Plan, Do, Study, Act) and the DMAIC roadmap of Six Sigma (Define, Measure, Analyse, Improve, Control). These cycles can be equalled to the action reflection cycles central to AR, as in the words of Bradbury and Reason: *"Hence what GE managers may call 'quality improvement' – and indeed what Deming, the father of the quality movement in the USA, called quality – is but one iteration of the action research cycle of reflection on action"* (2008, p. 19). In the iterative DMAIC and PDSA loops, action is carried out based on facts about a certain situation or problem. The results of the action are then evaluated (in action as well as after action) to learn what action leads to improvement. The group then continuously learns more about the system - *actionable knowledge* is generated – informing the subsequent improvement cycles in a continuous spiral throughout the case on a long-term basis.

AR recognizes four kinds of knowing; experiential (knowledge encountered in our daily activities), presentational (knowledge expressed through language, images, music etc.), propositional (knowledge distilled into

theories, statements and propositions). Finally, practical knowing, that bring the three former types of knowledge into fruitful action. Actionable knowledge thus combines different types of knowledge to shape the quality of our daily actions (Bradbury and Reason, 2008; Coghlan and Brannick, 2010; Heron, 1996;).

3.3 First-, second- and third-person AR

Drawing from the notion that inquiry can be looked upon as action and vice versa and that inquiry is an inherent part of everyone's everyday life, the practices of first-, second- and third person AR can be sketched out (Torbert, 2001). Chandler and Torbert (2003) propose a conceptual typology of AR, where three dimensions - time, voice and practice – are interweaved into a three-dimensional AR framework. The time dimension concerns not only inquiring the past, present and future, but also the presence in the present. This latter perspective involves both the territories of the outside world, and the sense of one's own actions, thoughts, emotions and feelings, while simultaneously paying attention to all these territories; reflection 'in action' as opposed to 'on action'. The voice dimension refers to *"…the manner in which types of research are conducted and represented to current participants in the research or to other audiences"* (ibid., p. 139-140): i) the subjective, first-person voice; ii) any given particular set of inter-subjective, second-person voices; and iii) the objectivity-seeking third-person voice.

The first-, second- and third person research can also be looked upon as a hermeneutic approach to the understanding/pre-understanding of the part-whole of a system (see for instance Alvesson and Sköldberg, 2008), where the hermeneutic circle can involve increasingly larger portions of the system, i.e. the micro-, meso- and macro-system levels of the organization. Thus, a first-person voice can be one's own reflections and interpretation of former or present action. Presenting these reflections to a group for common sense-making, the first person voice turns into a second-person voice. Collected qualitative data from this group meeting (second-person voice) can then be analysed to improve the ways improvement projects are conducted in a strategic programme (third-person voice).

The third dimension entails practices: the key approaches to doing action research. First-person practices address the ability of the researcher to foster an inquiring approach to his/her own life. Second-person practices refer to the ability to inquire face-to-face thus solving issues of common interest whereas third-person practice builds upon the practices of first and second person to create a wider community of inquiry (Bradbury, 2013).

3.3.1 First-, second- and third-person AR in the thesis

In this thesis, first-person practice thus refers to the continuous questioning of taken for granted assumptions of the author himself in his working life as well as in his ordinary life by reflecting in and on action. This inquiry might concern how he handles a never-ending echelon of step-by-step plans that are to be implemented in the organisation but that he notices that these initiatives have a tendency to fail and that he needs to rethink his view on how he encourages and manages improvement initiatives. Second-person research is the practices where the author engages in face-to-face dialogue with other persons in the organization. This could be improvement groups, workplace meetings, focus group meetings, interviews, management meetings, process group meetings and so on. Finally, third-person practices take place when the author participates in communities of inquiry beyond the second person practice, for instance democratic dialogues involving all the stakeholders in an integrated care system. Moreover, third person practice also takes place when he seeks to transfer and report actionable knowledge to an even wider audience (Coghlan and Brannick, 2010). Subsequently, the different perspectives could also be understood as inquiry carried out at different organizational levels, where second-person AR concerns what is called the micro-system in improvement science (Nelson et al., 2007), that is clinical microsystems, project and process groups, whereas a third-person perspective addresses inquiry into the surrounding meso- and macro-systems, for instance the process, the clinic or the hospital.

3.4 Insider AR: Pre-understanding, role-duality and access

According to Coghlan and Brannick (2010, p.x) "*…insider action research means that a member of an organization, besides the ordinary work, explicitly also takes on an action research role within that same organization.*" The position implies taking on a role as a practitioner as well as a researcher within the organization, but sometimes also shifting from an insider to an outsider research perspective. The role entails handling *pre-understanding, role duality and access* (ibid.) where the three dimensions are closely linked.

3.4.1 Pre-understanding

Pre-understanding can be seen as the "a priori' in the hermeneutic circle (see for instance Alvesson and Sköldberg, 2000); the taken-for-granted assumptions before taking action or "*…the cognitive rules or reasoning they (people) use to design and implement their actions*" (Argyris, 2001, p. 128). Pre-understanding inspires action, leading to new experience, followed by consequent reflection and a new understanding in iterative cycles – a new

pre-understanding has emerged (see for instance the double loop learning cycles described by Argyris (ibid.).

The author is a physician, specialized in internal medicine and pulmonology, with nearly 20 years experience of hospital care at the Skaraborg Hospital Group (SkaS). Since the middle of the 1990s he has been involved in different quality improvement efforts, dealing with quality issues at the local, regional, national and international level, but also participating as a working member in several formal and informal networks. He currently works as a development director and he has also been a member of the SkaS top management team since 2006 with a responsibility for hospital-wide quality improvement programmes and development efforts.

In his current position as a development director at SkaS, he knows the formal structures and processes of the organization, for instance policies, memos, written quality management systems, process plans and other steering documents. In fact, he has been the author or co-author of many of these documents (Lifvergren, 2009a; 2008a). In addition, as a long term member, having established close relationships with a number of co-workers at different hierarchical levels, he has also access to and, thus, a pre-understanding of many informal procedures, different cultures, conflicts, "what sits in the walls", in short – the power and political aspects of the organization. The position is, however, treacherous; the closeness and access to everyday informal organizational life might lead the author to think that he already understands every situation, simply assuming too much, and that his pre-understanding is sufficient to deal with the challenges at hand. Being and staying a member of the organization, the author could also have had a tendency to not only interpret outcomes as more positive than they really are, but also to refrain from criticizing policies, programmes or other official steering principles and documents in order to maintain his position in the organization. On the other hand, other organizational members could perceive that it could be beneficial from a developmental perspective when the author brings forward critical perspectives on various organizational activities. To cope with this difficult balancing act, the author has used several different strategies throughout the research:

- Engaging in iterative action reflection loops together with projects groups, thus collaboratively questioning taken-for-granted assumptions. In this thesis, iterative action reflection loops in second person AR practices – PDSA, DMAIC – have been used in all projects to question the author's and the group's pre-understanding to inspire new mental models and a new understanding of the problems at hand.

- Taking part in recurrent dialogues with external researchers (see Papers I,II,III,IV,V) where lessons learned and reflections have been brought up to encourage new perspectives on the subject matter.
- Deliberately taking on a critical, first-person reflexive perspective to create a counter-picture to juxtapose interpretations of external activities against the ongoing activities in the integrated care of West Skaraborg as well as at SkaS (see Paper VI).
- Participating in external action research networks, including conferences, workshops and seminars at regional, national and international levels thus gaining new perspectives on the ongoing quality projects at SkaS. For instance, since late 2010 the author has served on the editorial board of Action Research Journal with a special responsibility for the healthcare domain. Moreover, the author has been part of an international research community that manages a learning network connecting 20 healthcare systems from many different countries. The overarching research question is how to create sustainable healthcare systems. Practitioners and researchers in the network meet regularly to learn from each other. Lessons learned from the network are continuously being published in a book series (Mohrman and Shani, 2012; 2011).

Part of these experiences have also continuously been collected as field notes in a diary, giving the author the opportunity to iteratively reflect on earlier experiences and interpretations (pre-understanding) thus linking those experiences to current events and current understanding.

3.4.2 Role duality and access

The role of the researcher is of course closely linked to access to the formal and informal activities at SkaS. The author, being a development director at SkaS, has the role of an insider action researcher simultaneously being a project leader as well as an internal improvement facilitator in Papers I, II, III and IV. He has good access to daily activities at different organizational levels and a mandate to pursue and manage different projects. The position has given him an opportunity to obtain closeness to the different care processes presented in the thesis. His impressions, experiences and reflections as an 'observing participator' working as a physician, coaching local improvement groups, being a process owner, taking part in management meetings at operative, tactic and strategic levels form the basis of his insider research role. In Paper II, the role of the author has been more distanced from the actual care processes and the author has had a more pronounced coaching role, albeit also encouraging reflexive dialogues together with the project group. In Paper V, external researchers have had the explicit research role.

However, being an inside researcher means playing a role as an internal improvement facilitator as well as simultaneously becoming a member of a research community outside the organization. This role duality has sometimes been difficult to cope with. In the outside research community during research workshops and seminars, the author has sometimes been 'encouraged' with remarks such as "*you are drowning in empirical material, you have to limit your data collection*", or "*...but where are your research questions, do you have any questions at all?"*, or *"you have to distance yourself from the empirical material*" or "*this is just trivial and boring, where is the mystery?*" (field notes, author's diary). At the same time, other types of comments have met the author from colleagues within the hospital organization: "*This is probably very interesting from a theoretical point of view, but what are we supposed to do here and now"?*, or *"You are in a balloon sailing too far from reality, you have to come down now"*, or *"…that might be the case if we had more time but we now have to implement these solutions according to these standards immediately"* (ibid.). Obviously, shifting between these roles is a balancing act where the role duality sometimes becomes a burden but most often encourages self-reflection and the questioning of the author's own taken-for-granted assumptions.

3.5 Pragmatic case studies using AR

As previously described, the thesis is based on leveraging events in two longitudinal case studies. The case research has been carried out inspired by a pragmatic model for case studies (Fishman, 1999). This model is concordant with the iterative action-reflection cycles of AR (Figure 3-2).
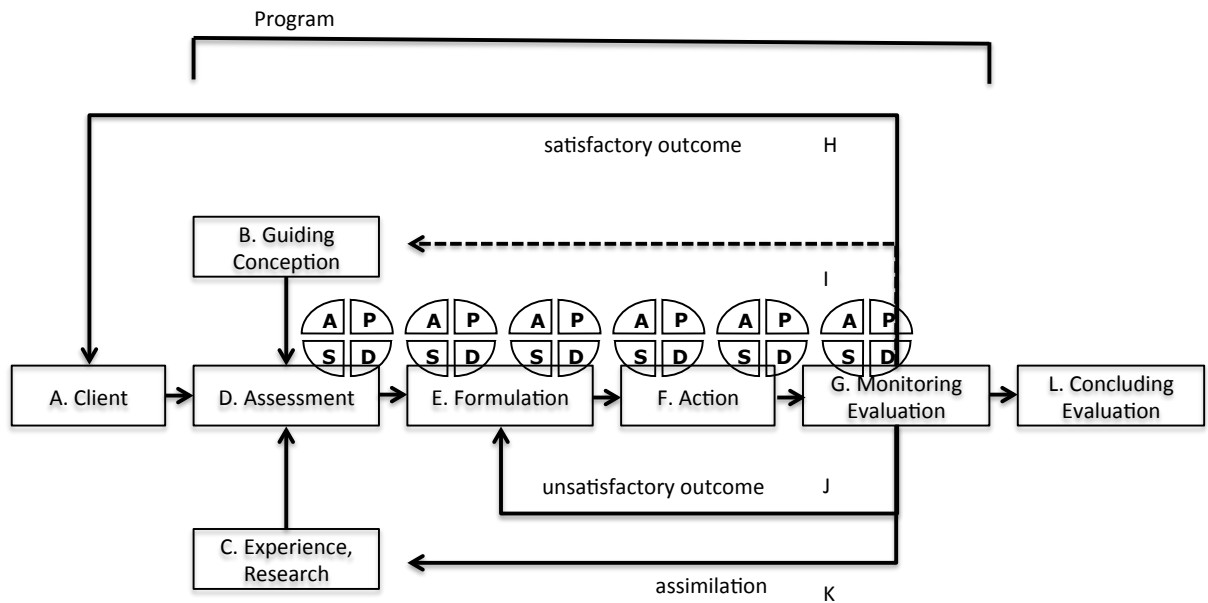
Figure 3-2. The pragmatic case study model with superimposed iterative action-reflection cycles (PDSA). Adapted from Fishman (1999, p. 11).

According to Fishman, *"…the pragmatic paradigm begins with a particular client presenting specific problems or goals"* (1999, p. 136), where the client might signify an individual, a group or an organization to mention some examples. The aim is both to solve the local problem and to create actionable knowledge of relevance for other practitioners with similar problems in other contexts – for instance a third-person AR perspective. The model thus starts with A, where the client has a problem that has to be solved. The next step, D, is an assessment of the actual problem and its context. Here, the shared pre-understanding (B and C) of the researcher and the client plays an important role. The guiding conceptions (B) can be understood as the mental models, based on previous experiences (pre-understandings), that the researcher and client bring with them into the inquiry. Experience and research (C) are the researchers' and clients' shared knowledge of current theories and models that might inform the programme, but also their earlier experiences from similar programmes. Thus, drawing from the entire pre-understanding of the current problem, a formulation (E), a plan of action-reflection is agreed upon. The plan is then carried out in iterative PDSA-cycles to encourage reflection-on-action, and, indeed, in action. To assess whether the repetitive interventions are successful or not, critical outcomes should be monitored (G) before, during and after the interventions. Eventually, the output from the programme has reached the desired level (L).

However, it is also important to use traditional data collection methods as well as analytical tools relevant to the actual research questions. Subsequently, both more traditional qualitative and quantitative data

collection and data analyses methods have been used in both cases.

3.5.1 Data collection and analysis

The methods to collect qualitative data, besides using iterative action reflection loops documented with field notes, have consisted of participant observation, interviews and focus groups, video films, documents and project reports. Data has been recorded using a diary including field notes from formal and informal meetings (individual and group), observations, the author's own reflections from his daily work including coaching and managing different quality management projects and participating in management meetings at micro-, meso- and macro-levels at SkaS and at steering committee meetings during the integrated care project in West Skaraborg. Moreover, audio recordings of interviews and focus groups with subsequent transcriptions have been carried out. Quantitative data has been collected by project managers in the different improvement projects, in some cases with assistance from the author and his co-workers, using Excel and Minitab software.

The qualitative analyses have been inspired by a thematic content analysis using a combination of affinity diagrams and relational diagrams of texts and field notes (Silverman, 2006; Bergman and Klefsjö, 2012). In many cases, the analyses have been carried out together with the co-workers involved during various meetings with project-, manager- and process groups. Groups of relevant themes and sub-themes in the texts have been identified and their relationships toward one another have been investigated using relationship diagrams. New themes and sub-themes have emerged, leading to new understandings and the formulation of local theories for the further investigation of local problems and possible solutions to the problems. The quantitative analyses have in the most part been carried out using the seven quality control tools, 7 QC (Bergman and Klefsjö, 2012; Ishikawa, 1982). In some cases, more advanced quantitative analytical methods have been used, for instance regression analysis, ANOVA and ANOM.

Table 3-1 gives an overview of data collection, the empirical basis of the research, the external researchers involved and the author's contribution to the collection and analyses in the different papers as well as an account of how data was analysed qualitatively and quantitatively.

Table 3-1 Overview of empirical material, data collection, quantitative and qualitative analyses in the two cases.

Paper	Empirical material	Data collection	Qualitative analysis	Quantitative analysis
I Case 1	Management meetings, steering committee meetings, democratic dialogue meetings, project and process group meetings. Protocols and steering documents including the balance scorecard for integrated care in West Skaraborg.	Participant observation, face-to-face and telephone and focus group interviews. Document studies, field notes and written out transcripts from interviews/focus groups.	Thematic content analyses and root cause analyses identifying themes, subthemes, and relationships between themes for the development of actionable local theories.	Run charts, time series diagrams and staple diagrams.
II Case 1	Iterative dialogues and workshops with the mobile team, at least three times a year over a period of four years. Interview meetings with patients and relatives. Focus group meetings with co-workers from hospital, primary care units and municipalities.	Field notes and recordings (later transcribed) of interviews and focus group dialogues Patients database, covering basic medical data, symptoms' scores, and other critical data in the care process.	As for Paper I.	Wilson–Crux analysis of symptoms score.
III Case 2	Meetings and individual coaching sessions with project- and management teams. Network meetings with project managers. Monthly network meetings that involved all the project managers. Three full six sigma education courses including coaching activities.	Field notes from meetings, as well as affinity and relationship diagrams. Recurrent project reports Field notes from video recording of one full-day reflection meeting with all project managers at SkaS including the co-creation of affinity diagrams and root cause diagrams	As for Paper I.	Goal fulfilment in projects using time series plots or control charts. A variety of quantitative methods within each project when assessing root causes to the problems, e.g. 7 QC, t-tests, regression analyses, ANOVA and ANOM.

		from the session.			
IV Case 2	Two workshop dialogues were carried out in which the author, the project managers, clinical manager and the assistant clinical manager participated.	Field notes. Affinity diagrams, relationship diagrams and root cause analysis that were co-created during the dialogues.	As for Paper I.	None.
V Case 2	Interview meetings with 22 managers and co-workers at SkaS that all had a role in the ongoing process management initiatives.	The interviews were transcribed and anonymized using NVIVO 8 software.	As for Paper I.	None.
VI	The lived experiences of the author at SkaS and at a quality conference in Paris.	Field notes and video recording. Author's diary.	Self- and close ethnography, hermeneutics, critical perspective using multiple aspects.	None.

3.6. Quality criteria for rigorous AR including reliability and validity

3.6.1 Criteria for rigorous AR

Several leading action researchers propose criteria for rigorous action research (AR). According to Reason (2006), rigorous AR should contain praxis of relational participation, where the cooperation between the researcher and the organization is transparent and inspires actionable knowledge for the improvement of the system. Further, continuous and iterative joint reflection on current activities is another key prerequisite. In addition, the AR process should rely on a plurality of knowing where associated methods are connected to the various knowledge domains. AR processes should also concern significant problems and lead to sustainable outcomes. Moreover, the AR process must be transparent, thus displaying how data are generated, gathered, explored and evaluated (see also Coghlan, and Brannick, 2010). This approach involves accounting for how iterative action-reflection loops are used for improvement, but also how taken-for-granted assumptions are iteratively questioned. The perspective also involves

purposefully taking on different aspects to interpret ongoing initiatives and activities.

According to Coghlan and Brannick (2010), three main elements are pivotal to rigorous AR; a credible story connected to the subsequent reflection on the story followed by an extrapolation of usable knowledge from that story.

Bradbury (2010) suggests that rigorous AR should contribute to AR practices and/or theories. Further, the AR process and methods should be articulated and clarified. The AR process should also present ideas that inspire and guide other researchers to act in similar directions. Subsequently, insights and contributions from the research process must be of significance for the systems involved as well as for other systems. Finally, encouraging a reflexive perspective, the researchers must explicitly locate themselves as change agents.

3.6.2 Reliability and internal and external validity

In AR as well as in other research traditions, reliability, internal and external validity are important as well as being important ingredients in the research effort.

Internal validity and reliability

Internal validity can be defined as to what degree of certainty a particular intervention really led to the actual result in the studied system, i.e. the unit, the clinic or the entire organization (Borg and Westerlund, 2006; Wallén, 1996). The crucial question is thus how we can be sure that it was the intervention, and nothing else, that "caused" the result. There are often two problems connected to internal validity in the social sciences. Firstly, co-variation might be confused with a cause-effect relationship, i.e. an intervention or a variable just co-varied with the result but it did not cause it. Second, the direction of cause-effect relationships can also be a problem – i.e. the classic chicken and egg problem; what came first – what was the cause and what was the effect? Internal validity also entails reliability, which is defined as "*the degree of consistency with which instances can be assigned to the same category by different observers or by the same observer on different occasions*" (Hammersley, 1992, p. 67, Silverman, 2006). Reliability can thus be assessed through repetitive measurements of the same phenomenon, making sure that there is no unwanted variation due to the measurement process itself between different measurements. The involved practitioners can also assess it through iterative sharing of data for confirmation and validation.

