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## **COGNITIVE CHANGE: AN EMPIRICAL STUDY IN THE PULP AND PAPER INDUSTRY**

Thesis submitted in partial fulfillment of the requirements for the degree of Master of  
Science in Technology

Espoo December 5, 2006

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Subject of the thesis: Cognitive Change: An Empirical Study in the Pulp and Paper Industry		
Number of pages: 116 + 5	Date: December 5, 2006	Library location: TU
Professorship: Strategy and international business		Code of professorship: 91
Supervisor: Professor Juha-Antti Lamberg		
Instructor: Professor Juha-Antti Lamberg		
<p>This study researches change in managerial cognitions over time. Lately there has been a growing interest in the cognitive view of strategy within the strategic management literature. This view considers the inability to adjust cognitions to environmental changes to be a major factor explaining the demise of organizations. There have been some studies considering how this change takes place, yet none has observed the cognitions of a single organization in the long term, and thus there has not been any study of the persistence of cognitive concepts. This study contributes to the body of knowledge by filling this gap.</p> <p>Using case study method this thesis creates four snapshots of the cognitions of the top management of Finnish pulp and paper company Enso Gutzeit Oy. Each map portrays a different era during the mandate of three different CEOs. The result of each case is one or more cognitive maps describing the causal interdependencies between different concepts in the managers' belief systems. These are created by conducting a meticulous and extensive documentary analysis. To better understand the map and to be able to tie the strategic actions to them, interviews are also conducted with key managers from different eras. The final results are then derived from cross-case analysis, which examines the differences and similarities between the maps.</p> <p>The most significant finding of this study is that managerial cognitions are very persistent. Despite the change of CEOs the business model of the company has changed surprisingly little over the last 40 years. This stems probably from the fact that they were recruited from within the same company. The mental models of the managers are adjusted only when some external event threatens the survival of the company. Closely related to this is another significant finding that the major threat that motivated a significant cognitive change was that posed by globalization. The story of Enso's internationalization is interesting to the research community as there are likely to be many companies whose existence is threatened by globalization. The shift from a local to a global mindset is first and foremost a cognitive adjustment.</p>		
Keywords: Cognition, Mental model, Cognitive change		Publishing language: English

Tekijä: Taneli Vaskelainen		
Työn aihe: Kognitiivinen muutos: empiirinen tutkimus sellu- ja paperiteollisuudessa		
Sivumäärä: 116 + 5	Päiväys: 5.12.2006	Työn sijainti: TU
Professori: Strategia ja Kansainvälinen Liiketoiminta		Koodi: 91
Työn valvoja: Professori Juha-Antti Lamberg		
Työn ohjaaja: Professori Juha-Antti Lamberg		
<p>Tämä tutkimus tarkastelee johdon kognitioita ajassa. Viime aikoina liikkeenjohtoa käsittelevät julkaisut ovat osoittaneet kasvavaa kiinnostusta strategian kognitiivisia näkökohtia kohtaan. Kyvyttömyyttä mukauttaa kognitiot ympäristön muutoksiin on pidetty merkittävänä tekijänä monen yrityksen lopettamiseen. Jonkin verran on tehty tutkimusta siitä, miten tämä muutos tapahtuu, mutta mikään tähän astisista tutkimuksista ei ole tarkastellut yksittäistä organisaatiota pitkällä aikavälillä. Näin ollen kognitioiden säilyvyydestä on vähänlaisesti tietoa. Tämän työn ensisijainen kontribuutio on tämän aukon täyttäminen.</p> <p>Tässä tutkimuksessa luodaan tapaustutkimusmenetelmää käyttäen neljä tilannekuvaa ylimmän johdon kognitioista Enso Gutzeit Oy:ssä, joka on suomalainen sellu- ja paperiteollisuusyritys. Kuvat ovat eri aikakausilta ja ne sijoittuvat kolmen eri toimitusjohtajan valtakauten. Jokaisen tapaustutkimuksen tulos on yksi tai useampi kartta, joka kuvailee kausaaliset riippuvuussuhteet eri käsitteiden välillä johtajien maailmankuvassa. Tulokset syntyvät laajasta ja huolellisesta dokumenttianalyysistä. Jotta karttoja voidaan ymmärtää paremmin ja jotta ne voidaan sitoa strategisiin toimiin, jokaisessa tapaustutkimuksessa tehdään haastatteluja aikakauden avainjohtajille. Lopulliset tulokset saadaan vertailevasta analyysistä, joka tarkastelee erilaisuuksia ja yhtäläisyyksiä karttojen välillä.</p> <p>Tutkimuksen tärkein havainto on se, että johdon kognitiot ovat hyvin kestäviä. Tutkitun yrityksen liiketoimintamalli ja johtajien käsitys maailmasta on muuttunut melko vähän viimeisen 40 vuoden aikana. Toimitusjohtajan vaihdos vaikuttaa kognitioihin yllättävän vähän, mikä johtuu todennäköisesti siitä, että Ensossa toimitusjohtaja valittiin yrityksen omasta henkilöstöstä. Johdon kognitiot muokkautuvat ainoastaan silloin, kun joku merkittävä ulkoinen muutos uhkaa yrityksen olemassaoloa. Tähän liittyy tutkimuksen toinen merkittävä havainto: globalisaation mukanaan tuomat uhat ovat ainoa asia, mikä on pystynyt muokkaamaan kognitioita merkittävästi. Enson kansainvälistymiskehitys on kiinnostava tutkimusyhteisölle, koska on hyvin todennäköisesti olemassa useita yrityksiä, joiden olemassaolo on uhattuna globalisaatiosta johtuen. Perspektiivin nostaminen paikalliselta tasolta globaalille on ennen muuta kognitiivinen muutos.</p>		
Avainsanat: kognitio, mentaalinen malli, kognitiivinen muutos		Julkaisukieli: englanti

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## **FOREWORD**

As I started my studies here at TKK about seven years ago in the Physics department, I would never have thought that I would make a thesis about cognitions. Yet after a slight hesitation I eagerly took up the challenge when it was suggested that this would be an interesting area to work on. Indeed the past months that I have researched the subject have been intriguing and educational. Now that the work is finished, I want to express my gratitude to the people who have helped me during the process.

First and foremost I want to thank my supervisor and director Juha-Antti Lamberg. His highly proficient guidance has led me through the wilderness of managerial cognitions and given me an understanding of the ways of science. Because of him the work has not only been educational, it has also been fun.

Secondly I am thankful for the people at Stora-Enso who have helpfully given me information about the company and contact information of potential interviewees. I specifically want to thank two people that I interviewed, Mr Pentti Salmi and Mr Esko Mäkeläinen, who provided invaluable information about the dynamics of the forest industry. The members of Glostra-project also deserve credit for the valuable input that they have given me.

I am also grateful to all my friends, who have given me words of encouragement when I have suffered anxiety over my thesis. Finally I want to thank my parents, who have been a source of constant support throughout my life.

Taneli Vaskelainen

Espoo, Finland, December 2006

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# TABLE OF CONTENTS

<b>PART I.....</b>	<b>1</b>
<b>1 INTRODUCTION.....</b>	<b>1</b>
1.1 BACKGROUND.....	1
1.2 RESEARCH PROBLEMS.....	2
1.3 RESEARCH OBJECTIVES.....	3
1.4 THE SCOPE OF THE STUDY.....	3
1.5 RESEARCH STRATEGY.....	4
1.6 STRUCTURE OF THE STUDY.....	6
<b>2 LITERATURE STUDY.....</b>	<b>7</b>
2.1 THE DEFINITION OF MANAGERIAL COGNITIONS.....	7
2.2 MOTIVATION FOR THE COGNITIVE STUDY.....	10
2.3 THE FIELD OF COGNITIVE RESEARCH.....	15
2.4 BASIS FOR COGNITIONS.....	20
2.4.1 Personal background.....	20
2.4.2 The identity of the company.....	21
2.4.3 The industry.....	22
2.4.4 Conclusion.....	26
<b>3 COGNITIVE RESEARCH METHODOLOGY.....</b>	<b>27</b>
3.1 CHALLENGES IN COGNITIVE RESEARCH.....	27
3.1.1 Limitations of the memory.....	28
3.1.2 The observation of cognitions.....	28
3.1.3 Complexity of cognitions.....	30
3.1.4 Summary.....	31
3.2 THE COGNITIVE MAPPING APPROACH.....	31
3.2.1 Different types of cognitive maps.....	32
3.2.2 Causal maps.....	33

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3.2.3	Description of the mapping procedure .....	36
<b>PART II</b>	.....	<b>43</b>
<b>4</b>	<b>THE CASE STUDY: ENSO GUTZEIT OY</b> .....	<b>43</b>
4.1	EUROCAN AND PINEVILLE KRAFT: 1963-1965.....	43
4.1.1	The time-span of the case study .....	44
4.1.2	The material used for the case study .....	45
4.1.3	The cognitive cause maps.....	46
4.1.4	Conclusions .....	51
4.2	TERVAKOSKI AND AHLSTRÖM ACQUISITIONS: 1984-1986.....	51
4.2.1	The time-span of the case study .....	52
4.2.2	The material used for the case study .....	53
4.2.3	The cognitive cause maps.....	54
4.2.4	Conclusions .....	61
4.3	THE STORA MERGER: 1995-1998 .....	62
4.3.1	The time-span of the case study .....	62
4.3.2	The material used for the case study .....	64
4.3.3	The cognitive cause maps.....	65
4.3.4	Conclusions .....	69
4.4	CURRENT SITUATION.....	70
4.4.1	The time-span of the case study .....	70
4.4.2	The material used for the case study .....	71
4.4.3	The cognitive cause map .....	71
4.4.4	Conclusions .....	74
4.5	CROSS-CASE ANALYSIS.....	76
4.5.1	The business model and the role of top management .....	76
4.5.2	Strategy – from emergent to planned .....	85
4.5.3	Internationalization – from Finland-centric to global .....	91
4.5.4	Future prospects .....	95
<b>5</b>	<b>VALIDITY AND RELIABILITY</b> .....	<b>99</b>

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<b>6</b>	<b>DISCUSSION AND CONCLUSIONS.....</b>	<b>103</b>
6.1	THE MOST IMPORTANT FINDINGS .....	103
6.2	LIMITATIONS AND GENERALIZABILITY .....	107
6.3	SUGGESTIONS FOR FURTHER RESEARCH .....	109
<b>7</b>	<b>REFERENCES .....</b>	<b>111</b>
	<b>APPENDIX 1: COGNITIVE SIMPLIFICATION PROCESSES.....</b>	<b>117</b>
	<b>APPENDIX 2: THE INTERVIEW GUIDE FOR THE FIRST CASE .....</b>	<b>118</b>
	<b>APPENDIX 3: THE INTERVIEW GUIDE FOR THE SECOND AND THE THIRD CASE .....</b>	<b>120</b>

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# **PART I**

## **1 INTRODUCTION**

### **1.1 Background**

The theorists of the Carnegie school brought the cognitive limitations of managerial decision making to the attention of the research community (Simon 1955; Cyert and March 1992). Since then cognition has received increasing attention, both as means to cope with insufficient information in an overly complicated world (e.g. Weick and Roberts 1993) as well as a potent source of pitfalls as managers oversimplify that world (e.g. Schwenk 1984).

Cognitive change has been especially interesting to researchers and therefore studied from many viewpoints. The well-known Polaroid case study by Tripsas and Gavetti (2000) presents so-called cognitive inertia, meaning sluggish changing of cognitions when needed, as an important cause of organizational demise. Some researchers have concentrated on the reasons for this phenomenon; why some organizations can adjust and others not (Fahey and Narayanan 1989; Barr, Stimpert et al. 1992). There are studies that consider how some specific factors, such as pace of change (Bogner and Barr 2000) affects management's ability to reinvent their mental models. Some papers have even found evidence of external bodies that change the cognitive landscape despite the fact that the environment remains fairly stagnant (Anand and Peterson 2000).

All of the papers studying cognitive change have had quite a short time-span. Therefore the question, how robust cognition constructs are, has been largely left unanswered. The aim of this study is to fill that gap. By using the cognitive mapping method developed by Axelrod (1976) this study charts the cognitions of the top management of Finnish pulp and paper company Enso Gutzeit at four time points in a time span of over 40 years. By comparing the cognitive maps, this study tells the story of the cognitive evolution of the company and sheds light on the topic of the persistence of managerial mental models.

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## 1.2 Research problems

The main research problem can be stated as follows:

*How persistent are the cognitions of Enso's top management, and what are the themes that undergo the most significant changes?*

As it is out of the scope of this study to make a cognitive mapping of a very long period of time in the company's history, this study concentrates on studying the eras preceding the biggest strategic decisions made in past decades. This is based on the assumption that the major decisions reflect time points at which management has learned something of the environment and puts its theories into action (Daft and Weick 1984). The main research problem can therefore be divided into the following sub-questions:

*What were the cognitive cause maps of the top management of Enso Gutzeit like in the era preceding the following decisions?*

- *The building of the mills in British Columbia and Louisiana*
- *The acquisition of Ahlström Varkaus factories and Tervakoski Oy*
- *The Stora-Enso merger*

*What is the current cognitive cause map like?*

*What similarities and differences can be found between the different mental maps?*

These three decisions have each taken place during the mandate of a different CEO. Each decision is considered to be the most strategically important during each CEO's term. The second research question concerns the last case, which creates a map of the current situation. This map is relevant mainly because of the managerial contribution of the study, which is described in the following chapter. The last question concerns cross-case analysis, in which the persistent and changing themes can be discovered.

Even though it is not the focus of this study, potential reasons for the major cognitive changes are considered. This is an important step in creating a basis for further research on the subject. However, as there are an enormous amount of potential sources for cognitive evolution, it is not in the scope of this study to give definitive answers on the subject.