External validity

External validity is defined as to which degree of certainty findings or results in a particular context (i.e. unit, organization, care process) using a defined set of methods might be generalized to and applicable in other contexts, where context refers to other environments and other individuals (Wallén, 1996).

3.6.3. Action research including external and internal validity in the case studies

The action research presented in this thesis is entirely based on a non-experimental design. The purpose of first-, second- and third person AR is thus to generate actionable knowledge drawing and learning from the lived experiences of co-workers at the individual-, group- and organizational level. These perspectives involve all the variation factors always present in organizational life. Thus, the co-workers who are involved in the processes interact with the researchers all the time – as opposed to enzymes or atoms they represent an interacting category (Hacking, 1999).

In both case studies, improvement efforts have been carried out using PDSA- or DMAIC-loops, where new models and practices for improvement have emerged successively. In all the improvement projects, quantitative baseline results or outcomes have been followed before, during and after the introduction of new practices. The interventions can thus be linked in time to the emergence of assignable cause of variation, ensuring the highest level of internal validity possible in a non-experimental research setting.

During the iterative PDSA-loops, new ways of thinking have thus been captured in focus group discussions, interviews, participant observations of project- and network meetings etc., where data have been collected using field notes, recordings, meeting minutes and interpretations of existing memos and PMs. The data have always been analysed by the author together with external researchers and/or with the co-workers and managers involved in improvement projects, as well as in recurrent network meetings. In Case 1, representatives from the development coalition participated and, in Case 2, quality coordinators and developers from all over SkaS participated. This process has thus been designed to confirm, validate and jointly make sense of collected data as well as to agree on and validate emerging new models and practices for improvement. In other words and from a pragmatic AR perspective, *"…the capacity for different raters to agree on interpretations of data – both quantitative and qualitative – is an important component of a valid and useful measure"* (Fishman, 1999, p. 187).

The process can also be seen as a model for analytical generalization, where the ambition has been to encourage double-loop learning (Argyris, 2001) leading to new practices for improvement in future PDSA-loops. In both cases, practices that emerged in and proved to be successful in one context (for instance in one clinic or in a network) could then repeatedly be tested in other contexts (another clinic or network) for external validation. From a pragmatic AR perspective analytical generalization can be referred to as *transferability*, where "*the major technique for doing this is to provide a qualitatively rich and detailed description – that is, a "thick" description – of the subjects, setting and the context of the study. Then the reader can decide to what extent the case as described can be generalized to other case situations*" (Fishman, 1999, p.185).

3.7 Ethical considerations

The ethical framework underlying this research rests, as all research, on the principles proposed by the Helsinki declaration and the Belmont report, the latter also addressing basic principles that should underlie the conduct of biomedical as well as behavioural research involving human subjects. The basic principles are; i) respect for persons; individuals should be treated as autonomous and persons with diminished autonomy should be protected, ii) beneficence, that is to do no harm and to maximize possible benefits and to minimize possible harm and, iii) justice; the research activities should not unduly involve persons from groups unlikely to be among the beneficiaries of the applications of the research.

During the research, inspired by the ethical framework for action research proposed by Brydon-Miller (2008), these principles have guided the subsequent steps during the entire research process. The research process has thus been transparent, inviting co-workers and other stakeholders, patients and relatives in the transparently accounted for joint inquiry for improvement of the system, simultaneously respecting the individual autonomy.

Particular consideration has been paid to groups with possibly diminished autonomy outside the organization, such as patients and their relatives, by explicitly explaining the nature of the research, making sure that this is understood. Further, based on that understanding accepting the individuals' choice to participate or not without coercion or undue influence. That is not to say that the research process has been without dilemmas. One major problem is that the action research process is always ongoing, where all stakeholders including patients and relatives meet regularly, sometimes in planned events, other times in spontaneous meetings. Further, the process has also been an integral part of managerially decided improvement

strategies for the last decade. These circumstances make it very difficult to apply for formal ethical approvals from the regional committee, and are why special attention has been paid to the principles pictured above. Accordingly, no citations from patients have been published in scientific papers, chapters or reports.

Other dilemmas have pertained to co-workers within the organizations. Critical characteristics of the AR process are broad participation where everyone is invited for joint inquiry, still respecting the autonomy of each individual. But what if a co-worker refuses to participate in an improvement project although it is part of the job description? This particular situation has come up a couple of times. The standpoint has been that co-workers may resist participation in improvement efforts but never the results of democratically pursued improvement projects.

4 RESEARCH STRATEGY IN THE APPENDED PAPERS

This Ccontains a more detailed presentation of the research strategy in each paper. The thesis suggests that using different AR practices is an important aspect of healthcare improvement. Thus, special attention is devoted to the action research practices that took place in each study and the author's role in the activities. Moreover, first-, second- and third-person AR perspectives will also be portrayed. The chapter is outlined based on the two cases, that is Case 1 (Papers I and II) and case 2 (Papers III, IV and V) before finishing with a description of methods used in paper VI. Action research practices were to a large extent intertwined in the ongoing case process activities; therefore some overlapping with the case descriptions in Chapter 5 is unavoidable.

4.1 Case 1: The development of integrated care in West Skaraborg

This case describes the quality management initiatives that took place in West Skaraborg between 2001 and 2012 to improve integrated care for elderly people. The case involves Lidköping hospital, the primary care centres and the six surrounding municipalities in the area.

In 2001, the newly created Western Region translated the intentions of a governmental healthcare plan to a regional plan for the improvement of integrated care. The ambition of the directive was to support already ongoing local initiatives that aimed to improve integrated care for the elderly through a closer collaboration between all the care providers. A development coalition steering group (DCSG) in West Skaraborg was created to take care of and translate the directive to concrete plans and actions in the care system of West Skaraborg the same year. The DCSG consisted of top managers from the local hospital, the six surrounding municipalities and the primary care centres. The initiative involved all the care providers along the patient pathway for the elderly; the Lidköping hospital, the primary care centres and the municipalities.

Paper I covers leveraging events that took place between 2001 and 2010 including the establishment and performance of a development coalition responsible for the improvement of integrated care in the area. The development coalition is explained in more detail in Section 5.2.1, but it was supervised and managed by the DCSG. The development coalition consisted of representatives from the three care providers, from patient organizations, political organizations, labour unions and external researchers. The operative part of the coalition consisted of eight projects with different tasks to improve integrated care concerning elderly care,

psychiatry and rehabilitation. In particular, Paper I describes the activities of one of these projects, the Örjan network, a collective, cross-professional project group that was formed in 2002 consisting of 18 co-workers from the three care providers. The mission of the Örjan network was to improve care for elderly patients with chronic diseases. The author was the project manager for the Örjan network.

In 2007, the DSCG concluded that although shared goals and permanent development structures for integrated care had been established, the results so far had mostly manifested themselves in general networking terms. Integrated practices and results that could be apprehended from a patient perspective had not yet evolved. Therefore, the DCSG decided to initiate a mobile operational team in late 2007 with the purpose of providing care for elderly patients with multiple diseases in West Skaraborg. *Paper II* describes the design, planning, implementation and results of the integrated healthcare mobile team between 2008 and 2012. The author worked as a development director at the hospital and played a facilitating role during this process.

In summary, many different AR practices have been used throughout the development journey of West Skaraborg. The practices have been chosen and adapted to fit the actual situation or problem. In many cases, the practices have also been associated with more traditional qualitative and quantitative methods. Before describing the research activities in each paper, an overview of key events in Case 1 including practices, methods and the author's role, is presented in Table 4-1.

Table 4-1 Practices and methods and the researcher's role in Case 1.

Year	Development coalition	Activities in the Örjan Project	AR practices	Author's role
2000-2001	Regional directive to West Skaraborg; Formation of the development coalition	Initiation of the local improvement project "Örjan" at the medical clinic at Lidköping Hospital	Stakeholder analysis, initiating learning networks	Senior physician at LH, Project manager for Örjan
2002	DSCG formed eight cross-organizational, cross-professional, and cross-level networks/teams to work with prioritized issues	Project adopted by the DC with DCSG as supervisor. Project network focused on mapping the patient journey	All project group activities were carried out in iterative PDSA – loops Home –and-away network design was used to spread	Senior physician at LH 50% Senior quality physician at SkaS including project manager for

	First democratic dialogue conference	through the entire care system – the patient pathway	knowledge about activities in all three organizations Large group meeting in the form of democratic dialogue	Örjan, all in all 50% Lead all the group activities together with Marianne Alärd, quality coordinator at LH Participated in democratic dialogue as project manager
2003	Second democratic dialogue conference	Measuring and improving patient pathways	Same as above + introduction of quantitative methods such as time series charts and staple diagrams before and after interventions change to assess results	Same as above but had a more active role in the second democratic dialogue conference; presented ways of working with iterative PDSA –loops
2004	Third democratic dialogue coference Permanent establishment of development coalition including fulltime internal consultants to support the networks	Continuous improvement of patient pathway Some early results achieved	Continuous iterative PDSA-cycles and network learning, Third large group meeting in - democratic dialogue conference, Patient survey (n=120)	Same as above + analysed survey and presented results from Örjan and suggested joint development facilitators and shared goals during the third democratic dialogue conference
2005	Development of DC balanced scorecard	Goals for the Örjan project based on the coalition balanced scorecard	Network learning inspired design for the joint creation of a DC balanced scorecard	Same as above + lead the management network for the creation of the balanced scorecard
2006-2008	Continued developmental work in West Skaraborg led by	Continuous improvement efforts	Large group meetings to present and spread DC balanced scorecard	Development director at SkaS, support to the Örjan

			Interview with key stakeholders in development coalition	project when needed. Analysed interviews
	the DCSG Diffusion of coalition scorecard *First steps in the formation of the mobile team for integrated care (paper II)*			
2008-2012	Continued developmental work in West Skaraborg led by the DCSG including balanced scorecard follow-up *Design and implementation of mobile team (paper II)*	Örjan group transformed to an integrated team network.	Iterative reflection workshops with integrated mobile team inspired by a co-generative AR-model. Focus-group and individual interviews with co-workers, patients, relatives in the West Skaraborg area	Same as above but functioned as an internal improvement facilitator for the integrated team. Led interviews, data collection and analysis.

4.1.1 Paper I

Second and third person action research using qualitative and quantitative methods

Research initiatives from 2001 to 2007

The author led the Örjan project between 2002 and 2007 together with Marianne Alärd, nurse and quality coordinator. They managed the Örjan network meetings including process mapping activities, survey analyses and project coaching. The author also participated in regular quarterly meetings with the DCSG to share results and lessons learned and he also participated in all of the development dialogue meetings.

A collective, cross-professional project group was established in 2001 to form the Örjan network. The group consisted of 18 co-workers from the three care providers, including representatives from the six surrounding municipalities, the primary care centres and the hospital. The author and the quality coordinator managed the group meetings. The group met regularly approximately every other month from 2002 to 2006. The meetings were always documented and minutes spread to group members for validation.

Structured meetings with agreed upon themes as well as new procedures to identify, prioritize and solve problems were used to accelerate the project work. The members of the group developed a working procedure that entailed four steps inspired by the PDSA-loop:

- Mapping the patient pathway (P)
- Analysing and measuring weaknesses in order to identify 'true' problems in the pathways (P)
- Designing and introducing improvements (D)
- Continuously evaluating implemented solutions (S and A)

These steps were carried out repetitively in iterating action-reflection loops. Qualitative methods were inspired by brainstorming using affinity diagrams and fishbone techniques to develop a shared picture, a 'local theory' of possible problems or opportunities for improvement. Identified problems were then always confirmed using the quantitative seven quality control tools such as structured data collection, stratification of data, line series diagrams, controls charts, staple diagrams, pareto charts and histograms. Measurements were also repeated after improvements to ensure that various interventions eventually led to permanent improvements in practice.

From a third person AR perspective, the maps were drawn with help from numerous cross-professional groups at the individual workplaces in the different care providing organizations. These groups sought to map out their part of the various pathways and the processes associated with them. Based on all this material twelve maps were integrated into a single, consolidated map. Inspired by a home-and away network design, the composite and individual maps acted as useful tools for dialogue at individual workplaces on the various issues concerned. The outcome of such dialogues was brought back into the regular meetings of the Örjan network for further reflection. Different strengths and shortcomings in the processes were thus identified. This process entailed collective learning in the subgroups, which was passed forward in a similar process in successive steps until it finally reached the project group as a whole. Furthermore, lessons learned from the Örjan network were shared with stakeholders from the entire care system in three consecutive large system development dialogues.

At the second dialogue conference in 2003, the author presented the working procedure of Örjan to the other networks in the development coalition. At the third democratic dialogue conference in 2004, the author presented results from the Örjan network. Based on internal dialogues from the Örjan group, he also brought forward the suggestion that common goals

for the coalition should be developed and that internal improvement facilitators to support the network development activities were needed.

To find answers to what critical demands and needs the patients had concerning the care processes, the quality coordinator conducted focus groups with patients and their relatives in 2004. Based on patient narratives from the focus groups, a survey was then constructed together with the author and diffused throughout the different pathways to a large number of patients (n=120). The survey was randomly distributed to patients over 70 years of age in the municipalities, primary care centres and at the hospital during one week. The response rate was 90%. Answers were fed into a database and the answers were analysed using descriptive statistics visualized in staple diagrams. Several new improvement ideas were generated this way.

In 2005, the author led seven half-day workshops with the DSCG. The purpose of the workshops was to develop a shared a vision and subsequent long- and short-term goals for integrated care in West Skaraborg. A network learning approach inspired the design of the workshop process. The participants in the workshops represented the three care providers. The balanced scorecard was thus developed stepwise, giving each member of the DCSG the possibility to share and anchor the progress regarding shared goals in their own organizations. The author documented all the workshops and the conclusions were presented to the participants for validation after each workshop. The workshops resulted in a shared Balance Scorecard for West Skaraborg that was presented to all the care providers in 2006. One DCSG workshop included a focus group where the members of the DCSG reflected on lessons learned during the entire process. This session was documented using field notes and was also presented to the members of the DCSG for confirmation and reflection.

Research initiatives from 2007 to 2008

During these years, the author functioned as support to the quality coordinator but was no longer managing the project. Two waves of assessment interviews were conducted and performance indicators were monitored during the period. The author, together with Professors Docherty and Shani, conducted the interviews. These entailed in person and by phone dialogues with key stakeholders that had first hand knowledge of the transformation process. The interviews consisted of five discussions with individuals and groups, and three stakeholders have been involved in every round. Transcripts of the interviews were drawn upon to compile a case description that was shared with the members of the DCSG for interpretation and validation.

Close collaboration with external researchers – third person AR

During the entire research process, close collaboration with external researchers was very important for shared sensemaking, reflection and the creation of transferable models for development. The first years of the research, dealing with the integration of the work of the different care providers, including the functioning of the networks and the three dialogue conferences, were led by Marianne Ekman, Tony Huzzard, Elisabeth Ek and Beth Ahlberg via the Skaraborg Institute. During the later stages of the development journey, especially on the issue of quality improvement, learning and management systems, the research was conducted together with colleagues from the Centre for Healthcare Improvement at Chalmers University of Technology – Peter Docherty, Tony Huzzard, Bo Bergman and Andreas Hellström – and Rami (A.B.) Shani from California Polytechnical State University/Politecnico di Milano.

Together with two external researchers, Peter Docherty and Tony Huzzard, the author participated in an international network between 2002 and 2007 – which consisted of practitioners and researchers from healthcare systems in eight European countries. Each system brought experiences from a local quality improvement case to the network. The members of the network had yearly workshops for shared reflections with the ambition of extracting recurrent themes and models of actionable knowledge. Experiences from these international network dialogues were also fed back into the integrated care networks in West Skaraborg.

4.1.2 Paper II

Second- and third-person action research using qualitative and quantitative methods

Research initiatives from 2008 to 2012

This paper describes the design, planning, implementation and results of the integrated healthcare mobile team between 2008 and 2012. The author had the role of an insider action researcher but functioned as an external facilitator in this case. Together with Professor Docherty at Chalmers, he met with the integrated mobile team regularly between 2008 and 2012. The team consisted of two nurses and one physician. A co-generative AR model inspired the joint learning process; see Figure 4-1 (Greenwood and Levin, 2007, p. 94). The meetings included at least three to four half-day meetings every year and also a joint two-day workshop during the first year of implementation. The aim of the meetings was to develop a shared problem definition thus creating a participative community for the generation of actionable knowledge of relevance for the project as well as for third-person purposes. Based on the problem, joint reflections were carried out in

iterative action-reflection loops. The team shared their ongoing experiences from the case with the author as well as the external researcher, who then provided theoretical input. This approach inspired a co-generative dialogue emanating in a continuous modelling of how the team worked, embedded in the macro-system. Moreover, new ways of acting and testing that action emerged from these dialogues. Insights were spread to actors in the surrounding hospitals and communities as well as to the DCSG.
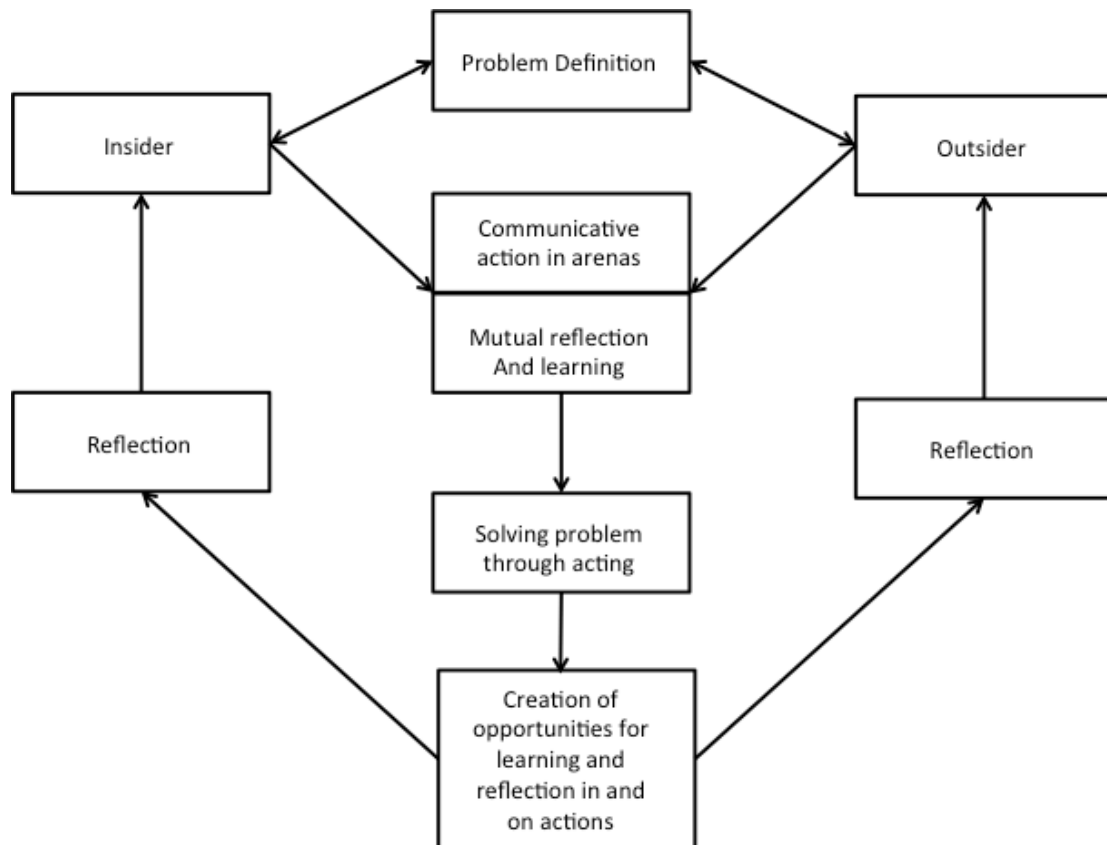
Figure 4-1. The co-generative model (source: Greenwood and Levin 2007, p. 94).