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Of the terminology used in the research questions at least two items should be explained. Firstly, there are several terms that are used interchangeably to describe cognitions in this study, including beliefs, mental models, and assumptions. The terminology in this field is somewhat immature, as evidenced by Walsh's (1995) identification of the use of 78 different terms to describe cognitive structures.

The second term requiring explanation is the name of the company. The case company was called Enso Gutzeit Oy until 1995. At that time the name was changed to Enso Oy as the result of a major merger. In 1998 the company received its current name Stora-Enso. To avoid confusion, normally only the word Enso is used to describe the company at different times.

### **1.3 Research objectives**

The primary objective of this study is that already mentioned in the introduction: to contribute to the body of knowledge by researching the robustness of managerial cognitions over time. Research that studies the persistence of strategic ideas despite changing decision makers was mentioned by Huff (1990) as one of the six potential ways to make a contribution to strategic management literature by carrying out an empirical cognitive study. This study gives an excellent opportunity for this as the decisions studied are from the eras of three different CEOs.

The secondary objective of this paper is to give those managers in the pulp and paper industry that read the study an awareness of the cognitions leading to major strategic decisions. This might help them to become more aware of their decision making processes, thus helping them to improve these processes. With the help of the relevant literature, this thesis can also shed some light on what is the industry logic, and how cognitions in the industry are created.

### **1.4 The scope of the study**

The most significant factor limiting the scope of the study is the fact that it only researches the cognitions of one company. This limits the generalizability of results, as industries cannot all be expected to have similar kinds of cognitive persistence. This issue is considered more in chapter 6.2.

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A further scope limit is the people whose cognitions are studied. This study concentrates on the mental models that affect strategic decisions. Therefore, although this is an organization-level study, the people that are included in the study are those who belong to the strategic apex, and only the statements of members of the top management team are examined. This theme is further elaborated in chapter 2.3.

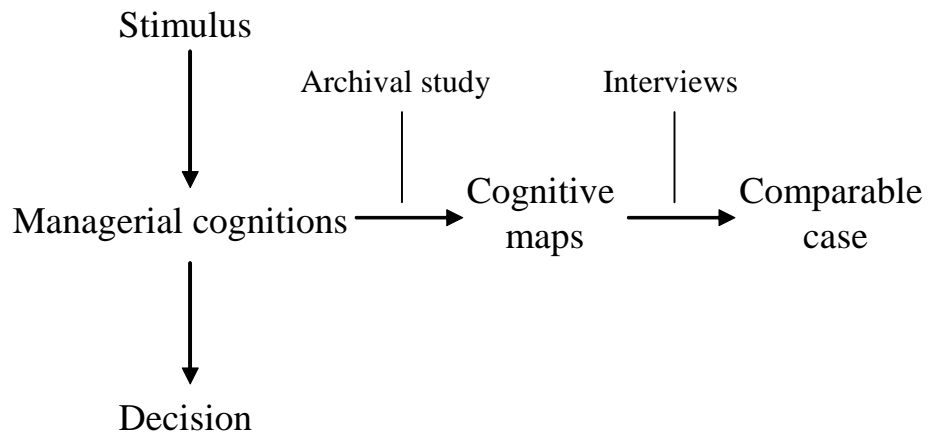
The functional scope of the study is limited to the content of mental models. Thus this research does not consider what the structure of mental models is or should be. This theme is also discussed further in chapter 2.3.

The study of the content of the mental models is also limited. Managerial cognitions are extremely complex and different schema is used depending on the situation at hand (Elsbach, Barr et al. 2005). This research studies eras that have preceded major strategic decisions in the pulp and paper business. Two of the studied cases concern large scale investments and one concerns a company merger. It is expected that the cognitive schemas used to the decisions are fairly similar. The last case that depicts the current situation of the managerial cognitions is not directly tied to any decision. However, it uses the same material sources as the former cases and is therefore likely comparable with them. Thus cross-case analysis can concentrate on identifying similarities and differences between the created cognitive maps.

## **1.5 Research strategy**

This chapter explains the research strategy for the empirical part of the study in general terms. It does not discuss the reasons for choosing particular data gathering methods nor does it describe the analysis methods used in detail. These issues are contemplated in the methodological part of the literature study in chapter 3.

The empirical part of the study consists of multiple cases, each of which charts the cognitive map of a major strategic change. The research strategy for a single case is described in Figure 1-1. The starting point for an individual case is one or many strategically significant decisions which indicate that a major shift has happened. The next step for a single case is using archival study to find the original stimulus that provoked the need for change. The time between stimulus and the actual decision sets the timeframe for an individual case.



*Figure 1-1. The research strategy for a single case.*

After the timeframe is set the next step is to code the managerial cognitions that are linked to the strategic change, using the documentary sources. The method used for the coding is called cognitive cause mapping. It is described in further detail in chapter 3.2.3. The output of the archival study is a graphical presentation of the managerial mental models of the causal relationships mentioned in the documentary sources.

The main validity indicator is how clear the reasons for the studied decisions are from the maps. It is assumed that if the maps and the actions are well aligned, the resulting cognitions are close enough to the cognitions of the managers. Interviews have an important role in providing validity reassurance. They give the managers the opportunity to justify decisions in their own words. These can then be compared with the derived maps. Another important validity-related task of the interviews is to ensure that the appropriate people were studied in the cases; specifically that the people whose cognitions were observed were actually the decision makers. This issue is further discussed in chapter 2.3.

One final task of the interviews is to provide contextual information. In addition to describing the most important parts of the cognitive maps, each case explains which event or issue each concept and linkage concerns. Each case also considers what is not included in the cognitive map. This is important, because the absence of issues tells about the choices made in the business model. For example if concepts concerning quality are not included in the map it is likely that quality is not used as the source of a competitive advantage.