The researchers documented all meetings and the notes were shared with the team for validation. The two-day workshop was recorded and transcribed. The data was then analysed by the researchers by identifying themes that could be enhanced and enriched through theoretical input. The material was then shared with the team for joint reflection. The team also participated in the composition and writing of the paper, where Dr. Ulla Andin contributed with the actual case description. All of these activities were used to enhance the shared generation of models for action.

The first author, together with Professor Docherty, conducted several interviews with patients and relatives. All in all, two patients with relatives and also four relatives of diseased patients were interviewed. Each interview lasted for about an hour. The author led the interviews, while both

researchers took notes. Focus groups were carried out with co-workers in the surrounding meso- and macro-systems. Two focus group sessions included eight persons; nurses from the local authorities, the primary care centres and the hospital and one senior physician from the hospital. These sessions were tape-recorded, transcribed and analysed by the researchers. The interpretations from all the interviews and focus groups were shared with the team for validation and further action.

Quantitatively, patient symptom scores including basic medical data, care consumption and adverse events were registered and monitored throughout the project in a database. Basic descriptive statistics from the database were then used in the recurrent action- reflection cycles.

Finally, lessons learned have been shared with the DSCG, with external researchers at Chalmers not connected to the actual project, as well as those from other parts of the country during national conferences on integrated care.

4.2 Case 2: Quality management at SkaS

This case describes the quality and process management initiatives that took place at the Skaraborg Hospital (SkaS) group from 2006 to 2008 to improve quality, patient safety and efficiency in the care processes at SkaS.

The Skaraborg Hospital Group (SkaS) is situated in the Western Region. SkaS is a specialist hospital group that serves a population of 260,000 in the former county of Skaraborg. It consists of four hospitals in the towns of Lidköping, Skövde, Mariestad, and Falköping. The hospital group is described in more detail in Section 5.1.1.

In 2004 Total Quality Development (TQD) was the core quality management strategy at the SkaS. Balanced scorecards for policy deployment had recently been implemented and continuous improvements based on process mapping were used at many units at the hospital since the late 1990s. Still, it was difficult to measure any concrete results from a patient perspective that could be linked to the various improvement efforts. Based on these experiences a large Six Sigma programme to support existing quality and process management initiatives was launched in 2006. In addition, although process mapping as an improvement tool had been in place at SkaS since the late 1990s, the Six Sigma programme also revealed that, so far, few permanent processes had been established in the hospital group. In 2008, two external researchers together with the author therefore conducted an evaluation of the actual state of process management at SkaS.

Paper III describes the events that led to the initiation of the Six Sigma programme between 2006 and 2008. The paper then continues to describe the structure, process and outcomes of the programme process, lessons learned as well as how it affected other ongoing quality management initiatives at SkaS. In *Paper IV*, a detailed analysis of an initially unsuccessful Six Sigma project in the programme in 2007 is presented. Lessons learned from this project were applied to the overall quality improvement initiatives at SkaS. Finally, *Paper V* accounts for the interpretations of 22 interviews led by external researchers and conducted with co-workers and managers having had a key role in the process management efforts conducted so far in three units at SkaS.

4.2.1 Paper III

Second- and third-person action research using qualitative and quantitative methods

This paper describes the initiation, structure, process and outcomes of the Six Sigma programme between 2006 and 2008 at SkaS and how it affected other ongoing quality management initiatives in the organization. A programme management consisting of the author, an economist, a senior quality physician and a Master Black Belt at SkaS managed the entire programme. During the three-year programme, the author was an inside action researcher who helped the project managers together with the clinical managers to select improvement projects. He also participated in and coached the various Six Sigma projects. In addition, he functioned as a teacher in the black belt courses during the last two years of the programme. Together with the senior quality physician, the economist and the master black belt he also led the network activities with project managers.

The programme had some key design principles:
- Project ideas were identified by the participating clinics and should concern major quality-, safety- or efficiency issues associated with the care processes at the actual clinic.
- Two project managers who were recruited from within SkaS led each project. The project managers, while simultaneously running the project, received training through a black belt course given by the programme management. The course contained 14 days of training, shifting between theoretical input and application of that theory in the projects. The training followed the Six Sigma problem solving road map DMAIC, (Design, Measure, Analyse, Improve, Control), which, from an AR perspective, could be seen as a more detailed action-reflection loop.

- A cross-functional project team from the local workplace as well as a steering committee consisting of clinical managers responsible for the care process to be improved was associated with every project. The role of the committee was to continuously monitor and give approval after each step in the DMAIC problem solving process. All clinical managers and project group members received training in Six Sigma approaches and methods by the author and his three colleagues.
- Inspired by home-and away learning theory, a network where all the project managers met once a month was created. During the network meetings the progress of the projects was continuously reported. Difficulties and problems in the projects were thus identified and improvement suggestions were developed jointly.

The continuous progress of the projects was iteratively documented by the project managers and spread to the programme committee, managers and co-workers involved in the projects. These reports were also presented at the regular network meetings. These meetings were documented through meeting minutes and the author also took field notes. The projects and the network activities were discussed frequently with outside researchers during the programme; Professors Bergman and Docherty, Senior Lecturer Hellström, and Associate Professor Gremyr. Insights from these dialogues were then fed back into the project and network meetings during the programme. One whole day network meeting was explicitly devoted to reflections on pitfalls and barriers in the projects. The author led the meeting. Professors Bergman and Docherty participated during this meeting, which was recorded and transcribed for further analysis. During the meeting all project managers (n=20) at SkaS identified factors critical to success using affinity diagrams in four small group sessions. Eventually, themes and subthemes from the groups were then jointly gathered and reflected on for revision of project roadmaps and templates.

Three waves of projects were managed during the three years. Each project followed a rigorous PDSA-loop albeit in the shape of the DMAIC roadmap of Six Sigma. In the first wave of projects, which was also facilitated by two outside consultants, a seven-step PDSA-inspired project roadmap was used (see Figure 4-2).

Mission

```
    1 Clarify requirements

    2 Map the process

    3 Search for root causes
    Generate improvement ideas

    4 Decide goals
    Make implementation plan

    5 Design and test solutions

    6 Implement

    7 Verify goals
    Secure the achieved level
```

Achieved and secured
improvement
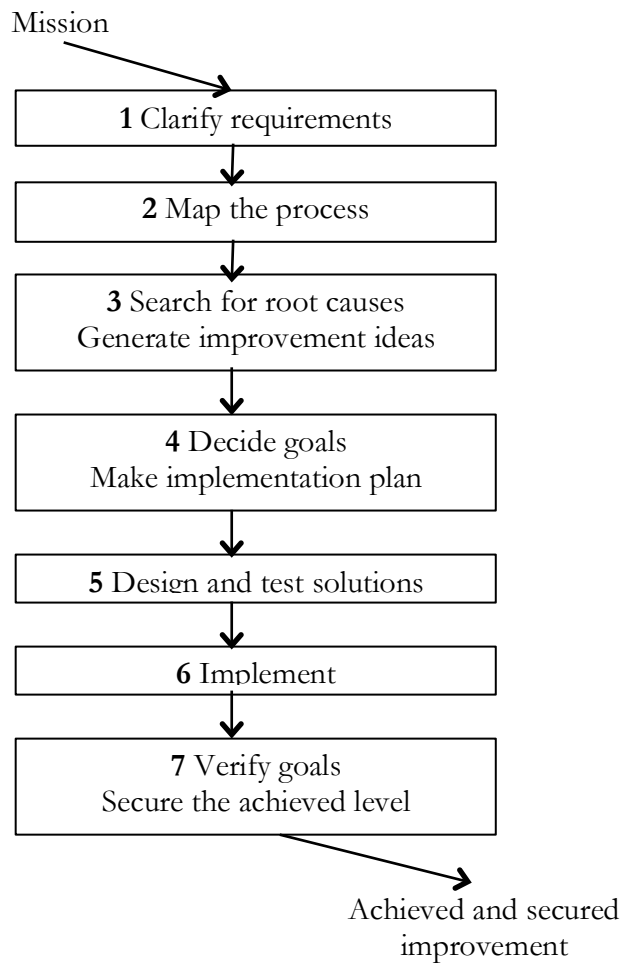
Figure 4-2. The PDSA-inspired DMAIC solving process used during the first project wave at SkaS.

During the second and third waves, inspired by lessons learned from the first wave of projects the roadmap was changed and an additional step was added – Learn, see Figure 4-3. (see Paper IV).
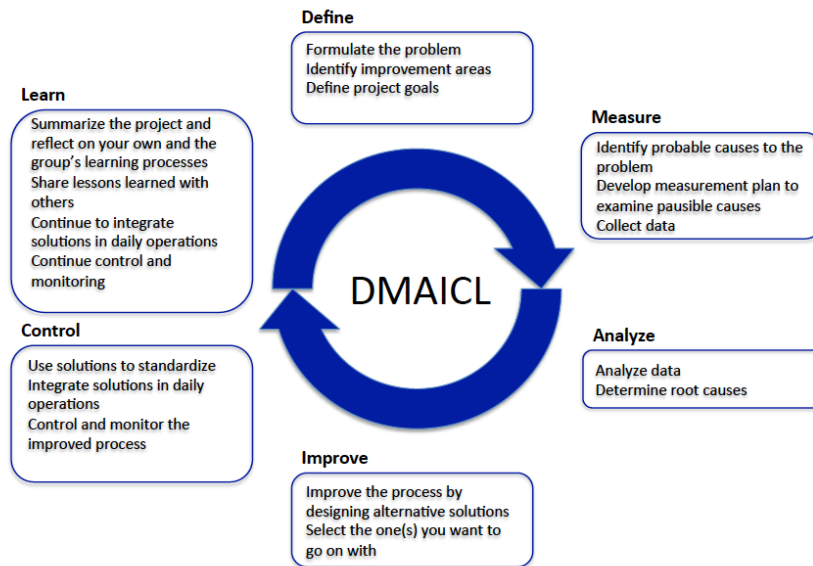
Figure 4-3. Further developed Six Sigma roadmap incorporating "Learn" - DMAICL

Written project reports were assembled from all projects after 9 months and 18 months. The reports were designed according to the DMAICL roadmap (see Figure 4-3). In the reports, the purpose and aim of each project was thus described, followed by the most important activities for every step in the problem solving process and lessons learned. The reports were analysed by the programme management committee where project results were compared with the expressed aim of the project. If the aim was fulfilled, the project was ranked as 'successful'; otherwise it was labelled 'not yet successful.'

Many quantitative methods were used in the different projects including data collection, stratification, pareto diagrams, regressions analyses, ANOVA and ANOM. Moreover, the results of the projects were quantitatively assessed using time series charts and control charts to capture the most critical outcome variables before, during and after the implementation of solutions. The project manager and the clinic economist also estimated the net cost savings for each project.

4.2.2 Paper IV

Second-person research using a co-generative model

One of the projects in the Six Sigma programme concerned patients' waiting times at one of the emergency wards (EW) at SkaS. This was one of few projects that had not succeeded so far so the author suggested that a more thorough analysis of the causes of project failure should be undertaken. The managers of the surgical clinic, the manager of the EW, the project group and the project managers agreed. Subsequently, two project workshops were

carried out using a co-generative model for AR. The workshops, the model and the subsequent analysis are accounted for in detail in paper IV.

Third-person action research: Adding lessons to the overall programme

Root cause analysis using a co-generative model revealed several probable causes of the initial project failure. These causes were then elaborated on to refine and improve the existing problem solving model. The enhanced model was then used in a successful retake of the project as well as in all the other Six Sigma projects during the entire programme. Lessons learned from the analysis were also shared iteratively in the project manager network. Moreover, the two project managers created a poster describing lessons learned and the refined Six Sigma roadmap. The poster was presented at SkaS as well as at an international quality conference.

4.2.3 Paper V

Participatory evaluation: Utilization-based evaluation

Although process mapping as an improvement tool had been in place at SkaS since the late 1990s, the Six Sigma programme revealed that, so far, few permanent processes had been established in the hospital group. In 2008, two external researchers together with the author therefore made an evaluation of the actual state of play concerning process management at SkaS.

The evaluation was inspired by a participatory approach as opposed to using a more conventional positivistic perspective. More specifically, a utilization-based evaluation was used (Greenwood and Lewin, 2007). The purpose of this method is to create a closer relationship between the evaluated and the evaluators, thus opening up possibilities for mutual learning and reflection. The approach presupposes that the researchers get close access to the internal dynamics of key organizational processes.

The author, working as a development director at SkaS, met with the external researchers before the evaluation, sharing his picture of process management at SkaS and the perceived problems. Moreover, current process management theories were discussed to set a common framework for the evaluation. The author, together with two quality coordinators responsible for process management at SkaS, selected key persons engaged in process management in three units for the interviews. The external researchers interviewed a total of 22 co-workers including managers, physicians and nurses. The interviews were recorded, transcribed, coded and categorized by the external researchers. This process is described in more detail in the paper.

Interpretation and validation for the generation of actionable knowledge

The external researchers together with the author then interpreted the material. The author, having been deeply involved in the process management activities at SkaS for many years thus provided a more profound contextual background to the interpretation. His pre-understanding could then be juxtaposed against the "native" reflections from the researchers for joint sensemaking. Lessons learned and conclusions from the research process were shared with the respondents but also presented to top management and in the project manager network at SkaS for further reflection and input. As a result of these lessons learned, the conclusions from the study were incorporated in the overall process strategy plan for SkaS developed by the author in 2009.

4.3 Paper VI

Prelude

The idea for this paper emerged during a course in qualitative methods at Lund University led by Professor Mats Alvesson in 2008. The course introduced the author to a more critical perspective on qualitative research in general and organizational studies in particular. Having been brought up in an environment dominated by the natural sciences with its positivistic research perspective, the course made the author question his own taken-for granted assumptions about ontological and epistemological perspectives in his action research efforts. In the middle of the course, the author took part in an international quality conference in Paris where he also gave a lecture on the ongoing quality management efforts at SkaS. Influenced by the ideas presented during the course, the author had difficulties appreciating the conference as well as his own performance during the conference. In order to further develop and clarify his own mental models he decided to use an interpretation of the opening speech at the conference as an input for reflections on his own actions at SkaS. These experiences resulted in a first version of the paper that was presented on the qualitative course for the examination. The paper was then further developed during a subsequent doctoral course in critical management studies at the same university.

First person AR: Using hermeneutics in self- and close reading ethnography

First-person practice refers to the continuous questioning of taken for granted assumptions of the author himself in his working life as well as in his ordinary life by reflecting in and on action. In this research, the author combined self- and close-up reading ethnography from different empirical environments to question his own taken-for granted assumptions about the

67

quality management initiatives he managed at SkaS. The research process is described in detail in Paper VI.

5 TWO CASE STORIES USING AR

This thesis, as noted earlier, is based on two longitudinal case stories using an action research approach. Case 1 describes the quality improvement initiatives that took place in West Skaraborg between 2000 and 2012 to improve integrated care for elderly people. Case 2 attends to quality improvement initiatives that took place at the Skaraborg Hospital Group between 2006 and 2008. The ambition of this chapter is i) to provide the background to and context of each case, ii) to give an account of the events that led up to the initiatives before each case, iii) to present an overview of the cases and thus position the papers vis-à-vis each case, and iv) to give a brief presentation of purpose, results and proposed contributions of each paper. For readability, some overlapping with the previous chapter is thus unavoidable.

5.1 Common context – the Skaraborg Hospital Group

The Skaraborg Hospital Group (SkaS) has been the stage for both cases. For this reason the hospital group and the region in which it is situated, the Western Region, are described first before turning to the particular cases.

5.1.1 The Western Region

The Skaraborg County was independent until 1999 when the counties of Skaraborg, Bohus, Älvsborg and Gothenburg were united to form the Västra Götaland Region (the Western Region). The Western Region is one of the largest counties in Sweden, with an area of 24,000 kms^2. The 1.5 million people who live in the region's 49 municipalities make up 17% of the Swedish population. The region has an overall responsibility for healthcare and dental care within the area. It operates 17 hospitals, 121 healthcare centres and 170 public dental care centres (VGR, 2013). The highest decision-making body in the Västra Götaland Region is the Regional Council. Its 149 members are directly elected by the region's inhabitants every four years and the Council convenes eight times a year. The Regional Executive Board consists of 15 members, who lead and coordinate the Region's political activities. There are also committees and boards, for example healthcare committees, hospital and primary healthcare boards, a regional development committee, and environmental and cultural affairs committees (ibid.) Healthcare makes up 90% of the Region's budget.

The Skaraborg hospital group the Lidköping Hospital

The Skaraborg Hospital Group (SkaS) is situated in the eastern corner of the Western Region. It is a specialist hospital group that serves a population of 260,000 in the former county of Skaraborg. The hospital group consists of four hospitals in the towns of Lidköping, Skövde, Mariestad, and Falköping

and offers services including acute and planned care in 30 different medical specialities. Moreover, the hospital group has a total of over 700 beds and employs approximately 4,500 people. Each year the hospitals handle around 41,000 inpatient episodes, 204,000 outpatient visits, 19,300 surgical procedures, and 2300 births.

The hospital of Lidköping, a part of SkaS, serves a population of about 85,000 people that inhabits the six surrounding municipalities in West Skaraborg – Lidköping, Vara, Skara, Essunga, Grästorp and Götene. It is an acute care hospital with complete departments and staff on call, more than 160 beds and about 700 employees.

Hospital group organization and re-organization

Two re-organizations were carried out at SKaS during this time period. In the late 1990s the hospital group had a divisionalized organizational layout where for instance the surgical and medical divisions where spread out over the four hospitals. In 2001 the Lidköping hospital became a division in itself with its own hospital director. The original divisional organization, however, was still prevalent in the other three hospitals with its own hospital director (Eriksson, 2005). The two directors were thus on the same organizational level and answered to the political board of the four hospitals. During this time period wards and care reception offices were united to form around 30 care units. There were three hierarchical levels of managers underneath the SHG hospital director at this time. Five divisional managers were in charge of the medical, psychiatric, gynaecological/paediatric and the general divisions respectively. On the next level, a shared leadership model was applied for every care unit, where a senior physician and nurse together shared the management for each care unit. The third level of management entailed ward – and reception unit managers.

The organizational layout was changed again in 2006 when a new SKaS hospital director took charge of all of the four hospitals including Lidköping. The Lidköping Hospital then became a division in itself as part of SKaS with a divisional manager on the same level as the other divisional managers throughout the rest of SkaS. Moreover, the care unit concept was terminated and replaced with clinics. The shared leadership for the care units was also put to an end and 30 clinical managers were appointed instead. The number of hierarchical levels did not change.

5.2 Case 1: The development of integrated care in West Skaraborg

This case describes the quality management initiatives that took place in

West Skaraborg between 2000 and 2012 to improve integrated care for elderly people. Paper I covers the events that took place between 2000 and 2010 including the formation and performance of a development coalition responsible for the integration of care for elderly in the area. Paper II continues to describe the design, planning, implementation and results of an integrated healthcare mobile team between 2008 and 2012 with a mission to provide care for the elderly with multiple illnesses in the same area.

5.2.1 Prelude and Context

From the author's perspective, this research started as an improvement project at the medical clinic at Lidköping Hospital in 2001. The manager of the medical clinic wanted the physicians to get more involved in quality improvement initiatives and therefore urged them to visit other hospitals in Sweden for ideas and inspiration. The author, being one of the physicians, paid a visit to the Höglandssjukhus in Eksjö, a hospital renowned for its work with quality management in a healthcare setting. During the visit, the author learned about the Ester-project, a project that had involved all care providers responsible for elderly care; the hospital, the communities and the primary care centres in Eksjö. The project had succeeded in improving integrated care for elderly patients through a long-term collaboration using a network design. Back in Lidkoping, the author, together with co-workers at the clinic and with support from the clinical manager, started the Örjan-group. Inspired by the work from Eksjö, Örjan was a fictive, elderly patient with multiple diseases in need of integrated care from all care providers. The aim of the project was to improve care from the patient's perspective. The goal was that the patient should perceive care as delivered from *one* organization, not from three different care providers. Together with the cardiologist at the clinic, the author managed to recruit the primary care centres in West Skaraborg, meeting them face-to-face to explain the project idea. Similarly, managers and co-workers from the six municipalities in West Skaraborg were eventually recruited to the overall Örjan network.

One of the first missions of the newly created Western Region was to translate the intentions of the National Plan for healthcare improvement elicited by the Swedish Government in 2000 into a regional plan for the improvement of integrated care. Thus, a regional directive was formulated in 2001. The ambition of the directive was to support already ongoing local initiatives that aimed to improve integrated care through a closer collaboration between all the care providers. In West Skaraborg, a development coalition (DC) was formed to meet the demands of the directive. A development coalition steering group (DCSG), consisting of senior managers from the hospital, the communities and the primary centres was established to lead the West Skaraborg initiative. Seven projects – networks were created. These projects were for instance targeted at

improving psychiatric care, rehabilitation, but also to improve information flow between the three organizations (Ekman et al., 2007). In 2002, the author, being the manager of the Örjan-project, asked the DCSG if the Örjan-network could also be part of the development coalition. The request was approved and the Örjan was thus adopted into the overall development coalition with the DSCG as its steering committee.
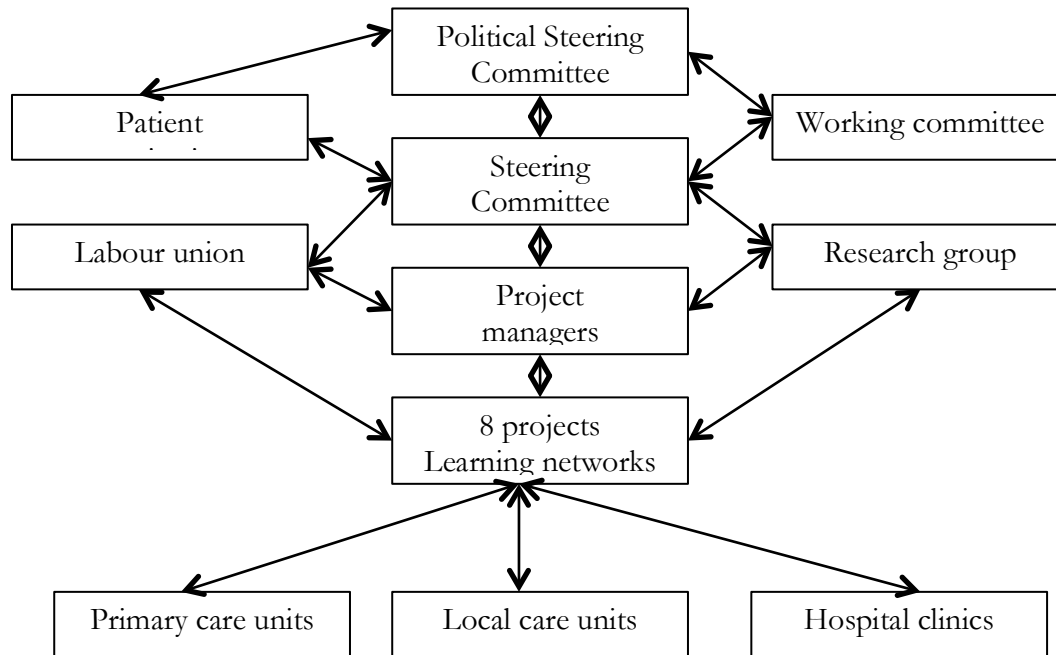
Figure 5-1. The organization of the development coalition in West Skaraborg where the Örjan project was one of the eight learning networks (adapted from Ekman et al., 2007).

The DSCG invited researchers to collaborate in the project, together creating the development coalition (Ekman et al. 2007; Ekman Philips et al. 2004;) consisting of politicians, patient groups, union representatives, the research team, and various front-line employees engaged in learning networks, each having a developmental responsibility (Figure 5-1). More specifically, the development coalition entailed (adapted from Ekman et al., 2007, p. 79):

- A steering committee – the Development Coalition Steering Group (DCSG) – consisting of the Lidköping hospital director and the chief senior physician at the hospital, a senior manager from each of the six surrounding municipalities and two representatives from the primary care organization
- A working committee consisting of three persons from the involved organizations respectively

- Initially seven projects/networks to be later expanded to eight projects (see below). The project groups were composed cross-professionally and included representatives from all the three organizations. These projects were for instance targeted at improving psychiatric care, rehabilitation, and also at improving information flow between the three organizations
- A committee consisting of representatives from the largest labour unions
- Representatives from patient organizations
- A political steering committee with representatives from the West Skaraborg regional board, the executive political board and the six municipalities
- A research group from the Skaraborg institute and the National Institute for Working Life Research

5.2.2 Milestones in the West Skaraborg case between 2000 and 2012

In Table 5-1, an overview of key events in the case is presented, particularly what happened in the development coalition and in the Örjan project.

Table 5-1 Key events in the West Skaraborg case.

Year	Paper	Development coalition and the integrated mobile team	Örjan Project
2000-2002	Paper I	A regional directive is sent to West Skaraborg with the task of improving integrated care. As an answer to the directive, the three care providers in the area (Lidköping hospital, the six municipalities and the primary care centres) form a development coalition (DC) to adapt the directive to local conditions and to initiate plans and actions to meet the challenges. A steering committee (DSCG) for DC is formed consisting of top managers from the three organizations. The DSCG prioritizes elderly care, psychiatric care and rehabilitation in the initiative. Eventually, eight cross-organizational, cross-professional, and cross-level networks/teams are appointed to work on the three prioritized issues.	One challenge at the medical clinic at Lidköping hospital is the care of the elderly; many elderly patients occupy beds in the wards due to problems along the patient pathway. The author, together with a colleague and inspired by the work in Eksjö, manages to recruit representatives from the three care providers to start the Örjan network. The aim of the network is to improve care for the elderly throughout the entire patient pathway. The Örjan network is eventually adopted and incorporated into the DC with the DSCG as its steering committee.

		In collaboration with external researchers, the first democratic dialogue conference takes place with about 100 participants, including representatives from all parts of the development coalition. The purpose of the conference is to develop a shared vision of integrated care in the area and to envision what plans and actions might lead to the fulfilment of the vision.	The Örjan network takes form inspired by a home-and-away network design. The core project group consists of 18 co-workers from the three organizations. Each project member also has a network "at home". The group starts to map the patient pathway through the care system to develop a shared picture of problems to be solved.
2003		The work on the other seven projects begins to take shape. The second democratic dialogue conference takes place with representatives from all parts of the DC. The purpose is to share experiences on project activities carried out so far and to inspire broad participation in the activities.	Eventually, the Örjan group agrees on a consolidated map describing the patient pathway and on the problems to be addressed to improve care for the elderly patient. The map is shared with co-workers associated with the network for further input. The group addresses the agreed upon problems using iterative PDSA-loops. Örjan presents its way of working during the second dialogue conference.
2004		The work in the other seven projects is now ongoing. The third democratic dialogue conference takes place with representation approximately as before. Results so far are presented including outcomes from the Örjan network. Many promising development initiatives are on the way, but to sustain the overall coalition a permanent establishment of the DC including fulltime internal consultants to support the networks is agreed.	The group continues to solve the commonly identified problems in repetitive PDSA-cycles. Some early results are reached including nearly a 20% reduction in yearly admissions at the medical clinic. The results from the Örjan network are presented at the third development dialogue conference.
2005		The author helps the DSCG develop a shared vision including long- and short-term goals for the coalition. The vision and goals are manifested in a balanced scorecard, which is distributed in the development coalition.	The group continues to solve commonly identified problems in the pathway using repetitive PDSA-cycles. A patient survey also gives input for new improvement projects. Focus is also put on how to improve the planning for elderly patients who are

				about to get discharged from the hospital.
2006-2008	Paper I	The DCSG continues to manage the developmental work within the coalition. Several of the former networks are turned into permanent networks including the Örjan network. Other projects are terminated. Several activities are carried out to discuss and diffuse the balanced scorecard to all three organizations. The work of the permanent networks is based on the goals in the scorecard.		The Örjan network is turned into a permanent integrated network structure within the coalition. Continuous improvement efforts are based on goals in the balanced scorecard.
	Paper II	In 2007, the DSCG concluded that although shared goals and permanent development structures for integrated care had been established in West Skaraborg, the results so far mostly manifested themselves in general networking terms. Integrated practices and results that could be apprehended especially from a multi-diseased patient perspective had not yet evolved. Thus, the DCSG decided to initiate a mobile operational team in late 2007 with the purpose of providing care for elderly patients with multiple diseases. Two nurses and one physician were recruited to form the team.		
2008-2012	Paper I	Continued developmental work in West Skaraborg led by the DCSG including balanced scorecard follow-up. Continued network activities.		Same as above
	Paper II	The mobile team designs the services and tests the design during 2008 to 2009. Further development and establishment of the team takes place from 2009. Continuous improvement and evaluation of activities together with the author and external researchers proceeds from 2010 to 2012.		

5.3 Paper I

5.3.1 Purpose

The purpose of this paper is to present lessons gained from the collaborative process that evolved over a ten-year period in the West Skaraborg County in the development of integrated care for elderly patients. The paper focuses on leveraging events between 2001 and 2010 that aimed at building sustainable capacities for the provision of improved healthcare for elderly patients. It is argued that the use of a tapestry of learning mechanisms and broad participation in learning networks proved to be critical success factors for the transformational process.

5.3.2 Results

From 2002 to 2007, the Örjan Network was established as a permanent network to be a source of sustainable creativity and innovation across organizational and professional boundaries, as well as supplying inputs to senior management on broader strategy issues.

Several examples of improved care outcomes were registered during the project. At the end of 2005, the Örjan network presented some key outcomes of its work:
- Elimination of waiting times for reception at the medical clinic (with the exception of heart ailments)
- Reduction in the number of visits to the medical clinic by 15–18%
- A patient survey which indicated a very high satisfaction rate (>95%) among the elderly with the integrated care services
- Initiation of process work in many other clinics and care units as a result of the initial Örjan project
- Increase in staff awareness and learning regarding the patient pathways

The development coalition assessed that the fall in the number of admissions to the medical clinic indicated that the integration of the care system had improved.

Other results of the change initiatives entailed the creation of shared goals for the entire coalition in the form of a balanced scorecard that was diffused to and adopted among the three care providers. Moreover, sustainable infrastructures for the future development of integrated care in the form of a permanent steering committee and also permanent development networks were established. The committee still consists of top managers from the three care providers and it meets every fortnight to discuss strategic and

operative issues pertaining to the further improvement of integrated care in the area.

In the paper, it is argued that the results also indicate that participation and learning mechanisms – *structural/networking, cognitive, and procedural mechanisms* – played a key role in the change initiatives. Between 2001 and 2006, new *structures* for dialogue were established, inspired by a "home-and- away" network design. Thus, action-reflection platforms for managers, project managers, co-workers and stakeholders from the three care providers became established throughout the care system. The learning platforms were used as arenas for individual and collective learning that linked through sub-networks into the major projects. Moreover, the networked design not only linked together the organizations along the pathway, it also connected the micro-, meso- and macro levels of the organizations as well as co-workers from different professions. On the platforms, new issues were discussed, for instance the shared image of a pathway (a cognitive mechanism), with the help of new tools and procedures, for instance process mapping (a procedural mechanism). Improvements were tested using iterative PDSA-loops, which could be seen as a combination of cognitive mechanisms (the emergence of new plans or problems during the P-phase) and procedural mechanisms (for instance the cycle itself).

The balanced scorecard is often seen as a management control mechanism (see for instance Hasselbladh et al., 2008), but in this case the model was viewed as an aid to organizational development, and was coupled to learning, and to development projects in the different workplaces. With support from the author, managers from the hospital, the primary care units and the municipalities developed a shared balanced scorecard for the entire system of integrated care. New concepts, models and values for thinking about and understanding important developmental issues in the different patient pathways emerged as a result of this process – combining cognitive, procedural and networking mechanisms. Subsequently, the BSC was interpreted and translated to local goals and activities in recurrent dialogues at different levels of the three organizations to encourage improvement efforts. This could be seen as a participative process involving and thus recruiting co-workers in the final establishment of shared goals for the entire system. The goals were then translated into new ways of working to provide better care for the elderly patients.

Finally, the development dialogues could be seen as important participative arenas connecting the entire system across organisations, organisational levels, professionals, and with other stakeholders. The meeting themselves could be seen as a structural learning mechanism assembling the system in one room, where new concepts, values and goals (a cognitive mechanism)

through an appreciative design of the meeting process (procedural learning mechanism) has been used jointly to envision plans for an improved future of the system.

5.3.3 Contribution

Several comprehensive research reports testify to the difficulties of applying quality improvement initiatives in a Swedish integrated care context. In summation, outcomes of such initiatives are, for the most part, unknown or have not resulted in any significant outcomes from a patient perspective (Anell and Mattisson, 2009; SKL, 2007; 2006; Åhgren, 2003).

In this paper, it is argued that a long-term process that involves all the critical stakeholders of the system across organizations, organisational levels and across different professions is a fruitful way to accomplish sustainable improvements from a patient perspective. Important ingredients in such a transformational process are cognitive, procedural, structural and networking learning mechanisms that connect all the parts of the complex integrated system. Examples of these mechanisms are home-and-away networks for continuous improvement, large group meetings in the form of development dialogue conferences to share visions and goals for the system, iterative PDSA-cycles for problem solving activities and testing improvements, process mapping to create a shared picture of parts of the system to mention a few. The case also illustrates the importance of developing a strategy that is agreed upon by all stakeholders as well as the need to find approaches to participation and engagement in the entire system, and to establish common measures concordant to the overall strategy that guide iterative improvement projects. The tapestry of the learning mechanisms that emerged over time in the healthcare system has constituted a new capacity, also enabling the system to continually generate improved outcomes.

5.4 Paper II

5.4.1 Prelude

Through the work of the development coalition several permanent infrastructures for development had thus been established in West Skaraborg and integrated care had improved significantly over the last six years (Ekman et al. 2007; Lifvergren et al., 2009b). Still, an analysis in 2007 revealed that, although manifest arenas for sustainable networking had been established in the area, improved integrated practices that involved direct care for patients with *multiple chronic diseases* had not evolved. An investigation showed that this particular group of patients also had high care consumption. The DCSG therefore decided to initiate and establish a

mobile operational team in late 2007, the purpose of which would be to provide care for these patients.

5.4.2 Purpose

The purpose of this paper is to examine how a cross-professional mobile team – a clinical microsystem – designed, implemented and evaluated a network-inspired model for the care of elderly patients with multiple diseases in its embedded context. The evolution of the team was a key event in the development journey of the West Skaraborg County from 2008 to present. Paper II describes the four phases that the team went through between 2008 and 2012 (see also Table 5-1): The design phase (2008), the test phase (2009), the phase of establishment (2009-2010) and the evaluation phase (2010-2012).

5.4.3 The process

The team consisted of one physician and two experienced nurses. In the design phase, the team put much effort on examining actual care needs for the patient group in the county, and also studied other teams in other parts of the country for inspiration. A conceptual model of the elderly population was developed; see Figure 5-2, guiding the microsystem in the design of the care model. The design of services was inspired by different organizational logics: shop-, network- and value stream logics.
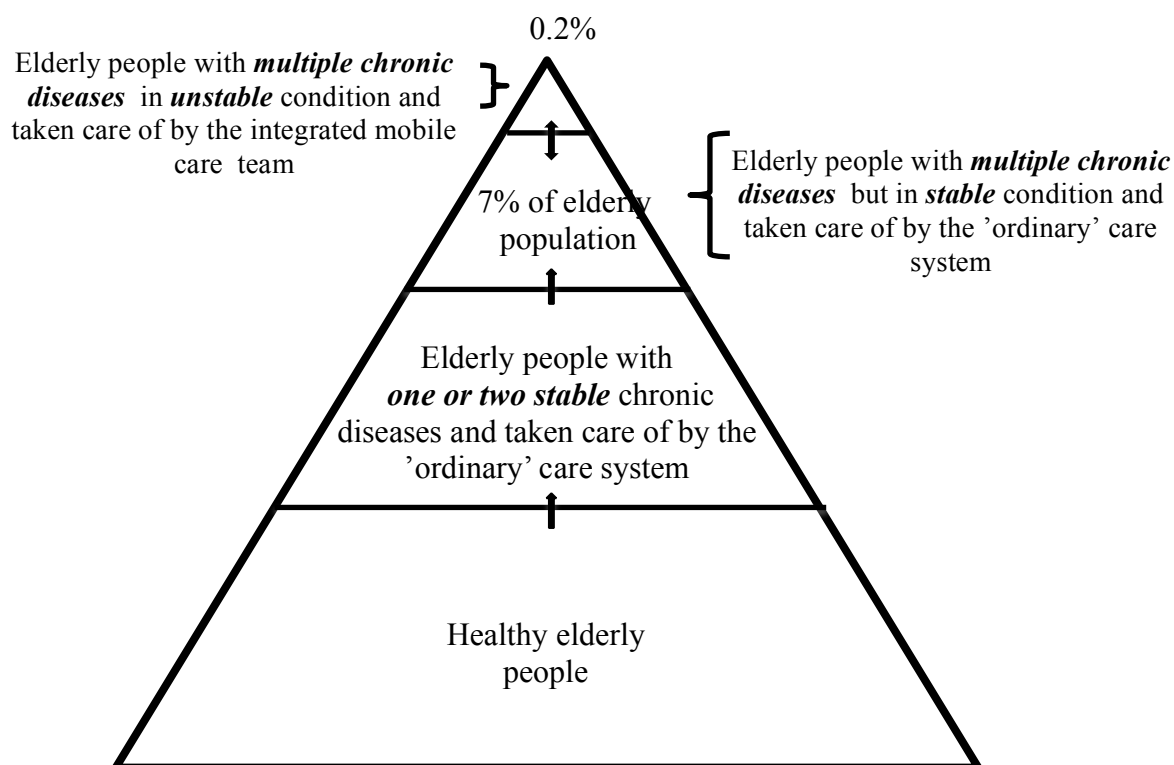
Figure 5-2. Conceptual figure developed by the team together with the researchers that illustrates the different proportions of elderly people with different care needs in the actual area.

Lind and Rennstam (2007) propose three ways of organizing teams, namely as role-differentiated teams, role-integrated teams and role-complementary teams. The first entails sequential relations of independent and differentiated tasks in the labour process; the second signifies parallel and co-operative relations between partly dependent and integrated tasks, whereas the third entails mutual relations whereby tasks are parallel, tightly interdependent and complementary.

Further, Stabell and Fjeldstad (1998) present a typology of three generic value configurations, which later Christensen (2009) applied in a healthcare setting. Translated to a healthcare context, a value configuration logic is defined as the way in which different care activities are carried out as well as how competences, services, responsibilities and levels of standardization are organized to fulfil the needs of customers, i.e. the patients (see e.g. NUTEK, 2007). In their value configuration analysis, Stabell and Fjeldstad (ibid.) distinguish between shops, chains, and networks. The shop configuration is characterized by what relevant skills and resources are gathered so that they can collaborate based on patients' various illnesses or life situations. The chain configuration signifies the value chain concept (Porter, 1985), and can be equalled to care chains (care processes, patient pathways) in a healthcare context, thus linking various medical and care resources to create value for

the patient throughout the whole patient journey. Finally, the network configuration where the organization or firm itself is not the network, but it provides a network service. Often the patient can be seen as an active co-producer in the value-creating network, supported by information technology, medical technology and mobile care teams.