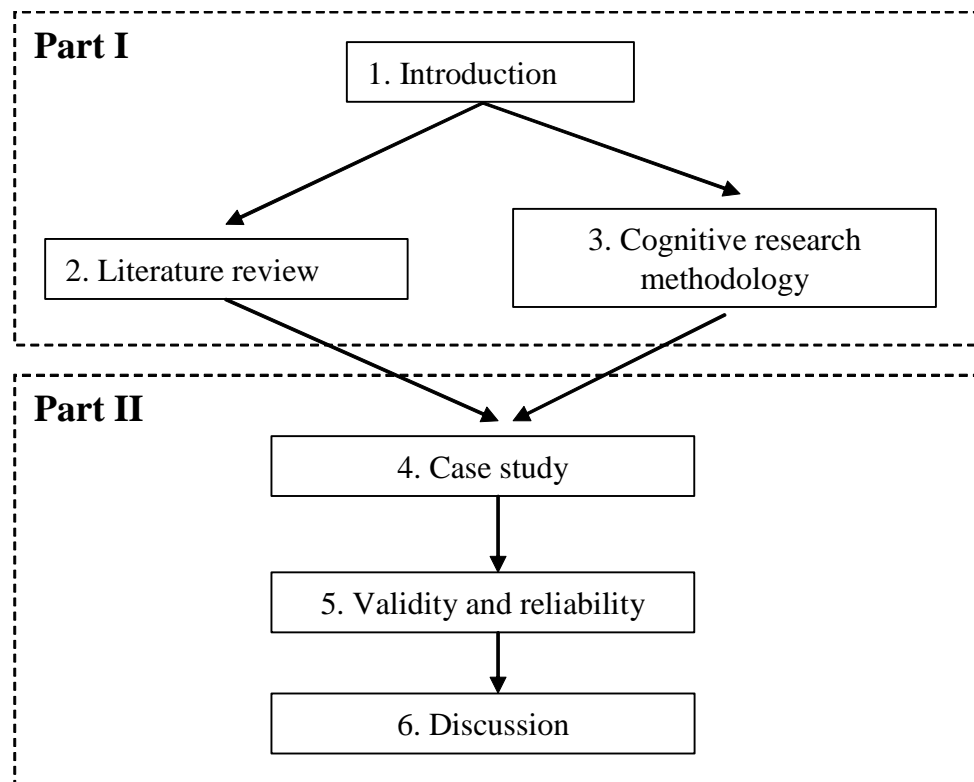
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Once the aforementioned issues have been dealt with, the case is ready for cross-case analysis, which searches for patterns in the maps. The resulting figures are compared to find the differences and similarities that tell the story of the managerial cognitions in Enso at different times.

## **1.6 Structure of the study**

The structure of the study is presented in Figure 1-2. The study consists of two parts. The first part is a theoretical analysis that creates the basis for the applied part of the study. This contains chapters one, two and three. Chapter two gives a wider perspective of the content and motivation of the study and thus creates the basis for interpreting and discussing the results. Chapter three describes the methodological toolbox that will be used in the case study. It also justifies some of the choices made with the research strategy.

The second part of this thesis starts by presenting the case study. Chapter four presents the individual cases and the cross-case analysis. Chapter five discusses the reliability of the results and the validity of the research method. Finally, according to the literature review and the case study, chapter six discusses how the results received relate to the existing body of knowledge.



*Figure 1-2. The structure of the study.*

## **2 LITERATURE STUDY**

The goal of this chapter is to give the reader an understanding of the phenomenon under study, to explain the motivations for the study and to give a basis with which to discuss the meaning of the results of the empirical study. Chapter 2.1 describes what managerial cognitions are and how they influence the actions of the managers. The motivation for a cognitive study is described in chapter 2.2. Chapter 2.3 gives a quick overview of how managerial cognitions have been studied and explains what the results of this study really are, as well as how they relate to the existing body of knowledge. Finally, chapter 2.4 discusses the various factors that have an influence on the managerial cognitions.

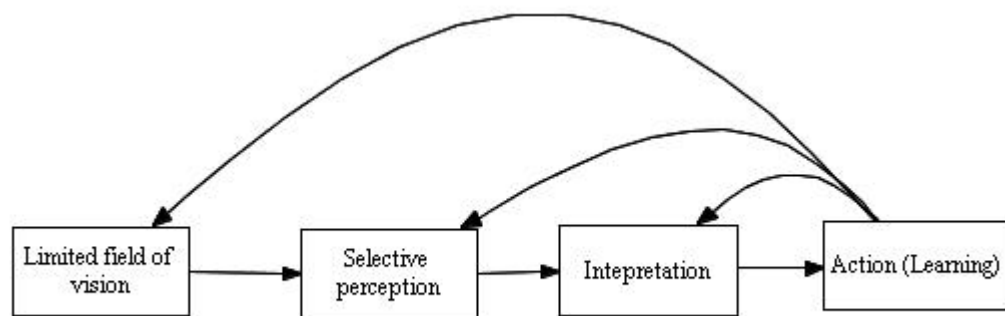
### **2.1 The definition of managerial cognitions**

As cognitions are not a straightforward subject, the first chapter of the literature study is dedicated to explaining what they really are. The specific focus of the chapter is a consideration of how the cognitions of managers affect their decision making.

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Cognitions work as a filter between the real world and a person's perceptions. Complex events that happen in a person's environment are interpreted with simple, comprehensible schemes. These cognitions allow a manager to make decisions in a complex environment using ambiguous information. (Gavetti and Levinthal 2000)

By observing the perception process of a manager, the effect of cognitions can be easily explained. An illustration of its phases are presented in Figure 2-1. The following chapters consider each phase of the process and explain how cognitions affect managerial perception.



*Figure 2-1. The illustration of the managerial perception process. Adapted from Daft and Weick (1984) and Hambrick and Mason (1984)*

As there is an enormous amount of potentially relevant information for a company, managers cannot possibly follow all of the information channels that are available. Based on their assumptions, managers must direct their attention to a very limited number of sources. Thus the manager chooses the channels according to what he assumes will provide the most useful information. This is the first step in which the mental models of the manager influence the perception process. (Hambrick and Mason 1984)

The information sources that have been chosen as relevant constantly bombard a manager with potentially important cues. Due to the lack of time, only a small subset can be chosen for more careful observation, and most are ignored (Daft and Weick 1984). A manager therefore selectively perceives only those cues that seem important according to his cognitions.

In the next stage, the chosen signals are interpreted. A manager considers what the meaning of the signal for his company is. The information that the manager receives

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is almost never perfect, but rather ambiguous or even conflicting (Cyert and March 1992). A human ability to categorize information helps managers to interpret these signals (Dutton and Jackson 1987). Managers match the cues that they receive to categories that exist in their mental models. Once a suitable category is found for the cue, the missing bits of information can be replaced by a so called gap-filling process, which means that the holes are filled with features that are typical for members of that category.

Some of the perceived stimuli require action from the managers. When choosing the right course of action, cognitive limitations also influence decision making. Decision makers can be somewhat narrow-minded when considering their options. Cyert and March (1992) noticed that the search for alternatives is often dictated by standard operating procedures, and it is normally the first alternative that meets the requirements which is chosen. Dutton and Jackson (1987) further noticed that the options considered are also dependant on how the decision has been framed. A decision that has been framed as a response to a threat will suggest different options than one which has been framed as an opportunity.

The chosen actions act as a delayed feedback loop for the perceptual process. The perception of the decision's success gives the manager an understanding of the prudence of his choices. Some of the cognitions can be reinforced and some weakened, and managers might even gain new insights that complement their cognitive frame. (Daft and Weick 1984).

The process described in the preceding chapter is a simplification of the real one, because it is assumed that perception happens in a sequential manner. In reality the different stages happen simultaneously. For example, cues cannot be selected for a closer observation without some kind of interpretative process.

This study considers only the last two steps of the perceptual process. The interviews might give a superficial understanding of the information sources used by managers. It is, in any case, insufficient to say how the manager creates his views from the information that he receives. Even less can be said of information sources that would be available for the manager, but that are not considered relevant. Thus, this study

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considers the interpretations of the managers and the decisions that these interpretations lead to.