Working as a role-complementary team embedded in the surrounding meso- and macro systems, the team – the micro system - initially developed three different care logics for the elderly with multiple diseases - the top of the triangle in Figure 5-2.

- The shop logic was used for providing care on discrete medical conditions where care activities took place primarily at the patient's home. Symptoms relief was emphasized to prevent deterioration at an early stage and the team managed to undertake most of the required care practices to stabilize the patient on one visit.
- The chain logic was used to ensure that care activities were coherently integrated according to the patients' needs.
- The network logic was used to involve and integrate existing care resources, e,g, primary care units and community nurses, in the care of each individual patient. The team thus coordinated already existing care resources around the patient, stabilizing the situation as well as learning about the existing meso- and macro-systems (that is, hospital wards, community nurses and primary care units) in real time to integrate care. This knowledge sharing with other actors in the broader system – the hospital, the primary care units and the communities – was considered a key prerequisite for the successful establishment and performance of the team. Subsequently, the team established collaboration with the primary care team responsible for the 7% part of the triangle, thus enforcing an even more profound upstream approach, where patients at the beginning of a deterioration process could be identified and taken care of.

In order to work with the different care logics, the team had to be mobile and flexible, adopting a role-complementary team approach, where the members of the microsystem could replace each other at any time.

5.4.4 Results

The results of the team's work dramatically improved the care for these patients, significantly increasing quality of life and stabilising their medical situation. Quantitative assessments pointed to a significant relief of troublesome symptoms among the patients. Qualitative evaluation including interviews and focus groups with patients, relatives and co-workers in the surrounding system also showed that the care model of the team was well

functioning and the team's efforts were also greatly appreciated. Moreover, the developed care model also led to decreased resource utilization, not just by the team, but also elsewhere in the wider health system. For example, care consumption among patients taken care of by the mobile team was reduced by 90%.

5.4.5 Contribution

As previously stated, few improvement initiatives pertaining to models for integrated care of the elderly show sustainable results from a patient perspective. In this paper, it is argued that sustainable care models for the elderly with multiple diseases can develop when combining key features from models of value logics, clinical microsystems and theories on different team compositions.

The case shows that different care logics can be seen as key ingredients in a clinical microsystem responsible for the care of elderly patients with chronic conditions. In order to manage different logics, the team members must work in a complementary manner, combining geographic mobility with a coordinating centre. Through continuous dialogue with critical stakeholders and co-workers in the surrounding meso-and macro system, a mobile and flexible team can coordinate already existing care resources in the surrounding system for the stabilization of patients with multiple diseases. Moreover, the team can also enhance a broader system's understanding, eventually catalysing an improvement strategy entailing the entire population of elderly people within the area, see Figure 5-2.

The shop-, stream- and network models can also be used to understand the development of the team itself. Through networks entailing the entire macro-system, knowledge sharing and resource mobilization was possible. The subsequent design, test, implementation and evaluation of the care model could be perceived as an improvement value stream process in its own right. Dialogue meetings, with or without the patients, most often included personnel from the three care providers using a shop logic. For validation and further generalization, this model has subsequently been implemented and evaluated in all parts of Skaraborg.

5.5 Reflections on case 1

These reflections took place during the period of the actual case and are based on a combined first-, second- and third person perspective including the author's experiences as an observing participant taking part in meetings with co-workers, project groups, networks, management groups as well as with external researchers during the case. The author functioned as the

Örjan project manager for five years. During this time many first-, second- and third person voices influenced and informed the author's interpretation and conception of the research process. Along the way, the author and the quality coordinator had numerous discussions about the improvement strategy itself and how to deal with a number of unforeseen difficulties that emerged now and again throughout the entire process.

Already at the beginning of the Örjan network group meetings, serious problems presented themselves. It soon became obvious that participants from the three organizations came from varying cultures. For instance, they did not share the same concept of the patient pathway. The name that was used for the prime customer — the patient — differed from one organization to another. This came as a surprise to the author as well as to the quality coordinator. The initial plan for the meetings had to be re-planned entirely. Three consecutive meetings, instead, had to focus on agreeing on core principles and values for the improvement activities. Involving the group members more deeply an agreement on values, core principles and mission for the project was instead the focus during the dialogues. In hindsight, this "storming" period was probably crucial for the future performance of the group (Lifvergren et al., 2009b)

The Örjan project met obstacles and elements of resistance at other organizational levels as well. In the beginning of the project, middle managers in the different organizations in particular were unaware of the development coalition. Therefore, no dedicated project time for co-workers was allocated and several participants of the Örjan network were not allowed to attend the project meetings. This was to a large extent due to poor communication about the projects in the development coalition with the line managers of the three organizations. Therefore, the author, the coordinator and the other Örjan network members developed a strategy to involve the surrounding system in the improvement activities to a larger extent. The project members themselves held meetings with the line managers from the various local workplaces, thus providing information about the project activities. This approach generated involvement among middle managers and ensured that the patient pathway was a permanent item on management's agenda. Thanks to this strategy, Örjan network members and other groups connected to the improvement activities were able to allot time for the project without middle management objections.

Still, territorial thinking existed at many of the workplaces across the three care providers and across different professional groups. The initial conflict that had been apparent in the Örjan group about the patient perspective also existed at the different workplaces. Therefore, a home-and-away networking approach evolved, where problems, maps, measurements and solutions were

always diffused to the different workplaces for comments and improvement suggestions. The group referred to this method of working as the 'accordion principle'; sharing current experiences and plans of the project's group with the co-workers at the local workplaces and then bringing the comments back to the project group for further action and reflection.

Finally, even in the DCSG, there were initially expectations of the Örjan network to be the project with a capital "P," solving all the problems along a certain patient pathway and thus reaching final closure. However, gaining more and more experience in iterative dialogues with the Örjan group, the DCSG came to see their activities no longer as a temporary project, but as an ongoing process embodied in the development coalition. In the words of one member of the DSCG: "*The improvement activities in the patient pathways have to continue forever.*"

5.6 Case 2: Quality management at SkaS

This case describes key events regarding quality management initiatives at SkaS between 2006 and 2008. The case is covered in Papers III, IV and V. To contextualize the case, earlier quality management initiatives at SkaS will be described followed by an overview of the key events in the case to set the specific background for each paper. Finally, a brief presentation of each paper, including purpose, methods, results and proposed contributions, follows. For purposes of readability, some overlapping with earlier chapters is unavoidable.

5.6.1 Prelude – earlier quality management initiatives at SkaS

An overview of quality improvement initiatives at SkaS between 1996 and 2011 is presented in Figure 5-3.
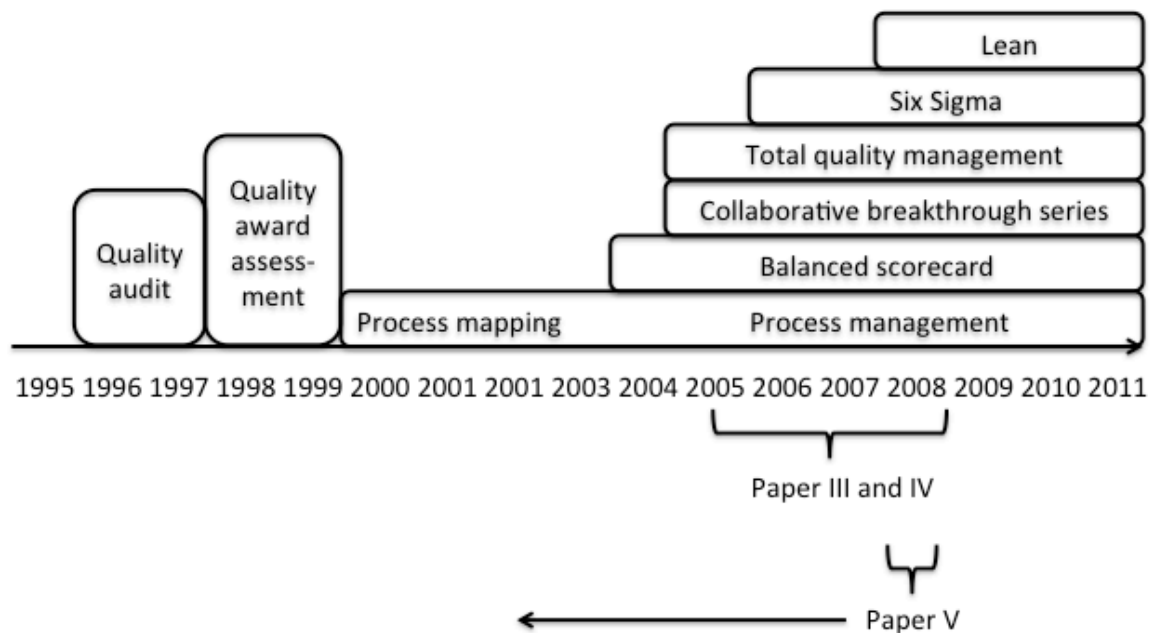
Figure 5-3. An overview of key quality management initiatives at SkaS from 1995 to 2011 and how these events are related to Papers III, IV and V.

Quality management ideas emanating from industry made their entrance to Swedish healthcare in the early 1990s (Eriksson 2005; Kammerlind and Kollberg, 2007; Kollberg and Elgh, 2006). These ideas also reached Skaraborg and SkaS took its first orienting steps regarding quality management already in the middle of the 1990s. An external *quality audit* was undertaken at SkaS in 1996, and some of the clinics also made *self-assessments* in 1998 according to the Swedish quality award for healthcare. However, both activities were perceived as very complex, far-reaching and time-consuming. More time was put on control rather than on actual improvement of care processes (Eriksson, 2005).

Based on these experiences, the top management team at SkaS decided to focus on the *process improvement* dimension in the Swedish quality award framework. A process education programme in which all employees were invited to participate was designed to support the new quality strategy. The education programme started in 1999 and continued until 2011. Hundreds of co-workers attended the courses each year. The courses were designed to let co-workers bring real quality problems from their daily operations to the course. They were then taught how to use *process mapping* as a tool to solve patient-related problems in the actual care process (Eriksson, 2005; Hellström, 2007).

At the beginning of the 2000s, the Western Regional Board presented the *balanced scorecard* (BSC, Kaplan and Norton, 2001; 1992) as a potentially useful quality management system for the healthcare context. Buy-in was not mandatory but the top management team at SkaS decided to test the

concept. SkaS became one of the first hospital groups in the region to translate and adopt the BSC to a healthcare context. The scorecard was developed in 2003 and introduced to the hospital group in 2004. It covered vision, mission, and long- and short-term goals for SkaS. It was fairly well accepted in the organization as it shifted the management discussions from a pronounced financial emphasis toward a more patient- and quality-oriented focus (Lifvergren et al., 2010). Patient, process, and co-worker/learning perspectives were thus incorporated into the strategic discussion at the different organizational levels, which reinforced the focus on continuous improvement and process management from a patient perspective. A scorecard on the corporate level was first developed. The long- and short-term goals of the scorecard was then translated and adapted to scorecards on the divisional and clinical levels at SkaS. From 2004 on, the BSC has been used at SkaS as a dialogical tool at the corporate, division and clinic levels and for assessing, learning from and balancing current strategies regarding quality management, patient safety, co-worker perspectives and financial issues. Scorecard dialogues were carried out three times a year on two organizational levels: Representatives from the top management team met with managers at the division levels and divisional managers met with clinical managers. The dialogues focussed on goal achievements in the different perspectives and what activities had been carried out and/or were planned to reach the intended goals.

At the same time, the author attended a 30-credit quality management course at Chalmers from 2004 to 2006. The course was led by Bo Bergman (professor) and Andreas Hellström (senior lecturer, at that time a PhD student) and introduced the author to the concept of *Total Quality Management* (TQM) (Bergman and Klefsjö, 2012). During the course a Swedish version of TQM developed by Bergman and Klefsjö was presented. The model rested on seven cornerstones (principles) with associated approaches, methods and tools. The principles were a customer focus, management commitment, a process focus, together with continuous improvements, fact-based decisions, everybody's involvement and a whole systems view. These principles were also presented to the top management team at SkaS and it was decided that the principles should be incorporated into the BSC. Moreover, all the cornerstones were also used as a quality management strategy to reach the scorecard goals. The principles were called Intensive Quality Development at SkaS.

In 2004, the *collaborative breakthrough series* was added as a quality management tool at SkaS. The Institute for Healthcare Improvement developed this approach in the early 2000s (IHI, 2003). The main idea in the method is to gather improvement groups from different organizations (or units within the same organization) to focus on the same quality problem. According to the

model the teams set distinct improvement goals. Iterative actionable PDSA-cycles are then used to reach the goal. Considerable attention is also put on measuring the results of the activities to assure that the tested interventions eventually lead to improvements. The teams meet three times during the series to learn from each other. SkaS introduced the breakthrough series in 2004/2005 with the first series targeted at improving patient safety and reducing patient waiting times. Slightly more than half of the ten participating improvement groups achieved their intended results. Through this initiative knowledge about the PDSA cycle was spread throughout the hospital group and used in many other improvement efforts as well.

In sum, many methods and tools were introduced at the same time causing some confusion, which made it more difficult for some units to really focus on using the most appropriate method to solve their particular problem. In some parts of the organization, using the tools became a goal in itself. In one division an assessment in 2005 showed that, although more than 50 process mapping activities with associated PDSA-loops to improve care were running, a whole systems view was missing. Process mapping was still used as an improvement tool and not as a way to organize along the entire value-creating patient journey through the organization. Therefore, from 2005 on, more emphasis was put on *process management* as the organizing principle according to the TQM cornerstones. From 2006 and on, the quality strategy focused on identifying, establishing and improving the most important patient flows through SkaS. Process roles were developed and these roles were still used in 2012.

When organizing improvement efforts from a patient process perspective, many problems especially between units along the patient journey emerge. It thus became evident that the so far adopted quality management tools were not sufficient to solve these larger cross-sectional problems. These insights led to the launch of the Six Sigma programme described in more detail in *Papers III and IV*. This programme revealed that many care processes had not yet been established. These insights led to collaboration with two external researchers who interviewed 22 managers and co-workers with a key role in the process management initiatives. This research is presented in *Paper V*.

In 2008, an external audit of the SkaS quality management strategy revealed that although co-workers were invited to participate in continuous improvement activities, there was no coherent structure for the reduction of waste in the daily operations. Moreover, the importance of an even flow in the larger planned patient processes became evident. As an answer to these shortcomings *Lean* approaches were added to the quality management strategy. Smaller Lean applications were tested on a small scale in 2007 and

Lean workshops were subsequently introduced in 2008–9 where 40 units participated in the first major Lean programme.

Subsequently, *Paper III* describes the events that led to the initiation of the Six Sigma programme between 2006 and 2008. The paper then continues to describe the structure, process and outcomes of the programme process, lessons learned as well as how it affected other ongoing quality management initiatives at SkaS. *In Paper IV*, a detailed analysis of an initially unsuccessful Six Sigma project in the programme during 2007 is presented. Finally, *Paper V* accounts for the interpretations of 22 interviews conducted with co-workers having had a key role in the process management efforts conducted so far in three units at SkaS in 2008.

5.7 Paper III

5.7.1 Purpose

The purpose of this paper is to explore how Six Sigma can be translated to a healthcare context. More specifically, the ambition is to reveal contextual success factors and barriers to Six Sigma implementation. In the study, 22 consecutive large improvement projects were followed at SkaS between 2006 and 2008. This was also the first large-scale Six Sigma initiative in Swedish healthcare. The programme was initiated by the top management team at SkaS as a complement to earlier quality management initiatives that had not generated the expected medical outcomes.

5.7.2 Results

The majority of the projects focused on improvements regarding quality of care and patient safety in medical care processes. Still, the results from this study showed a success rate of 75%; 15 of the 20 projects reached their intended goals (two projects were not completed when the final assessment was carried out). The success rate is high compared to results reported from other healthcare improvement programmes. The calculated average net cost savings in every project (including the failed projects) amounted to €40,600, a factor that is seldom reported regarding quality improvement results in a healthcare context.

The results of the programme also led to the institutionalization of improvement facilitators at SkaS. These co-workers are experts on various quality improvement approaches and tools. There are currently about 20 improvement facilitators working full-time at SkaS. The improvement facilitators support Lean activities, the Collaborative Breakthrough Series, and other process improvement initiatives as well as managing local Six Sigma projects.

5.7.3 Contribution

Several reports describe severe difficulties when translating quality management efforts to a healthcare context. In many cases, no improved outcomes from a patient perspective are attained and successful improvements are, at best, locally applied, not involving the entire system (Anell and Mattisson, 2009; Norbäck and Targama, 2009; Olsson et al., 2003; Thor, 2007; Åhgren, 2003; Øvretveit, 2009, 1997).

This paper contributes to actionable knowledge regarding the translation of Six Sigma to a healthcare context. The study shows that the addition of Six Sigma on a large scale is useful and leads to significant results from a patient's perspective when improving healthcare processes. Moreover, it can also be a cost-effective contribution to the quality management repertoire.

More specifically, findings from successful Six Sigma programmes in other sectors such as manufacturing and services were also identified and translated to a healthcare context:

- Through the involvement of co-workers and managers in the improvement evolving around the projects a large degree of organizational 'pull' regarding quality management is created. The education of project managers and project groups contribute to the spread of knowledge about how to work with improvements, especially when the education is tied to real-life improvement projects.
- A decentralized parallel meso-structure where project managers and other co-workers take on distinct roles and responsibilities for quality development can create resources for improvement efforts and also stimulate other continuous improvement activities in the organization.
- Process immaturity can be revealed during a Six Sigma programme and may thus contribute to an urgency to put more effort on process management and design within an organization.

Other findings seem to be more unique for the healthcare sector. Longer project timetables seem necessary to reach tangible results from a patient's perspective. Moreover, elementary quality tools were most often sufficient to reach project goals. Furthermore, in most industrial Six Sigma projects, identifying and removing unwanted variation involves the analysis of variation between and within groups. However, the healthcare processes differ in this aspect. Much variation can be found in the individual patient variation over time. A manufacturing-influenced Six Sigma programme is not quite enough in a healthcare situation, where the individual patient process also has to be modelled and individual solutions sought. Successfully

applying Six Sigma's DMAIC roadmap to care processes thus requires detecting and reducing between-group variations, within-group variations as well as the individual patient variation over time.

5.8 Paper IV

5.8.1 Purpose

The purpose of this paper is to describe how an analysis of a project that initially failed led to an improved project road map – DMAICL –where 'L' stands for Learning, as well as to the explicit integration of learning mechanisms into a quality programme between 2006 and 2008 at SkaS. It is argued that lessons learned from project failures are very valuable and contribute to the iterative improvement of the programme itself.

The concept of continual improvement plays a vital role in quality development. Iterative action-reflection cycles (PDCA, PDSA, DMAIC) for joint sense-making and learning are critical for the generation of actionable knowledge. This paper builds on experiences described earlier in Paper III, where lessons learned from a large Six Sigma programme at SkaS is presented. The paper describes the analysis of one of the few projects in the programme that initially failed.

5.8.2 Results

The analysis suggested that the importance of learning had been played down in the DMAIC roadmap in favour of more instrumentally oriented problem solving techniques, for instance templates, project charters and statistical analyses. Moreover, the clinical management had not been sufficiently involved in the project. The project group did not have enough mandates to solve the problem and the ongoing results of the project were not communicated to all co-workers at the unit.