A manager has fairly little control over his own cognitions, because he is normally not aware of them. The cognitions are assumptions that are taken for granted by the managers, practically considered as facts (Fiol and Huff 1992). Even if a manager is able to become aware of some of his cognitions, he will not be able to realise the limitations of his assumptions (Axelrod 1976). Axelrod (1976) illustrates this with an analogy:

*“A Roman supply officer employing Roman numerals would not have given much thought to the structure of the system of calculation he was using... he would probably not have considered the fact that his system of arithmetic calculation could be substantially improved by the use of Arabic numerals.”*

To summarize the content of this chapter, cognitions work as a filter that allow a manager to make decisions in a complex world. Cognitions have an impact on every decision that a manager makes, because they influence every part of the perceptual process in some way. Yet managers are not aware of most of their cognitive limitations. Thus managers orientate through the pitfalls of their environment with a map about whose content and limitations they are unsure of. This provides a good basis for the discussion of the motivation for cognitive study, which is considered in the next chapter.

## **2.2 Motivation for the cognitive study**

Cognitions provide powerful tools for managers. They allow managers to work in enormously complex environments. They give the manager the means to fill the gaps in the information that they receive. They even help the managers to communicate their thoughts with others who have similar kinds of mental models, by providing a common language (Dutton and Jackson 1987). However, when the environment changes, cognitions can become a dangerous liability, and oversimplified world views might bias decision making. This chapter considers why cognitive research is important. It first discusses how cognitions can explain the demise of companies when the environment changes rapidly. It goes on to consider how organizational

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cognitions can be changed, and finally looks at the drawbacks of the cognitive simplification processes. The chapter also highlights how cognitive research can help decision making and adaptation to change.

During a time in which the environment remains fairly stable, the managerial cognitions of successful companies are likely to correspond well with the needs of the business. One of the major benefits of the cognitive mechanisms of human mind is indeed that people can use their past experiences to help decision making in the present (Kipping and Lamberg 2003). However, constant updating of the mental models is needed for prolonged success. Huff and Schwenk (1990) noticed that a long period of success can lead the managers to become stagnant. They characterize this phenomenon in their studies of the oil and automotive industry as follows:

*”Good times appear to lull executives into focusing on the link between company activities and performance results... But every outcome is also linked to external events and the environment is always changing. Over time the underlying assumptions of executives, no matter how astute initially, will become less accurate. The illusion of control and the representativeness heuristic help to obscure the widening gap.”*

Managers do often notice the change in their environment, but they have difficulties in understanding how these changes affect the success of their companies. Barr et al. (1992) noticed in their research in the railroad industry that the distinguishing factor between successful and unsuccessful firms is whether, when there is an abrupt change in the environment, management change their mental models to reflect these changes.

The case study by Tripsas and Gavetti (2000) of Polaroid’s failure in the digital imaging industry supports this observation. According to this case study, Polaroid’s failure was mainly caused by cognitive inertia. It tried to compete in the new market with their old business model. Polaroid did notice the change in the environment and made substantial investments in digital imaging technology. It failed however to understand that not only their technology, but also that their business model was obsolete in the new market.

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Kiesler and Sproul (1982) assert that information about the major changes in the business environment is readily available to managers, but that it does not get their attention because other information has a stronger signal. Kiesler and Sproul (1982) also suggest some reasons why this information signal is weak. Managers tend to consider information that supports their former mental models as reliable, whereas highly divergent information is considered to be erroneous. Mildly divergent information is most easily believed by managers, because it gives them the impression that they are in touch with the environment, but does not collapse the logic of the business. Weick (1995) echoes these arguments in the following way:

*“Experts overestimate the likelihood that they would surely know about the phenomenon if it actually were taking place... ‘because I do not know about this event, it must not be going on’”*

The role of cognitive inertia varies in different industries (Kipping and Lamberg 2003). In hypercompetitive industries, the constant destruction of past competences and models is a necessity for survival (Bogner and Barr 2000), whereas in more stable industries, sticking with the approved recipes for success provides good results. However, the challenge is not non-existent for more stable industries. Kiesler and Sproul (1982) assert that the more stable the industry is, the less likely it is that managerial cognitions will change. Thus, when there is a need for drastic change, it is almost certain that a company in a cognitively stable industry is slow to shift position.

Cognitive study can help managers to be aware of the mechanisms by which the mind refuses to take highly divergent information. According to Kiesler and Sproul (1982), the only way managers can notice extreme change when it occurs is by expecting it. Kiesler and Sproul (1982) advise managers to create schemas for extreme change by, for example, rewarding actions that promote people to seek out extreme information. Barr et al (1992) urge managers not to link their failures only to temporary external events that they cannot control, but to instead consider what is wrong in the current business model and concentrate on the solutions. The difference between success and failure in the study by Barr et al (1992) was determined by

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whether or not companies could see the significance of external events for their business model.

Unfortunately there has so far been little research into practical tools that could be used by managers in preparation for change. Most of the studies concentrate on telling war stories of successful and unsuccessful organizational renewal processes and on analyzing the reasons for the outcome. However, one would imagine that a successful change first requires that a company knows where it stands. Therefore different cognitive mapping procedures presented in chapter 3.2 could help managers.

Cognitive research can not only help to notify managers about the need for change, it can also be of assistance in change implementation, because any significant strategic change leads to change in managerial cognitions (Gioia and Chittipeddi 1991). Thus, to make a successful organizational change, the change initiator must be able to convince the other decision makers of the necessity of the change in mental models.

Bartunek (1984) studied a religious order during a major restructuring process. She discovered that change could only be implemented when the stakeholders believed that the change was beneficial. Thus the change could not be carried out until the stakeholders' mental models were renewed in such a manner that the change made sense to them. Bartunek discovered that management can influence the mental model adaptation process by promoting actions that support the change process.

According to Gioia and Chittipeddi (1991), a strategic change is always a negotiation process that is normally initiated by the CEO. The CEO, or for that matter anyone who wants to implement a change process, must argue his point to the stakeholders. Cognitive mapping can also help during the negotiation process. Being armed with an understanding of the status quo of managerial cognitions in the firm can help the change agent to find the proper arguments to convince the target audience.

So far this chapter has only discussed the benefits of cognitive research on informing and implementing a significant organizational change. This is partly due the fact that much of cognitive research is concentrated on cognitive inertia and its effect on the survival of a company. However, cognitive study can also help managers to

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overcome some of the shortcomings that the simplification processes of the human mind imposes on the decision making process.

Schwenk (1984) has carried out an extensive literature review of the negative effects of the cognitive simplification processes on decision making. Their effects are presented in Appendix 1. Many of the negative effects stem from the fact that managers fail to see the shortcomings of their preferred alternatives, due to various reasons, such as commitment due to invested resources or prior hypotheses. The negative aspects of the non-preferred alternatives are, on the other hand, exaggerated, and are easily seen as being impossible to implement. Creative problem solving can be restricted by persisting with previous problem solving strategies, or clinging to a single goal and single course of action because of an overflow of information.