Based on the probable root causes, solutions were designed and tested in a re-take of the initial project, this time with successful results. The experiences also led to the addition of an 'L' in the roadmap, DMAICL, highlighting the importance of learning in improvement efforts. After this pilot test, the solutions were also put in to the overall Six Sigma programme at SkaS.

5.8.3 Contribution

Although a multitude of papers report on failures or difficulties when translating quality management efforts to a healthcare context, very few reports actually describe lessons learned from failed projects (Anell and

Mattisson, 2009; Norbäck and Targama, 2009; Olsson et al., 2003; Thor, 2007; Åhgren, 2003; Øvretveit, 2009, 1997).

In the paper, it is therefore argued that a thorough analysis of a failed project is a vital component in the overall improvement strategy for an organization. Further, it is suggested that the application of 'L' in an instrumental problem solving procedure (DMAIC) might contribute to and invoke double loop learning within and between project groups and operational units in the organization. Moreover, the DMAICL roadmap is an example of how cognitive and procedural learning mechanisms might improve the outcomes of a quality improvement programme.

5.9 Paper V

5.9.1 Purpose

The purpose of this paper is to examine what happens when the idea of process management – originally a manufacturing concept – is implemented at SkaS. The paper describes how managers and co-workers perceive the idea of process management and, moreover, what happens when processes are highlighted and more power is allocated to the process dimension of the organization. The inquiry was carried out in 2008 at the end of the Six Sigma programme.

5.9.2 Results

Inspired by a utilization-based evaluation, the material was jointly analysed by the author and external researchers. In the analysis, data were categorized using the 4 C – model - Cure, Care, Control and Community (Gloubermann and Mintzberg, 2001a).

The results of the study showed that, although SkaS had been involved in quality development for many years including the above-mentioned Six Sigma programme, many obstacles to process management were still prevalent. The organization was itself in many ways an obstacle to the achievement of a process-oriented management style. In the empirical material, healthcare staff voices bore witness to bureaucratic organizing principles and structures standing in conflict with a more process oriented view where the patient's journey through the system is highlighted. Although process maps had been drawn and process managers and owners had been appointed to focus on how value for the patients was created, traditional budgeting and reimbursement systems still followed the functional line organization. Many voices and material artefacts showed that different professional identities still seemed to be related to the functional units rather than to the processes. Physicians, representing the Cure-

perspective, highlighted the importance of medical skills and integration of tasks within the specialities. For them, standardization was applicable to skills and knowledge rather than to procedures and process standards. Nurses, on the other hand, tended to adopt a more systems oriented view, where process management was seen as an approach that helped co-ordinate care activities.

Moreover, an image of a misfit between management and control systems emerged, where bureaucratic structures (for instance rule-bound hierarchical authority, standardization and specialization with a clear functional division of labour) were in conflict with the horizontal patient perspective of process management. The hierarchical structures were perceived as slowing down and obstructing the development of process management. However, this frustration could also be interpreted as a fairly developed understanding among the interviewees of the process management idea. In addition, the manufacturing vocabulary surrounding process management did not evoke any reactions, also supporting the notion that a certain level of maturity regarding these ideas was prevalent in the organization.

In conclusion, the dominant organizing paradigm at SkaS had not yet changed in any dramatic way. Process management was something that was considered important for the improvement of care processes, but strong vertical mechanisms regarding the control dimension of the organization, such as budgeting and reimbursement systems were still present in the organization.

5.9.3 Contribution

The contribution of this paper is its illustration of barriers to knowledge transfer from manufacturing to service industries. It focuses on how a Swedish healthcare organization adopts the idea of process management. From a theoretical point of view, a perspective based on the horizontal patient care processes complements the functional perspective. Patient value is enhanced if the entire care chain is interlinked and co-ordinated, reducing the risk of sub-optimization as well as offering possibilities for patients to influence the improvement of the system.

Still, the traditionally bureaucratic way of organizing healthcare still prevails. Specialization has been and continues to be one of the cornerstones in healthcare organizations. Furthermore, specialization continues inexorably and at an increasing pace. The introduction and adoption of process management in healthcare organizations must somehow co-exist with the functional, vertical structures. Paradoxically, these institutionalized functional systems might, in themselves, act as barriers to new ways of working.

When co-workers are invited to translate and make use of new organizing ideas, for instance process management, changes in vertical re-imbursement systems and control mechanisms must also be initiated concordantly. Bad timing seems to create frustration and loss of organizational energy. Managing alternative perspectives in an organization is a balancing act, where experiences from matrix-organizations might be fruitful.

5.10 Reflections on case 2

These reflections took place during the period of conducting the actual case and are based on a combined first-, second- and third person perspective including the author's experiences as a participant observer taking part in meetings with the project managers, the project groups, steering committee groups for the projects, management and process groups, as well as with external researchers during the case.

The project managers came to form an entirely new role within the organization. This development was not without obstacles. Many project managers testified to scepticism towards the projects as well as against themselves. However, adhering to the scientifically inspired problem-solving roadmap of Six Sigma could eliminate a great deal of the resistance, especially among physicians. Paradoxically, although the programme committee tried to avoid Anglicisms during the programme, project managers and project groups commonly used common Six Sigma terms like "black belt" or "green belt", probably distancing other co-workers not involved in the projects from the initiative. Some co-workers even considered the project managers to be a type of elite squadron, sending the signal that quality improvement was not for everyone to take part in. Indeed, an external audit in 2008 revealed that although co-workers were explicitly invited to participate in continuous improvement activities, such participation was far from the case and there existed no coherent structure for improvements of daily operations involving all co-workers. Further, in trying to establish their new role as improvement facilitators, many project managers including the author had the tendency to take over ownership of particularly difficult improvement projects, thus making managers and other concerned stakeholders become more distanced from the process and results of the projects. Transparently analysing and reporting on a failed project, however, probably decreased the distance between co-workers involved in the programme and those not involved.

The programme tended to attract clinics and units already engaged in quality improvement activities, thus widening the already existing gap between

clinics and units already involved in continuous improvement and those who were not. Further, there existed a tendency during the programme to recast problems to fit the Six Sigma toolbox instead of choosing a method that was appropriate to solve the actual problem.

The DMAICL roadmap was introduced in the programme after analysis of the failed project. However, after this introduction, the external researchers pointed out that it would have been better to put the 'L' below DMAIC, thus visualizing that learning should be both *in-* and *on* action – during every step of the roadmap – instead of only on action. The viewpoint illustrates how it is often necessary to compromise from an insider action research perspective. Although the author agreed that an 'L' below the DMAIC text was more appropriate from a theoretical point of view, the new DMAICL that had already been adopted at SkaS was thought to be 'good enough' and it had already contributed to dialogues about learning in most improvement projects.

5.11 Paper VI – a first person AR perspective

5.11.1 Purpose

The purpose of this paper is to illustrate how a first-person action research approach can be used to question one's own taken-for-granted assumptions in the execution of a quality management strategy. Moreover, it also seeks to illustrate how these reflections made the author, working as a development director at SkaS, adopt a more reflexive approach embracing the importance of grand narrtives and how they effect change initiatives in complex systems.

5.11.2 Methods

A self- and close-up reading ethnography together with a hermeneutical approach was used to examine global and local discourses pertaining to quality improvement. The interpretation of the opening speech at the International Conference on Quality and Patient Safety in 2008 was juxtaposed against interpretations of quality improvement strategies in general and at SkaS in particular through a critical lens. Alternating between the part – the opening speech - and the whole – quality improvements in Sweden and at SkaS- iterative hermeneutic interpretative circles were used to question the author's pre-assumptions regarding quality management initiatives.

5.11.3 Results

Several pitfalls reveal themselves when deliberately adapting critical perspectives to understand organizational phenomena. Using a purposefully critical lens when interpreting empirical material might lead to a superficial analysis, in turn leading to nothing. Moreover, too much critique and deconstruction without subsequent reconstruction and action also leads to nothing and depletes the organization of energy. Questioning taken-for-granted assumptions is thus a delicate balancing act, where the analyses should be undertaken with the ambition to encourage double loop learning for improved action.

The interpretation of current grand narratives and discourses made the author reflect critically on earlier quality improvement activities with associated talks initiated by him as described in Case 1 and 2. Furthermore, he adopted a less normative and prescriptive attitude in the subsequent quality management efforts at SkaS and also changed his talks about quality improvement. For instance, a quality management programme in 2010 was termed "A Booster Dose of Quality improvement", where the support was explicitly designed to meet the local demands and needs of each clinic.

5.11.4 Contribution

Purposeful and critical reflection of discourses and subsequent actions to question taking-for-granted assumptions is not an approach that, hitherto, has been part of suggested methods and techniques associated with improvement science. This paper thus seeks to portray how a first-person action research approach can be used to expand the practical quality improvement repertoire. Further, the ambition is also to contribute to AR practices by presenting how self- and close-up ethnography combined with a hermeneutical approach can lead to the emergence of entirely new plans and actions.

6 COMMON THEMES IN THE APPENDED PAPERS

6.1 Context, structures, processes and outcomes

As previously stated the purpose of the thesis is to explore how quality management approaches can support the improvement of healthcare processes, especially in integrated elderly care as well as in a hospital setting. The ambition is thus to present the context of different organizational interventions, how they were structured, the processes and the outcomes. In Table 6-1, an overview of the papers pertaining to these themes is presented. The *context* portrays what part of the care systems were involved, and what organizational levels were engaged in the improvement initiatives. Inspired by Donabedian (2003), *structures* signify how interventions were designed in terms of participants, stakeholders and meeting structures; *Process* pertains to leveraging plans and actions during the cases; *Outcomes* refer to the practical results of the efforts.

Table 6-1 Context, structure, process and outcomes in the appended papers.

	Context	Structure	Process	Outcomes
Paper I Case 1	All the three care providers in West Skaraborg; the hospital, the municipalities and the primary care centres. Multi- level in the organizations; workplaces, departments, clinics, hospitals, primary care centres etc.	Top managers from all care providers, development coalition with multi-stakeholder participation (e.g. politicians, patients, unions, internal/external researchers, co-workers, managers). Meeting structures for whole system, projects, networks, managers.	A multi-stakeholder development coalition led by managers from all organizations was established. Areas for improvement were identified and project networks to attend these areas were appointed. The three care providers were connected across levels, professions and projects through networks and large systems meetings. A common vision and goals for the integrated care system were developed and shared. Iterative	Elimination of outpatient waiting times and reduction of admissions to the medical clinic. High satisfaction rate with services among elderly patients. Increased staff awareness of patient pathways. Shared goals for the entire coalition in the form of a balanced scorecard. Sustainable infrastructures for the development of integrated care;

			PDSA-cycles and dialogues were used for joint learning and goal sharing at all systems levels in all three organizations.	permanent steering committee, full-time improvement facilitators and established development networks.
Paper II Case 1	Same as above but also a special focus on the clinical micro-system and other microsystems surrounding the elderly patient.	Same as above but also a special focus on meeting structures around the patient in real time.	The design, test, establishment and evaluation of the integrated mobile team evolved gradually using iterative PDSA-loops. The progress of the process was reported to the development coalition for broad anchoring in the entire system. Continuous learning processes with other microsystems were carried out in real time connected to each patient.	Improved quality of life, relief of troublesome symptoms and stabilized medical situations for elderly patients with multiple diseases. Reduction of care consumption by 90% for the actual patient group.
Paper III Case 2	The Skaraborg hospital group (SkaS), multi-level in connection to projects; workplaces, departments, clinics and processes	Top managers, clinical managers, department managers, project managers, and project group members. Meeting structures for projects and project education including the steering committee, structures for project managers network meetings.	Top management decided to initiate the quality programme. Clinics and departments identified problems pertaining to patient care. Designated project managers, simultaneously trained in problem solving techniques, managed projects according to DMAICL roadmap. Co-workers and managers from local units were involved in the project groups	Success rate of 75% for larger improvement projects. Net average cost savings of € 40,600 per project. Institutionalization of improvement facilitators supporting local improvement initiatives.

			and received training concurrently with the projects as well. Experiences from project processes and results were continuously shared in networks and with top management.	
Paper IV Case 2	SkaS; Project analyses on microsystem level. Results of analysis on meso- and macro-systems level; departments, clinics and processes.	Programme and project managers. Project members, clinical and unit manager Structure for co-generative dialogue. Meeting structures at the emergency ward.	The programme committee together with managers concerned agreed that an analysis would be fruitful. Co-workers and managers associated with the project were involved in the analysis. Results from analyses were integrated into the improvement programme	The addition of 'L' for Learn to the problem solving roadmap of Six Sigma, thus highlighting the importance of learning in improvement efforts. A successful re-take of the initial project.
Paper V Case 2	SkaS; foremost meso- and macro-level; departments, processes, clinics and hospital	Key managers and co-workers involved in process management activities. Interview meetings with external researchers.	Development director decided that an external co-evaluation of process management efforts would be valuable. The design of the evaluation process and analysis of data was jointly carried out with external researchers. Lessons from the analysis were fed back into the process management programme	Process management was considered important for the improvement of care processes, but strong vertical mechanisms regarding the control dimension of the organization, such as budgeting and reimbursement systems were still present in the organization.
Paper VI Reflecti ons on Cases 1 and 2	International forum for quality and safety and SkaS. Individual analyses.	Not applicable	First-person action research using self-ethnography. Interpretation discussed with managers and co-workers for possible	Purposeful insider reflection on and interpretation of ongoing quality improvement initiatives may

			application in succeeding improvement initiatives.	lead to a less normative attitude towards quality management efforts.

Subsequently, analysing the cases and the associated papers from a context-, structure- and process lens, several common themes reappear when successful results are achieved. Without doubt, the *contexts* of both cases are genuinely complex. Evidently, broad participation involving all stakeholders connected to the improvement initiatives is critical. Thus, *structures* for meetings and joint learning involving all the stakeholders are necessary ingredients in large improvement initiatives. In both cases, sustainable improvement initiatives have inevitably involved the micro-, meso- and macro levels of the organizations; meeting arenas and schemes that regularly connect improvement projects to local workplace meetings as well as to unit-, clinic- and hospital structures have been pivotal. Moreover, structures for iterative meetings across the traditional organizational levels are also a distinct theme. Thus, network structures have created arenas where project managers are connected to each other; units are connected to units, managers to managers as well as managers from one clinic to co-workers from another clinic. Processes have also invoked new meeting structures where the traditional hierarchical and bureaucratic parts of the organisation meet managers and co-workers working along the patient pathway.

In Case 1, the context was even more complex involving the connection *between* organizations thus also connecting one level or part of one organization to another level of the other organization. This complexity necessitates structures such as development coalitions, large groups meetings and home-and-away network structures to connect all parts of the system. To ensure broad participation, co-workers from different professions, managers at different levels and from different organizations, project managers and project group members, process managers and process group members as well as politicians, patients, union members, insider- and external researchers have been invited to the meetings to various extents. Thus, broad participation and diversity emerge as a common theme pertaining to the meeting structures in the cases.

The *process* lens on the improvement initiatives exhibits what plans were agreed upon during the meetings and how they were acted on – how they were executed – as well as what was learned from the results of the previous actions and how this affected future plans for action. Subsequently, iterative action-reflection loops are a recurrent theme in the cases.

In Case 1, these loops were made concrete using iterative PDSA-cycles (Plan, Do, Study, Act), albeit on different system levels. From the perspective of the development coalition and its steering group, establishing the coalition, identifying areas of improvement, appointing networks and connecting the entire system could be seen as the planning phase. Encouraging, facilitating and supervising the action of the project networks could be equalled to the doing phase. Assessing the results from the actions during subsequent large group and network meetings could be interpreted as the study phase followed by an action phase where for instance permanent improvement facilitators were appointed to support further improvement initiatives.

From a project network point of view, to map and jointly identify problem areas in need of improvement could be conceived as the planning phase. The joint inquiry to identify causes of the problems and then testing solutions would then constitute the doing phase. These steps were then followed by the spread of successful interventions and joint evaluation in network and project groups meetings, the studying phase. Finally, the acting phase that focused the results of what had been done but more importantly also invited reflection on the action: What went well? What went wrong? What have we learned? What lessons do we bring with us during the next PDSA-cycle? Lessons learned led to new practices and approaches when embarking on new improvement cycles. Similarly, the continuous evolution of the integrated mobile team could be perceived as a PDSA-cycle; designing (planning), testing (doing), establishing (studying) and evaluating (acting) the performance of the team, continuously also striving for reflection in- and on action during the steps.

In Case 2, similar PDSA-cycles inspired the overall programme activities. In the planning phase, the hospital group top management initiated the programme. Critical quality and patient safety problems associated with the care processes were identified and project managers with associated project groups were appointed to address the problems. Network structures were designed to connect managers, project and process groups for joint reflection on project progress. In the doing phase, the projects were carried out following the DMAIC roadmap. Project managers reported to the steering committees on each step of the roadmap. Network meetings encouraged learning between project groups during the process. All co-workers including the project managers received advanced training in problem solving techniques related to the actual project. Results from the projects were assessed regularly. In the studying phase, results from successful projects were spread throughout the organization. Failed projects were analysed to improve the problem solving procedures. In the action

phase, lessons learned from successful and failed projects were integrated into the overall programme to improve future plans for action, for instance the introduction of the DMAICL roadmap into the programme. In other words, 'smaller' iterative PDSA-loops could be seen as superimposed on the 'large' PDSA-loop of the programme to inspire reflection in- and on activities. Overall, the ambition was always to bring lessons learned from previous activities into the next 'small' or large PDSA-loops, thus encouraging a learning spiral.

The PDSA-cycle is also prominent in the first-person action research process inspired by self-ethnography described in paper VI. In the planning phase, the author's interpretation of international, national and local improvement initiatives was carried out. These interpretations were then presented to his co-workers. Drawing from joint reflections on the interpretations, the next quality improvement initiatives were redesigned and subsequently diffused (the doing phase) throughout the organization. Feedback from these initiatives (the study phase) was then evaluated for the further improvement of new initiatives (the action phase), as well as common reflection and learning together with co-workers.

6.2 Action research practices and learning mechanisms in the appended papers

This thesis rests on the viewpoint that individual and organizational learning is a prerequisite for sustainable quality improvement initiatives. Taking this position also assumes that individual learning is necessary for organizational learning. Further, the 4I framework (Intuit, Interpret, Integrate, Institutionalize) proposes how organizational learning takes place, connecting the individual to the group and then the group to the organization. Eventually, new organizational members learn from the organization (Crossan et al. 1999).

Subsequently, dynamic learning processes are vital in larger improvement initiatives, which is why a recurrent theme throughout the cases and associated papers is the focus on the applied action research practices and their connection to different learning mechanisms. Notably, the author has purposefully not adhered to any one, specific AR practice, but instead has embraced the view that AR practices should be adjusted to the problems and the contexts at hand. Learning mechanisms encourage and inspire learning, thus possibly facilitating and accelerating improvement initiatives. As previously mentioned, three main categories of learning mechanisms are defined; cognitive, structural/networking and procedural mechanisms (Shani and Docherty, 2003). To recap, *cognitive mechanisms* are the bearers of

language, concepts, values, symbols, theories and frameworks. They are involved in the common thinking, reasoning and understanding of organizational phenomena and might be explicitly expressed in the values, strategy and policies of the organization. *Structural mechanisms* are inter- and intraorganizational infrastructures that encourage practice-based learning, for instance, networks and processes. Finally, *procedural mechanisms* concern the routines, methods, and tools that support and promote learning. In Table 6-2, an overview is provided that depicts the relation between the various AR practices and methods used in the cases and how they are connected to different learning mechanisms.

Table 6-2 Relations between AR practices/methods and learning mechanisms.