The functions of cognitive maps by Fiol and Huff (1992) are presented in Table 2-1. According to them, the cognitive maps tackle many of the issues mentioned by Schwenk (1984). Seeing the cognitive framework in a visual form can urge managers to consider whether all factors have been considered adequately, thus potentially revealing gaps that would otherwise be difficult to spot. When the amount of information overwhelms managers, the cognitive maps can highlight key information to concentrate problem solving on relevant issues. When there is too little information the cognitive map can supply missing information with a gap-filling procedure inherent to the categorization of issues. However, Fiol and Huff (1992) warn that successful usage of the cognitive maps in a decision making process requires that users are aware of abilities and shortcomings of the maps. These are considered in chapter 3, which covers methodology, and in chapter five, which includes the recommendations for the case company.

Focuses attention Triggers memory	--->	Issue structuring
Reveals gaps	--->	Issue closure
Highlights key information Supplies missing information	--->	Creative problem-solving

*Table 2-1. Map functions from Fiol and Huff (1992)*

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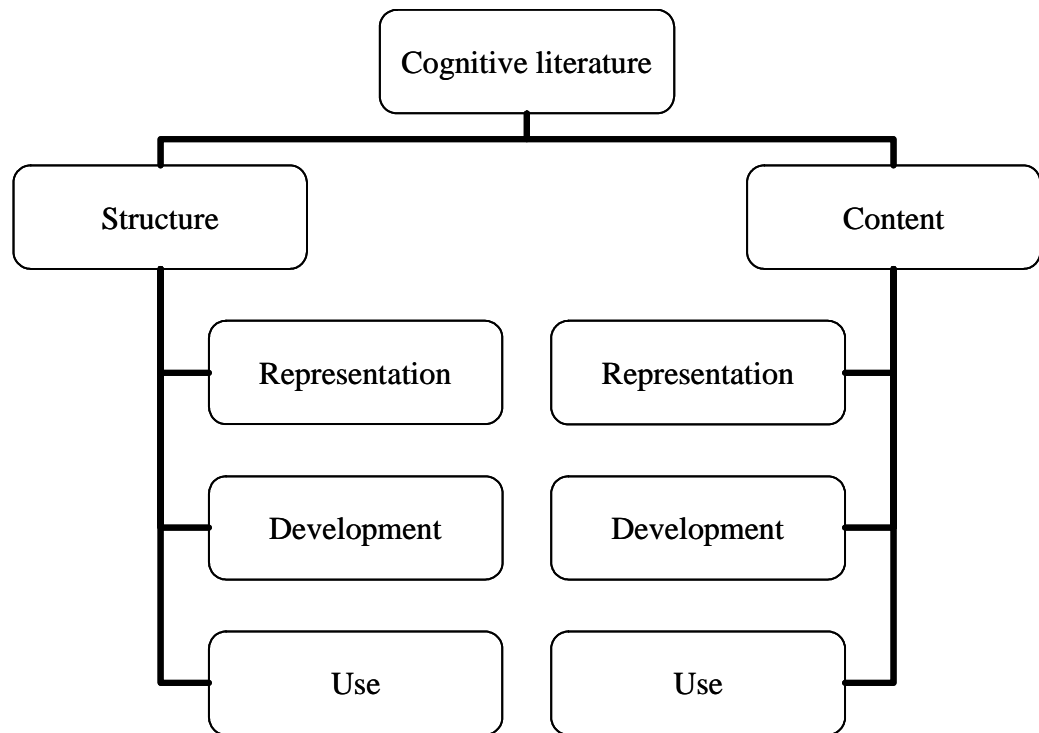
Hodgkinson et al (1999) provided empirical evidence of the utility of cognitive study with an empirical study, which showed that the use of a cognitive mapping tool significantly reduced research subjects' likelihood to fall for the so-called framing bias. The framing bias refers to the phenomenon in which managers choose different strategies in the same situation according to the way in which the situation is framed. This result is especially interesting, as this study also uses cognitive cause mapping, which was also used in the research by Hodgkinson et al (1999).

To conclude the findings of this chapter, cognitive inertia is a significant factor explaining the frequent demise of companies during major strategic shifts. Cognitive study can help managers to prepare and to implement changes in organizations and to overcome some of the negative effects of the cognitive simplification processes in managerial problem solving. The literature study progresses from motivation to consider which parts of the cognitive literature this research can contribute to.

### **2.3 The field of cognitive research**

This chapter explains how managerial cognitions have been analyzed in literature. It also sheds light on what is actually received as the result of the case study. The chapter starts by considering various functional research areas of cognitive literature, and goes on to consider possible levels of analysis.

Walsh (1995) has made the only extensive overview of the cognitive body of knowledge. His categorization of various themes is presented in Figure 2-2. Cognitive research is first separated into broad themes of structure and content. Structural research observes, among other things, what form cognitive structures take, how complex they are, and how complex should they be. On the other hand, the study of the content of cognitions concentrates on what kind of information these structures contain. Both lines of research are further divided into research of representation, development and use. Representation refers to how the information environment is actually understood. Development refers to how the content or the structure develops over time. Use refers to how cognitions affect organizational actions.



*Figure 2-2. The categorization of the themes of cognitive study (Walsh 1995).*

This study concentrates on studying the content of cognitions. It would need a far larger sample than what is possible within to scope of this study to generate reliable results for the structure of cognitions. Furthermore, research into content is much more advanced than into structure (Walsh 1995), and thus there are already some methodological tools available, such as the cognitive cause mapping used in this study. Also the chosen focus serves the managerial contribution of this study, because it concentrates on the logic of the business and thus keeps results at a practical level.

Representation and development of managerial cognitions are the main focus areas of this paper. Representation is studied by describing the cognitive maps of management at different times. Development is studied as these maps are compared with each other. As was mentioned earlier, development also represents the main scientific contribution of this paper. The use of the mental models is only studied briefly. This paper does attempt to link cognitions with decisions that the management has made, but this link is not studied meticulously.

To understand what kind of picture this study can give of managerial cognitions, it must be considered what the resultant cognitive maps represent. As the results of this

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study are derived from documentary sources the question is how close the stated assertions are to the actual mental models of managers. Holsti (1976) comments on the interpretation of cognitions as follows:

*“The issue being raised here centers on alternative models of communication – the ‘representational’ and the ‘instrumental’... The representational model assumes that verbal expressions are valid indicators of the communicator’s beliefs, motivations and the like, whereas instrumental view begins with the premise that words may be chosen to have an impact on the target of communication.”*

This study assumes that cognitions derived from documentary material give a representative view of managerial cognitions. When management puts something in writing for their key stakeholders, they more or less have to act accordingly. If the actions are unaligned with the written statements, the writer will appear insincere, which can be very costly for the decision maker (Axelrod 1976).

It is not expected that all managerial cognitions can be captured in the maps. The illustration made by Narayanan and Fahey (1990) of which cognitions are open for observation is presented in Figure 2-3. In their illustration, the cognitions that the research subject is aware of are called accessible causal maps. They are, however, rarely accessible to the researcher. The researcher must study the so-called revealed causal maps. These lack some of the non-articulated causalities and might include some causalities that the manager does not believe in, which are just brought forth to explain a mistake, or to hide the real agenda.