Paper	AR practices and methods	Cognitive learning mechanisms	Structural learning mechanisms	Procedural learning mechanisms
Paper I Case 1	Development coalition and democratic dialogue conferences	New concepts and frameworks were introduced during the dialogue	Coalition and large system meetings connected co-workers and units within and between organizations	The agenda of large group meetings followed a four- step cycle to inspire new conversations and insights
	Process mapping and the sharing of these maps using the 'accordion' principle	New concepts were introduced, for instance a focus on the patient's pathway through the care system	Home-and-away network design connected co-workers and units within and between the three care providers	Process-mapping procedures using iterative PDSA-loops
	Workshops with the development coalition steering group to develop shared vision and goals	New concepts were introduced through the balance scorecard framework	Network learning approach where participants shared progress 'at home' to get feedback on the work from their own organizations Balanced scorecard shared with integrated care system through network activities and large group meetings	Procedures and models for stepwise development of a shared balanced scorecard

Paper II Case 1	Co-generative model for AR. Focus groups and interviews collecting voices from patients, relatives and co-workers in the system	Voices from patients and relatives as well as input from external researchers inspired new directions for the dialogue	Lessons shared with other structures, including development coalition networks, and also acted on between workshops	The steps in the co-generative model were used iteratively between workshops
Paper III Case 2	Larger improvement projects were carried out using the DMAIC (later to be DMAICL) roadmap. All co-workers, including project managers, received training in improvement techniques.	New concepts and theories introduced, for example common cause and assignable cause of variation	Networks for home-and-away learning created for project managers and project groups	A new problem solving procedure – DMAIC(L) – was used in all projects
Paper IV Case 2	Co-generative model for AR. Retake on project using PDSA.	Lessons from the workshops were used to change frameworks and models for improvement	Lessons from analysis shared in network meetings and at different managerial levels.	The steps in the co-generative model were used. A PDSA-procedure was used during project retake
Paper V Case 2	Participative, utilization-based evaluation including interviews with 22 co-workers	Voices from managers and co-workers as well as input from external researchers inspired new directions for the dialogue	Lessons shared in network meetings and at different managerial levels	The established procedure for utilization-based evaluation was used
Paper VI Reflections on Cases 1 and 2	First-person action research using self- and close reading ethnography of grand discourses	Examining one's own and other's grand discourses inspired the questioning of existing theories, frameworks and talks	Lessons shared in network meetings and at different managerial levels were used to refine quality management vocabulary	The hermeneutic circle shifting between the whole and the part and between pre-understanding and understanding

Evidently, the various AR practices are, to a lesser or greater extent, always connected to cognitive, structural and procedural mechanisms. Using AR practices in quality improvement initiatives can thus be perceived as a powerful approach to attain sustainable improvement.

In Case 1, the key structural learning mechanisms were the establishment of a development coalition in which the various parts of the system were connected through large group meetings, home-and-away learning networks and processes. These structures were also associated with the introduction of new values, strategies and goals as well as new procedures and tools to be used in the iterative problem solving cycles. Involving external researchers using a co-generative model of AR added further to new dialogues and possibly new ways of acting.

Similarly, in Case 2, the Six Sigma framework added new theories and frameworks to the organization, especially pertaining to the understanding of the variation concept. The framework included new procedures and tools for quality improvement. Network- and process structures connected the different improvement efforts for enhanced learning.

However, other AR practices invite a *critical perspective* on organizational learning as outlined in Paper VI. In a first-person AR process, a critical perspective on grand narratives and discourses permeating other's as well as the author's approaches to quality improvement are the point of departure. The perspective takes a step back from the notion that someone, for instance the author, can easily design or 'put in' learning mechanisms into various improvement programmes, calmly expecting successful results. Instead, viewing organizations as complex responsive processes (Stacey, 2003), interactions between co-workers (within groups or between groups) can be seen as ongoing conversations where relations continuously are created and create one another. Symbols, body language, emotions but, foremost, what is talked about create patterns that *attract* conversations and subsequent actions in various, often unforeseen, directions – the *attractor*. New conversational patterns might thus attract new actions in new directions. However, in a genuinely cross-professional improvement group thus representing four different worlds (Glouberman and Mintzberg (2001a; 2001b), cure, care, control, and community, initial conversational patterns might seriously diverge, not even attracting joint action. Thus, a complex responsive process perspective inevitably puts the focus on cognitive learning mechanisms.

Although cognitive mechanisms are the bearers of language, concepts, values, symbols, theories and framework, they are often represented as something positive when expressed in the values, strategy and policies of the

organization. Still, cognitive mechanisms may also be implicit, unspoken and represented as artefacts or symbols that prevent or even inhibit the attraction of conversational patterns that encourages learning. In Paper VI, it is argued that grand narratives and discourses of n-step models for quality improvement at times created patterns of talk and action that rendered quality improvements more difficult. The critical examination of these discourses partly inspired a reconstruction of the vocabulary associated with quality improvement thus contributing to the re-creation of more powerful cognitive learning mechanisms.

7 DISCUSSION

7.1 Areas of discussion

The challenges that face the Swedish healthcare system, and subsequently the healthcare systems in Skaraborg, have been the driving force behind the research presented in the thesis. The elderly becoming an increasing proportion of the population together with accelerating medico-technical developments have put increased strain on the healthcare system. Poor quality and patient safety drains the system even more. Simultaneously, the level of available resources to put into the system will probably not increase. However, one proposed solution to these challenges is quality management and improvement. The underlying logic is that continuous improvement involving all parts of the system will increase efficiency, quality and safety, making it possible to deliver "more with less". Thus, quality management ideas have emerged as a possible solution to these challenges, also inspiring the development of a new scientific field – improvement science – where quality management theory, practices and methods are continuously being translated to a healthcare context. However, many reports show that quality improvement in a complex healthcare context is far from easy. On the contrary, many efforts fail, or it is not known whether the initiatives improved quality, safety or efficiency of the care processes.

These challenges have also manifested themselves in the integrated care system in West Skaraborg as well as at the Skaraborg Hospital Group. Despite many years of intensive quality improvement efforts within the Skaraborg care system, healthcare services have still been in need of improvement pertaining to the integration and coordination of care for elderly patients. Other challenges have been to 'improve improvement'; that is, to improve outcomes and the efficiency of various quality and patient safety improvement efforts in the system.

Thus, the research questions of the thesis concern what positive and negative mechanisms for change can be identified in the quality improvement efforts presented in the empirical material? And how can experiences and lessons learned from the cases be added to the conceptual healthcare framework of improvement science?

As is evident from the empirical material, healthcare systems are admittedly complex. The systems involve patients and relatives as well as many stakeholders representing different worlds (for instance the care, cure, control and community perspectives). Added to this complexity, representatives from these worlds have different backgrounds, educational

qualifications, languages etc., as well as different epistemological standpoints. The system also rests on longstanding, hierarchical and bureaucratic linear structures that are increasingly contrasted against the emerging horizontal, supposedly value creating, patient processes and pathways. This developmental trend tends to result in complex organizational matrices at best (see e.g. Paper V).

Although many less complex improvement projects using a set of pre-planned steps probably succeed, larger and more complex interventions tend to fail. Drawing from the empirical material presented in the thesis, it is proposed that other mind-sets beyond the traditional n-step models are more fruitful and provide alternative ways to move forward when attending to improvement interventions in complex systems. The thesis thus suggests a view on healthcare systems as being genuinely complex where interactions between co-workers can be looked upon as continuously ongoing conversations where learning plays a central role to encourage coordinated action. Consequently, learning and shared conversational patterns that lead to fruitful actions can be seen as pivotal mechanisms for change that lead to integrated and useful action.

In particular, five different aspects of the argument will be discussed further here. The first aspect is the issue of how different learning mechanisms and their role as attractors for change in complex responsive processes can encourage alternative views on improvement efforts. Further, some reflections on how to handle the epistemological differences that often emerge in multi-stakeholder improvement efforts will be discussed. Attention will also be paid to how AR practices and their associated theories may help us go beyond traditional step-for-step models in improvement initiatives. In addition, the design of the development coalition in West Skaraborg and how the coalition constituted a necessary platform for the establishment of the integrated mobile team will be elucidated. The importance of different value logics as well as views on team composition during the design and establishment phases were key parts of this initiative. Finally, the chapter concludes with some reflections on the importance of taking variation into account in improvement projects.

7.1.1 Learning mechanisms and complex responsive processes

In the continuously expanding field of improvement science, the linkage between professional and improvement knowledge has been a pivotal ingredient (Batalden and Stoltz, 1993). Deming's (1994; 1986) concept of profound knowledge, involving knowledge of variation, systems, psychology and 'knowledge', has been and is still an important inspirational source for

the further evolution of the field. Still, there has been a need for theoretical additions to Deming's conception of systems in a healthcare context as well as to the psychological and learning mechanisms that underpin large-scale quality improvement initiatives. In this respect, clinical microsystems theory, connecting the clinical microsystems to the surrounding meso- and macro-systems in complex healthcare systems, has added further to the understanding of these mechanisms. This framework, rigorously developed from large studies of successful microsystems (Nelson et al., 2007; Mohr and Donaldson, 2000), gives important directions for the design, development, management and continuous improvement of high-performing microsystems in their surrounding meso- and macro-systems. Further, the framework gives key insights regarding the planning of patient-centred care, models for improving patient safety, practices and tools for continuous improvement and models for the development of a rich information environment to mention a few examples (Nelson et al., 2007). In similar vein, Batalden and Davidoff (2007) suggest a view on healthcare as processes within systems, where knowledge of variation and knowledge of the customer from a multitude of perspectives are key interest domains in improvement science. Further, how to lead, follow and make changes in iterative PDSA-cycles and to collaborate with teams to promote learning and manage conflict are other important principles. Several tools and methods are also associated with these domains of interests.

As previously described, the author has had the role of an inside action researcher in the two cases, acting as project manager in Case 1 and as development director in Case 2 and in Paper VI. A large part of being a project manager or development director involves the joint design of step-for-step plans (n-step plans) with the underlying expectation that these pre-planned steps will be carried out at least to some extent. Indeed, it is the author's belief that such plans are very important components of everyday organizational life. There will always be a need to jointly agree on plans for common action, not least to relieve anxiety and to create a feeling of common consent concerning the direction of future actions. In both cases described in the thesis, such plans have been pivotal ingredients, to a large extent inspired by the above-mentioned principles and tools associated with improvement science. For instance, in Case 1, a detailed plan for process mapping of the patient pathway was used, where the results were shared with the surrounding meso- and macro systems. Moreover, the process of designing, developing, testing and evaluating the integrated mobile team in West Skaraborg were mainly inspired by principles and tools from clinical microsystems theory. In Case 2, the initial plans for the Six Sigma programme rested heavily on detailed n-step models adopted from an industrial context. Major emphasis was also put on measurements and knowledge of variation to improve care processes.

Subsequently, in many cases the plans and action described in the thesis have been successful in a very straightforward way. Thus, the purpose is not at all to abandon easy-to-follow steps for successful action. On the contrary, most quality improvement initiatives always start with a joint plan for action. However, in many cases the initial plans are *not* successful, as also widely testified in the literature (Anell and Mattisson, 2009; Norbäck and Targama, 2009; Olsson et al., 2003; Thor, 2007; Åhgren, 2003; Øvretveit, 2009, 1997). The ambition of the thesis is to suggest ways to reflect on and understand these particular situations thus adding to a repertoire of *alternative actions*, instead of immediately embarking on yet another n-step plan. One obvious alternative is to genuinely and transparently analyse projects that fail (as described in Paper IV). Such analyses may involve many co-workers and managers for joint reflection on current improvement practices, as well as contribute to the improvement of current problem solving processes in use all over the organization.

Additionally, ideas from AR practices have been a key ingredient in the cases of the thesis, especially pertaining to the 'meta-exploration' of initially unsuccessful plans for the development of alternative plans and action. It is argued that AR practices with associated theories of learning and systems can provide fruitful additions to the continuously expanding field of improvement science.

From an AR point of view, taking one step beyond the direct examination of current plans and actions inspired by n-step recipes implies a meta-inspired reflection (Coghlan and Brannick, 2010) where the ambition is to evoke double-loop learning to develop action plans of another order. Instead of directly analysing how concrete plans are designed and carried out, it is suggested here that it is more fruitful to focus on the dynamic learning processes involved (Crossan et al., 1999), as well as whether symbols and interaction attract conversational patterns in new directions to prompt new actions (Stacey, 2003). The focus can instead be put on organization learning as a prerequisite for successful improvement; how individual learning can be understood (Docherty, 1996) as well as how learning between individual-group-organisation-individual is portrayed (Crossan et al., 1999; Docherty, 1996). Another key aspect is how such learning can be encouraged through various learning mechanisms.

Drawing from the 4I framework suggested by Crossan et al. (1999), the addition of learning mechanisms to the framework can give new ideas about alternative actions in the system. The 4I model can be perceived as a cycle, as in Figure 7-1.
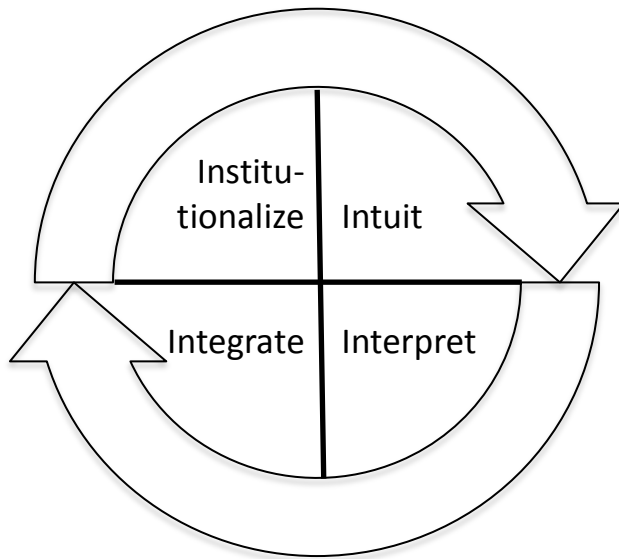
Figure 7-1. A simplified image of the 4I framework (adapted from Crossan et al. 1999).

Subsequently, incorporating different learning mechanisms to the steps of the model brings forward more perspectives on the learning processes involved in the quality improvement initiatives. In Table 7-1, the various learning mechanisms are added to the different levels of the framework.

Table 7-1 Cognitive, structural and procedural mechanisms added to the 4 I model

Process	Level	Inputs and outcomes	Learning mechanisms
Intuiting: the pre-conscious recognition of the pattern and/or possibilities inherent in a personal stream of experience. This is in essence an individual level activity	Individual (or small group)	Experiences Ideas Images Metaphors Insights	Cognitive mechanisms inspiring new images and symbols that lead to new insights
Interpreting: the process of developing and feeding forward shared understanding among individuals. This occurs as individuals interact with others in	Individual (or small group) to group	Language Verbal explanation of idea Conversation Dialogue/ Understanding	Cognitive mechanisms to develop common interpretations of ideas Structural mechanisms to connect individuals to groups, groups to groups

small groups.			
Integrating: the process of developing and feeding forward shared understanding among individuals to enable coordinated action. Shared understanding develops within groups and is then fed forward to the system level.	Group to system	Shared understandings Clarity of implementation Move to action Routines	Same as above but also procedural mechanisms to iteratively encourage movement between action and reflection
Institutionalizing: the process of translating the new understandings to become part of the system's routines and/or standard operating procedures. This entails a process of feedback of new understandings and actions to individuals.	System to individual	Procedures for implementation Self-evaluation Reflection	All three mechanisms as laid out above, where the procedural mechanism could be seen as an iterative loop connecting all the four I's

Thus, *cognitive mechanisms,* being bearers of language, concepts, symbols, theories and frameworks, can be of value during all the steps. The mechanism implies that deliberately introducing new vocabularies and ways of looking upon and understanding the world leads to new insights and interpretations informing integrated action in possibly new and fruitful directions. *Structural mechanis*ms give ideas about how to sustainably connect individuals and groups in- and across organizations using inter- and intraorganizational infrastructures that encourage practice-based learning, Finally, *procedural mechanisms* inspire iterative learning cycles in all parts of the model.

Crossan et al. (2011, 1999) as well as Lawrence et al. (2005) suggest that politics and power dimensions of the organizations may encourage patterns of conversations that do not invite learning followed by useful actions. For instance, Crossan et al. (1999) pay special attention to the steps from interpretation to integration, as well as how institutionalized understandings, standards and unspoken mental models affect a new co-worker. Thus a

more critical perspective on learning mechanisms is called for. Superimposing a complex responsive process view to the framework, what is talked about or written – a cognitive perspective – might enhance the understanding of patterns that attract conversations and subsequent actions in possibly unwanted directions (Stacey, 2003). Subsequently, discourses that invite conversational patterns of critique and resistance to existing plans attract actions that inhibit organizational learning, rendering the movement from interpretation to integration more difficult. What is talked about, and how it is talked about is thus of utmost importance. However, talk inspired by a patient's perspective can be a potent attractor for the conversational patterns that emerge (Hellström et al., 2013), even inspiring joint action. For instance, in the case of patient pathways (Paper I), the Örjan group and its connected networks, where representatives from the 'four different worlds' participated (Glouberman and Mintzberg, 2001a), the group met several times to agree on common values to focus on the patient's needs during the subsequent conversations and actions. Adopting a complex process view on learning encourages a more reflexive perspective where attention is put on what is talked about regarding quality improvement, and also how it is talked about. A joint development of conversational patterns of quality improvement and subsequent actions in the organization are possibly a fruitful way forward.

Subsequently, such a perspective also suggests that healthcare organizations should abandon the tendency to adhere to a particular quality improvement package in the never-ending echelon of new quality management programmes (for instance 'TQM', 'Six Sigma', 'Lean', 'Lean Six Sigma', 'Value-based healthcare delivery' to mention but a few of the proposed 'one and only' salvations to cope with healthcare challenges). Instead, it is suggested that the framework proposed by Dean and Bowen (1994) – principles, practices and tools – allows an additive approach to quality improvement, where the organization may continuously add new theories and practices (if needed) to refine its capacity to solve problems in the core processes related to the patient. This approach also avoids the grand narratives and discourses always associated with the packages, instead inviting co-workers in the joint development of conversational patterns pertaining to the quality improvement initiatives that continuously evolve in the organization.

In sum, it is thus argued that AR practices with associated theories of learning and complex responsive processes might add to the current understanding of dynamic organizational learning processes. Further, it is argued that these aspects can be of use for the further development of principles and tools pertaining to the framework of improvement science as portrayed above.

7.1.2 An epistemological perspective

Perla et al. (2013) as well as Berwick (2008) and Batalden and Davidoff (2007) highlight the epistemological challenges pertaining to improvement science. Perla et al. (2013) stress the importance of learning cycles for the development of actionable knowledge, thus bringing forward the strong connection to conceptualistic pragmatism (Lewis, 1929). Berwick also advocates a pragmatic approach where iterative PDSA-loops for continuous improvement play a central role and where the objectivist view on knowledge production in social systems is played down in favour of what co-workers and managers instead can learn about what is happening and how the system can be improved. Batalden and Davidoff (2007) argue that the connection of different knowledge systems is vital for successful quality improvement, also providing a formula depicting how these knowledge systems can be connected.

Evidently, some of the challenges facing the further development of improvement science concern epistemological issues. A recurrent theme is that advocates of the traditional natural scientific paradigm question the rigour and validity of research on social systems change (Berwick, 2008). Subsequently, an important question is how the co-creation of actionable knowledge can be appreciated as valid and transferrable to other contexts and systems in healthcare.

Drawing from the insider action research experiences of the author, these challenges are certainly prevalent in everyday improvement initiatives as well. Often, representatives from the four worlds of the '4 C's are involved in various healthcare improvement projects, representing truly different views on what is evidence or not; actually, what is true or not. Even worse, the different views on what is relevant knowledge may stand in the way of the development of a high-performing clinical microsystem. Obviously, these questions are of utmost importance from the perspective of a project manager or a development director. But, once again displaying the ambiguity of different insider AR roles, the author has repetitively been discouraged from bringing up epistemological issues in the research community: "*…it is committing suicide to engage yourself in such discussions…*", or "*…this is very difficult theory, it is a minefield*", or "*…it seems very pretentious to bring it up…*", or "*…your attempts will only be ridiculed…*" (field notes, author's diary).

However, as a development director, these issues must be addressed to cope with the challenges permeating most improvement projects, whether doing so is pretentious or not. The author has also been somewhat encouraged by the recommendations of C I Lewis (1929) that everyone should be his (or her) own philosopher. Accordingly, a practical framework has been

developed, connecting the iterative action-reflection loops inherent in all improvement efforts with the tri-lateral truth concept. The argument is that all three truths are indeed needed during the efforts, or even "…*the patient needs all truths…*" as expressed by the author during a multi-stakeholder improvement workshop where epistemological indifferences had arisen (field notes, author's diary). The first point of departure is the close connection between the action-reflection loops proposed by Lewin, the PDSA-cycle proposed by Deming (inspired by Lewis) and the problem solving roadmap of Six Sigma. The loops can be considered as three (sic.) different sides of the same coin as illustrated in Figure 7-2.
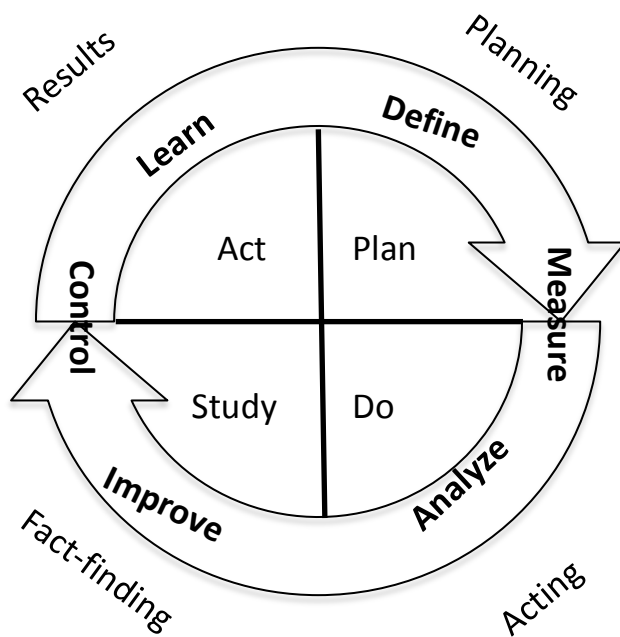
Figure 7-2. Different types of action-reflection cycles superimposed on one-another.

In the tri-lateral truth concept, truth as correspondence (C) claims that the degree of truth depends on to what extent a statement corresponds to the phenomenon in question (the deep structure). Truth as meaning (M) refers to what a statement really means, the discovery of a more profound meaning or purpose, for instance the significance of a phenomenon. Finally, in the pragmatic truth concept (P), the focus is on the usefulness of bringing about improvement for social communities. Using the DMAICL roadmap as a template for the discussion, the D-phase contains elements of M and C. That is, to inquire into what a phenomenon really means, why it is significant, how we can understand it and why we should improve it (M), as well as, as in the control phase – how good or bad is it? How do we understand the meaning of the system being improved (M)? Can it be

measured before, during and after repetitive loops of actions/interventions (C)? How do we know that a change is an improvement (C)? The M- and A-phases, looking for and determining causes of a problem, make use of the combination of M, C and P. What causes of the problem can be detected (M, C and P) in the system? Do we know enough of a cause to take action with the ambition to improve the system (U), the I-phase? Did it get better; the C-phase (C)? Finally, what can we together jointly learn from the efforts so far being carried out? How can we bring this knowledge with us during the next cycle, the L-phase (M, P)? Evidently, it is utterly impossible to go full cycle through an action-reflection loop without involving all three perspectives.

Drawing from the author's experiences, many improvement groups sometimes run into difficulties when embarking on important activities that lay before them. There can of course be many explanations for this. There may for instance be difficulties on agreeing a joint purpose for the group activities, or there may even be personal conflicts that obstruct the performance of the group. However, in some cases the conflict is on the epistemological level, and is not uncommonly also unconscious or unspoken due to the fact that these things are not easy to speak about. The practical framework presented above has proved to be a useful tool for a more informed dialogue in those situations, sometimes even resolving the conflicts at hand thus giving the group a chance to progress with its improvement project.

7.1.3 AR practices

Drawing from the empirical material it is also suggested that different AR practices may be a valuable addition to the theories as well as to the practices proposed in the framework of improvement science. As previously articulated, the author has purposefully avoided connecting himself to a certain AR practice (Bradbury and Reason, 2008), instead choosing the most appropriate practice depending on the problems at hand. Thus, all the practices in the vast repertoire of AR are available, making it possible to adapt the method to suit the problem instead of reconstructing the problem to suit a particular approach.

The approaches informing AR practices have thus been a key ingredient in the empirical material underlying the thesis, especially pertaining to the 'meta-exploration' of initially unsuccessful plans for the development of alternative plans and action. Although every AR practice is associated with the explicit action-reflection cycles inherent in any improvement project (for instance the PDSA- or the DMAIC- loop), AR practices also invite 'meta-reflection', especially if the initial pre-planned steps of the project failed. Thus, AR practices always encourage a reflection on the dynamic learning

processes and conversational patterns beneath the explicit patterns of an improvement effort, eventually contributing to the evolution of more fruitful plans for further action.

First-person AR practices also invite a purposefully critical perspective on improvement initiatives not frequently encountered in the practices associated with improvement science (Paper VI). It is suggested that self- and close-up ethnography may be an alternative regarding a first-person AR perspective when critically examining improvement activities and associated discourses going on in an organization to develop alternative plans for improvement efforts.

7.1.4 Improving integrated care

In Case 1, the development of integrated care in West Skaraborg contains several features that deserve further examination. As previously stated, few improvement initiatives pertaining to integrated care of the elderly show sustainable results from a patient perspective. However, experiences from this particular case shows that a long-term process that involves all the critical stakeholders in a development coalition across organizations, organisational levels and across different professions is a necessary platform from which further initiatives can be developed. Cognitive, procedural, structural and networking learning mechanisms inherent in AR practices are important ingredients in developing such a learning platform. The case also illustrates the importance of developing a vision, goals and strategies – a cognitive learning mechanism – connected to this very platform. The vision, goals and strategies may attract conversational patterns in desirable directions eventually inspiring useful action from a patient perspective. Thus, the development coalition constituted a vital platform for the further improvement activities in West Skaraborg.

One of these activities concerned the development of a mobile team that sought to improve integrated care for elderly patients with multiple diseases. Exploring the process of establishing the team, it is argued that sustainable care models for the elderly with multiple diseases can develop when combining key features from models of value logics, clinical microsystems and theories on different team compositions. Adhering to different care logics seems pivotal when establishing a clinical microsystem responsible for the care of elderly patients with chronic conditions. Moreover, in order to manage different logics, the team members must work in a complementary manner thus drawing from theories of different team compositions. Further, through a continuous dialogue with critical stakeholders and co-workers in the surrounding meso-and macro systems, a mobile and flexible team can coordinate already existing care resources in the surrounding system for the stabilization of patients with multiple diseases. Eventually, the model makes

it possible for the team to withdraw from the actual care situation, instead offering services to other patients in more need of the services provided by the team. The shop-, stream- and network models can also be used to understand the development of the team itself. Through networks entailing the entire macro-system, knowledge sharing and resource mobilization was possible. The subsequent design, test, implementation and evaluation of the care model could be perceived as an improvement value stream process itself. Dialogue meetings, with or without the patients, most often included personnel from the three care providers using a shop logic.

7.1.5 A variation perspective on improvement projects

In Case 2, the study shows that the addition of Six Sigma on a large scale is useful and may lead to significant results from a patient's perspective when improving healthcare processes. Moreover, the approach can also be cost-effective and lead to quality- as well as patient safety improvements. Connecting to the framework of improvement science, the programme is an example of how knowledge of variation can be applied to an operational context. Indeed, experiences from the programme reveal that much variation can be found in the individual patient variation over time. Therefore, manufacturing-influenced Six Sigma programmes are not quite enough to cope with the complexities inherent in a healthcare context. During such circumstances, the individual patient process also has to be modelled and individual solutions looked for. Successfully applying Six Sigma's DMAIC roadmap to care processes thus requires detecting and reducing between-group variations, within-group variations as well as the individual patient variation over time. Other experiences reveal that longer project timetables seem necessary to reach tangible results from a patient's perspective. Moreover, elementary quality tools are most often sufficient to reach project goals.

8 CONCLUSIONS AND CONTRIBUTION

The purpose of this thesis is to explore what positive and negative mechanisms for change can be identified in the various quality improvement efforts accounted for in the empirical material, as well as to portray how experiences from the cases can be added to the conceptual healthcare framework of improvement science with its associated practices and tools. The ambition is thus to enhance our understanding of change processes in a complex healthcare context, looking beyond the traditional n-step models with associated methods and tools for quality improvement.

In this section, drawing from the discussions in the previous section, conclusions and suggested contributions from the thesis will be presented from theoretical, methodological and practical perspectives, although overlaps between these perspectives are unavoidable. An overview of the conclusions and contributions is displayed in Table 8-1.

Table 8-1 Conclusions and contributions in different research fields pertaining to theory, methods and practices.

	Research field	Conclusion	Contribution	Papers
Theory	Learning mechanisms and complex responsive processes/improvement science	Learning mechanisms add to action repertoires in improvement efforts but are also necessary components in large system interventions	AR practices with associated theories of learning and complex responsive processes add to the current understanding of dynamic organizational learning processes in complex systems	I-IV
	Improvement science/AR epistemology	Superimposing tri-lateral truth concepts on action-reflection cycles inspires meta-reflection on improvement initiatives	The concept adds one further argument to the epistemological debate	I-IV
	Improvement science/clinical microsystems theory	Different value logics are pivotal ingredients in the design and improvement of integrated care Value logics can also be used in the establishment of	Team composition theories and theories on different value logics contribute to the current understanding of clinical microsystem	II

		microsystems		
		Different clinical microsystems should take into account the mission of the system for most effective role composition		
	Healthcare process management/ Improvement science	There are strong vertical mechanisms regarding the control dimension of hospital organizations as well as regarding specialization. These structures compete with horizontal patient care processes increasing system complexity	Strong vertical structures compete with horizontal patient care processes. Accordingly a matrix image of healthcare organizations is suggested as an additional perspective	V
Methods	AR	Self-ethnography can be used as a first-person research practice Purposefully avoiding adherence to a particular AR practice increases actionable flexibility	Contributes to the continuous development of first-, second and third person practices	I-VI
	Improvement science	An additional 'L' to the DMAIC roadmap elucidates the importance of learning and reflection Variation is inherent at more levels in care processes compared to industrial processes	Contributes to practices in improvement science regarding iterative PDSA-loops in which the perception of variation as well as learning are important	III, IV
Practices	Improvement science	AR practices are useful approaches in improvement initiatives, adding learning mechanisms as well as a more reflexive perspective to quality improvement	Various AR practices contribute to approaches, methods and tools in improvement science	I-VI

		practices and discourses		
	Improvement science/integrated elderly care	Development coalitions connecting all parts of the system through various learning mechanisms and a long-term approach are necessary components for sustainable development Such platforms are also vital for the support of more particular interventions in the system, e.g. the establishment of an integrated mobile team	Contributes to practices pertaining to large system change initiatives in improvement science	I, II
	Improvement science/hospital care	The addition of Six Sigma practices on a large scale is useful and may lead to significant improvements regarding quality and safety from a patient's perspective and is also cost-effective, thus enhancing efficiency	Operationalizes knowledge of variation into improvement programmes and projects	III, IV

Evidently, theoretical, methodological and practical conclusions and contributions overlap, which indeed is the purpose of action research. Or, in the words of Kurt Lewin "…there is nothing as practical as a good theory…".

8.1.1 Theoretical conclusions and contributions with some practical applications

As depicted in Table 8-1, it is concluded that theories of learning mechanisms and complex responsive processes are valuable approaches when initial n-step plans fail. Instead of directly analysing how concrete plans are designed and carried out, it is equally important to focus on the dynamic learning processes involved as well as how new symbols and talk

may attract conversational patterns in new directions and subsequently prompt new actions. AR practices entail such a focus where organizational learning is considered a prerequisite for successful improvement. This meta-exploration invites new mental models and possibly actions of another order in the next action-reflection cycle. Further, it is concluded that cognitive, structural/networking and procedural learning mechanisms are vital ingredients in the improvement initiatives of complex large healthcare systems, connecting all parts of the system as well as supporting learning and action through new discourses, frameworks and concepts, procedures and tools.

The empirical material presented in the cases provides practical applications of these theories, where developmental learning coalitions and networks were designed to facilitate the quality improvement initiatives in the integrated care system as well as at SkaS. New visions, goals, models and procedures were also key parts of the system. Further, it is also proposed that sustainable learning networks and coalitions not only have increased capacity for organisational learning and change, the readiness for future interventions is probably also enhanced as well. Theoretically, the thesis contributes by suggesting that learning mechanisms and ideas from complex responsive process theory may be superimposed on the '4I' model for organizational learning. Combining these frameworks adds to the further theorization on how organizational learning can be facilitated and also gives insights to why conversational patterns may attract subsequent actions in various directions, not least in unwanted directions.

Epistemologically, the thesis contributes with a model for further dialogue about truth and evidence in iterative action-reflection cycles. It is concluded that a model where the tri-lateral truth concept is added to the action-reflection cycle inspires meta-reflection in improvement groups, especially when many different stakeholders are involved.

The thesis also makes contributions to clinical microsystems theory, adding insights from team composition theories and theories on different value logics to the current theoretical framework of clinical microsystems. The combination of frameworks adds to further theory building and dialogues on team compositions and the modus operandi of microsystems depending on mission, context and role. In this particular case concerning the integrated mobile team in West Skaraborg, it is concluded that the role-complementary design of the team and the use of all three value logics were of great importance in the improvement of integrated care for multi-diseased elderly patients.

Drawing from the empirical material, it is evident that specialization

continues to be one of the cornerstones of healthcare organizations. However, the thesis concludes that an accelerating process management approach also implies that processes must co-exist with the functional, vertical structures in healthcare systems. This in effect implies the onset of a matrix structure, which increases complexity and might even present barriers to new ways of working. These insights inspire further theory building regarding matrices in healthcare organizations.

8.1.2 Methodological conclusions and contributions

In the thesis, it is concluded that purposefully adapting various AR practices to the context and problem at hand is flexible and increases the actionable repertoire, allowing for many possibilities of action and reflection during an insider research project. The approach contributes to the continuously expanding field of AR methods, thus suggesting a flexible 'AR practice of AR practices'. Further, first-person AR in the form of self- and close-up ethnography enhances self-reflexivity thus inspiring double-loop learning for actions in new directions. The approach adds to the current methods for first person AR.

Introducing the DMAIC-cycle in a healthcare context emphasises the importance of taking variation into account in improvement initiatives. However, adding 'L' for Learning to the DMAIC(L) roadmap highlights the importance of learning and reflection, thus providing more balance the already prominent technical perspectives of the roadmap.

8.1.3 Practical conclusions and contributions

The quality improvement initiatives described throughout the empirical material of the thesis have all been informed by AR practices. The vast repertoire of AR practices provide a valuable contribution to the methods and tools of improvement science, inviting multi-level reflection as well as putting a prominent focus on the learning aspects of improvement. Simultaneously, these practices add useful methods and tools to large system transformation initiatives. Some of these practices include development coalitions, learning mechanisms and large systems meetings as well as co-generative dialogues and co-participative evaluations together with external researchers.

Adding knowledge of variation to the improvement practices on a large scale in a healthcare organization, for instance in the form of Six Sigma, is useful and may lead to significant improvements regarding quality and safety from a patient's perspective. It also draws attention to the financial aspects of improvement and can thus show that quality improvement efforts indeed can enhance efficiency in care processes.

It is also concluded that the framework proposed by Dean and Bowen (1994) – principles, practices and tools – provides for an additive approach to refine quality improvement initiatives in an organization, at least for a development director. Using the framework makes it easier to avoid adhering to the latest quality management package or fad. Instead, already existing principles, practices and tools can be incrementally improved and refined using a continuous long-term approach that also invites all co-workers to participate in continuously building the improvement capacity of the organization.

9 DIRECTIONS FOR FUTURE RESEARCH

The ever-increasing demands on healthcare systems require further research on key mechanisms for complex systems transformation, as well as research to understand how organizations can both maintain and continuously enhance their capacity to improve. The field of improvement science with its expanding knowledge domains associated with principles, methods and tools is an excellent platform for further research initiatives. A continued focus on the basic domains of profound knowledge; knowledge of systems, psychology, variation, and 'knowledge', are of course vital perspectives in these further research initiatives as well. Simultaneously, more connections to other relevant knowledge fields for joint research efforts, for instance epidemiology, translation science and implementation science to mention a few, are other potentially fruitful development paths.

Likewise, a more pronounced sustainability research perspective might be a valuable addition to these endeavours. The sustainability of systems entails social/human, economic and ecological dimensions. Thus, healthcare transformation must be sustainable entailing regenerative workplace conditions that invite reflection, development and motivation. Simultaneously, the waste put into the stratosphere while operations are continuously improved for increased efficiency are other important dimensions that must be focused on much more. Another important sustainability metaphor is the 'upstream' approach, that is, to attend to situations before problems arise thus eliminating waste from all dimensions. Such a research focus invites even more initiatives regarding health promotion and disease prevention efforts in the system. Research inspired by a sustainability frame would also explore the 'how-aspect' of sustainability; that is, how healthcare systems can increase their adaptive capacity including a balance between what is institutionalized (exploited) against what new innovations are introduced in the system (explored). The attention here would for example be a further focus on organizational learning and learning mechanisms in complex responsive processes, for example where institutionalization meets intuition. Further, collaboration between developed and developing countries would certainly accelerate learning and value for all parties regarding these issues.

The patient dimension is also becoming increasingly important, where for instance patients participate in improvement efforts in so called experienced based co-design projects. However, more research is needed to attend to the power asymmetries inherent in many parts of the system. Patient empowerment, person-centred care, self-management and health literacy are

research areas that are already attracting a great deal of attention and will continue to expand, and where an even closer connection to improvement science can be of great value. Moreover, the patient is a potent attractor for healthcare systems change, potentially attracting all stakeholders in a common direction. Important future research areas could thus be to invite patients into further improvement activities to co-create services together with co-workers, as well as to take part in the management structures and in the knowledge production of the healthcare system.

As presented in the thesis, there are striking similarities between the fields of action research and improvement science. A further integration of these fields including future joint research efforts would probably contribute to the common development of theories, methods and practices of value for both fields. In the thesis, the focus has been on the contribution of AR practices to improvement science. However, it is the author's conviction that the other direction is equally interesting: How can knowledge from improvement science and quality management theory contribute to AR theory and practices?

More attention is also necessary pertaining to epistemological issues. There are still epistemological disputes that slow down the development pace of healthcare systems. Research leading to more concordant views among various stakeholders on issues regarding evidence-based practices, as well as on what constitutes significant, valid and transferrable knowledge on healthcare transformation is encouraged.

In addition, there is still an urgent need to explore how to create sustainable care systems for patients with chronic diseases, regardless of age. It is probably fair to say that process value stream logics, for instance process (value stream) theories, have dominated the field to the detriment of shop and network logics, the two latter probably having more potential to contribute to this particular research area. These latter logics might also provide important insights on how to create an 'upstream' approach regarding health promotion and disease prevention.

More research attention is also recommended on how knowledge of variation can be used to facilitate various improvement efforts in healthcare. One particular area of interest is how care processes can be monitored, especially pertaining to critical care outcomes in real-time to promote rapid intervention thereby removing unwanted assignable causes of variation immediately instead of waiting for accumulated data. In the same vein, it is suggested that more research on the patient's individual variation over time in order to customize interventions and treatments is a hitherto, to a large extent, unexplored field with considerable future potential.

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