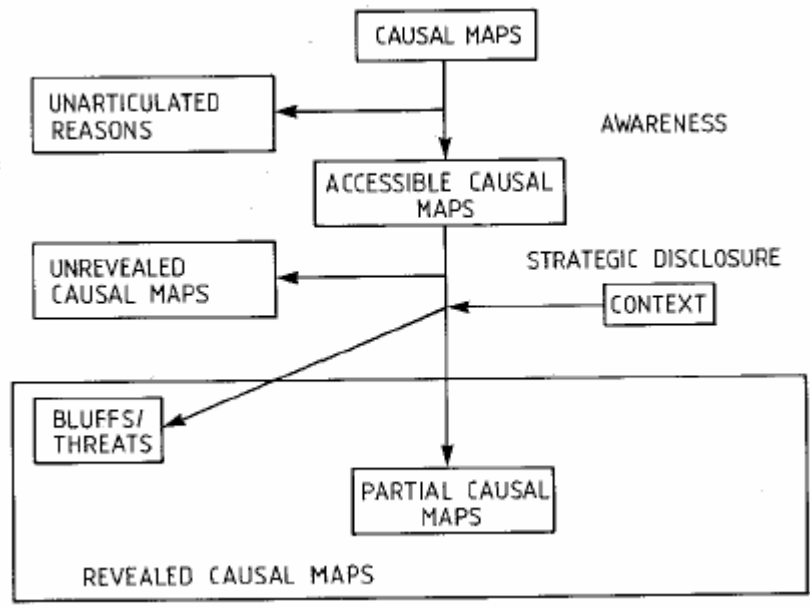
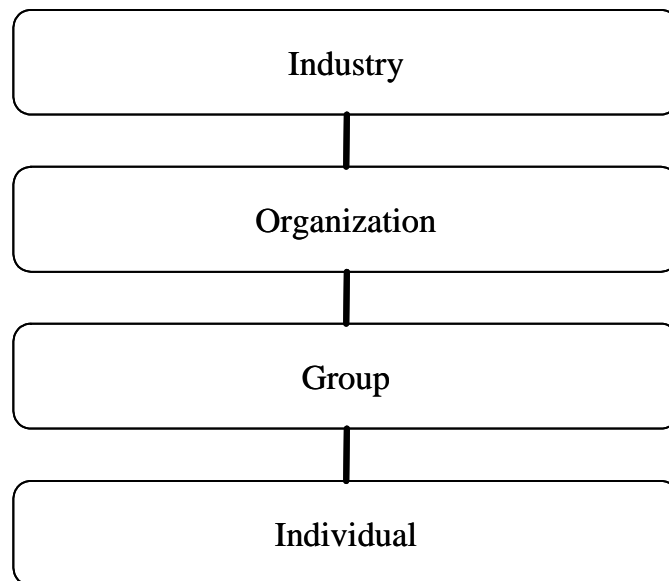


Figure 2-3. Availability of cognitions to a researcher.

Axelrod (1976) mentions two reasons why some of the accessible cognitions might be not be revealed by research. Firstly, issues such as the logic of the business are so self-evident that expressing them verbally can seem futile for a manager. Secondly, some of the causalities might be at odds with the preferences of a manager. For example, if a manager wants an investment decision to be made, he might abstain from expressing the causalities that do not support the making of that decision.

Another important issue to be considered in addition to how close the resultant mental models are to the actual cognitions of the managers is whose cognitions are actually studied. Walsh (1995) mentions four possible levels of analysis presented in Figure 2-4.



*Figure 2-4. Different levels of analysis (Walsh 1995).*

This study concentrates on considering organization-level cognitions. However, it is impossible to try to chart the cognitions of each and every person in the organization. Nor would it be sensible, as this study tries to understand which mental models influenced particular strategic decisions. Only a few people in the organization have the power to influence those decisions.

Some papers (e.g. Thomas, Clark et al. 1993) that have studied decisions as results of cognitions have used an individual level of analysis by concentrating solely on the cognitions of the CEO. However, empirical evidence (Gioia and Chittipeddi 1991) suggests that the cognitions affecting strategic actions are the result of negotiation. Thus, the vision of the CEO changes as a result of discussion with the closest stakeholders – the most important of which are the other members of the top management team.

This study follows the assumption of Hambrick and Mason (1984) that organization-level decisions are reflections of the members of the top management team. Thus the statements of all the people in the chosen sections of the archival records are charted on the cognitive map. Carrying out the archival study in any other way would be highly challenging. It is often very hard to determine whose cognitions affect the assertions in the documents studied. For example, the directorate's annual report, which is a very important source for cognitions, never reveals who has written a particular part of the text.

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As this paper studies cognitions as a supra-individual level phenomenon, it is necessary to consider what exactly the outcome of each case study is. There has been a lot of confusion in the literature about the notion of supra-individual level cognition, and some have even questioned its existence (Klimoski and Mohammed 1994).

Each part of the case study produces a cognitive map that aggregates the cognitions of those having an impact on the decision. It is likely that those maps highlight the cognitions of those who had the most power, because they were also likely to be behind the statements to the key stakeholders. However, the resultant mental models are not to be considered as being the maps of any particular person. They are more likely to reflect the logic of the business that is shared within the case company.

Although this research studies organization-level cognitions, it is highly likely that the resultant cognitive maps present also cognitions that are shared across the industry. Mental models may also be influenced by the backgrounds of the individual managers. The next chapter continues the literature study by considering which factors have an influence on managerial cognitions.

## **2.4 Basis for cognitions**

The focus of this study is to chart cognitive maps in different time eras and to compare the differences and the similarities between them. It is not within the scope of this study to meticulously examine why managers come to think as they do. However, to give the reader more understanding of the context, and to create grounds for discussion later in the thesis, this chapter sheds light on the different issues that can have an effect on cognitions. The chapter also considers the status of various issues in the pulp and paper industry, and thus lays the groundwork for the cognitive landscape that can be expected in this study. The examination starts with personal issues, progresses to issues concerning the company, and finally to issues concerning the industry and its environment.

### **2.4.1 Personal background**

Almost all cognitive researchers agree that the personal background of a manager affects his cognitions and therefore also decision making to some extent. This

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chapter does not attempt to give an extensive view of different issues that could make a difference, but tries to chart some of the most important factors that are relevant to this study.

Hambrick and Mason (1984) assert that education gives an indication of the cognitive preferences of the managers. It is therefore fair to assume that people graduating from the same schools and universities will have similarities in their mental models. Hitt and Tyler (1991) further assume that a higher level of education creates focused and specialized paradigms that lead to greater conformity among the cognitions of the students.

Managers' work backgrounds can also have significant effects on their cognitive horizons. Hambrick and Mason (1984) argue that managers that have worked in the same organization for their whole lives can be expected to have fairly limited perspectives. For these managers, old organizational paradigms can dictate what to include in the search for alternative courses of action. Hambrick and Mason (1984) further assert that the functional specialization affects the decisions made by a manager. This means that managers tend to see strategic challenges concerning their functional experience and also the solution options considered often stem from this source.

Considering these issues, the cognitive perspectives of managers in the Finnish Pulp and Paper industry can be expected to be somewhat rigid and homogenous. There are few places that provide higher education in the paper technology field and therefore managers often have fairly similar educational backgrounds. It is also the case that the top managers in Enso have been working in the organization for several years before progressing to the strategic apex. This means that their views are likely to be colored by the organizational paradigms as well as the identity of the company. The identity is considered in the next chapter.

#### **2.4.2 The identity of the company**

According to Klimoski and Mohammed (1994), refinement of the mental models used in work occurs during training. Thus, the mental maps that affect decisions would be created when already working for the company. Organizational paradigms

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and values can therefore have a significant effect on cognitions. According to Dutton and Dukerich (1991), the identity of the company is the key factor giving the basis for paradigms and values. It gives justification for what is done and what is not done.

In their research on the homelessness issue within the New York Port Authority, Dutton and Dukerich (1991) noticed that the organizational identity worked as a reference point when considering the importance of an issue. For a long time, the Port Authority refused to react to the homelessness issue, because they did not identify themselves as being in the social services business. Only when the issue started to threaten the central components of the Port Authority identity, such as its reputation as a “fixer”, did it really take action. Accordingly, the identity of a company can predict which actions it will take and which not.

It is hard to tell what kind of role identity plays in the decisions made by Enso. Enso was for many years the flagship of Finnish export businesses, and very closely connected to the Finnish state. Now, as the result of major mergers, it is one of the biggest paper manufacturing companies in the world and is a player in the global market. At times, Enso has been a fairly diversified firm, involved in industries such as engineering and shipping, alongside its core activities in the pulp and paper market. Yet now the firm is focused on its core businesses. It can be expected that Enso’s identity has changed significantly over the years, which may also be seen in the cognitive maps. Identity is not studied at length in this work, but it may provide a basis for very interesting further study.

### **2.4.3 The industry**

The industry can also have a significant effect on managerial cognitions. As companies solve the same problems and interpret the same cues, it is common that industry-wide belief structures of how things are and should be done are created (Porac and Thomas 1989). In time these belief structures come to be considered as facts, and managers cannot even consider other ways of doing or seeing things. This chapter firstly considers the content of the industry-wide belief systems going on to discuss how belief systems are created, and finally considering what kind of industry is likely to have strong common belief systems.

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The different issues that are shared in an industry, according to Porac et al (2002), are presented in Table 2-2. Cognitive belief systems are presented in ascending order. At the lowest rung is the product ontology, whereas the highest is reputational rankings. The lower order beliefs create the conditions for the higher order beliefs.

Name	Explanation
Product ontology	Definition of the product features and their linkages to usage conditions and buyer attributes
Boundary beliefs	The conception of the boundaries between different markets
Industry recipe	The logic of how to be successful in a particular market
Reputational rankings	The metrics of how a company is successful in the market and the information of the ranking of different companies

*Table 2-2. The cognitive belief systems (Porac, Ventresca et al. 2002).*

In this study it is quite probable that product ontologies and boundary beliefs are not revealed in their entirety. The beliefs about the consumer's needs, the products and their markets are likely to be so self-evident to the managers that they are not stated in the archival documents that form the main source of data in the empirical part of the study. Reputational rankings and industry recipe are, on the other hand, likely to be shown fairly extensively as managers explain what must be done in order to be successful in the market to the board of directors and the investors.

All industries are not equally prone to have industry-wide belief systems. Many different factors have an influence on their creation, including:

- Interfirm communication
- Information availability
- The pace of change
- Entry barriers
- Agents working across company barriers

Porac and Thomas (Porac and Thomas 1989), in their study about the cognitive community of Scottish knitwear manufacturers, highlighted that interfirm communication is an important prerequisite for the creation of industry-wide mental models. The common beliefs in an industry are largely created because of imitation between the companies. Thus, active communication and forums for exchanging ideas are likely to increase the effect of the industry on the beliefs of individual managers.

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Another issue, closely related to interfirm communication, that increases the likelihood of the creation of industry-wide belief systems is the breadth of information available (Johnson and Hoopes 2003). If everyone has access to technology and the occurrence of technological breakthroughs is rare, it is likely that beliefs become stagnant within an industry. If every player in an industry has information about the moves of the others, imitation is also easier.

Other kinds of revolutionary changes, and not only technological breakthroughs, decrease the rigidity of the beliefs within an industry. Kipping and Lamberg (2003) argued in their comparative research between the pulp- and paper industry and the management consulting industry that incrementally-changing industries are more likely to lead to stagnant managerial beliefs. All types of frame-breaking changes increase entrepreneurial activity and thus unfreeze some of the old industry logic. This argument is supported by Bogner and Barr's (2000) findings in hypercompetitive communities. They noticed that in such environments, managerial cognitions concerning content do not tend to freeze at all, but are in a constant state of flux. The beliefs that are shared across firms concern process. For example, Moore's law (that the number of transistors that a single microchip will hold will double every 18 months) has been used as a benchmark for competition for nearly 40 years in the digital communications industry.

As entrepreneurial activity and experimentation are usually the basis for revolutionary changes in an industry, industries with low entry barriers are unlikely to have strong beliefs that are spread across firm borders (Bogner and Barr 2000). In contrast, industries that are characterized by the dominance of few large companies are likely to present a fairly rigid cognitive landscape.

All of the issues considered above concern the players within an industry. However, external agents working across company barriers may also have an influence on the creation of industry-wide belief systems. For example, Anand and Peterson (2000) demonstrated that in the commercial music industry, the provider of market information was able to change the industry logic by changing the standard by which market information was provided. The inclusion of new categories in the market

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information and the disappearance of others led music outlets to change the ways in which the success of a certain artist was measured.

Considering the various factors that promote the creation of an industry-wide belief systems it would seem that the pulp and paper industry is inclined towards their existence. It is an economy of scale business, characterized by high entry barriers. This means that new players rarely appear in the market and the existing firms tend to be there for a long time. As there are only a few significant players in the industry, it is likely that the members of the top management team know each other on a personal level, which is likely to encourage knowledge-transfer across company borders. There have also been different forums for interfirm communication. The Finnish players have had various alliances and projects together (Näsi, Lamberg et al. 2001). Furthermore, all belonged to various cartel institutions, some of which were even operating on a pan-Scandinavian level.

The pace of change in the pulp and paper industry has also been very slow. Technological development has been rapid, but it has concentrated on incrementally making the manufacturing process more efficient. New technological breakthroughs have not occurred since 1880 and there has not been a need to change the fundamental management logic in the past 100 years. Information about the technology has been available for everybody, and thus it cannot have been a source of competitive advantage. The pulp and paper industry has not suffered from any other kinds of frame-breaking changes, as there have never been significant threats in the form of substitute products or serious declines in market demand. The success of the industry has mainly been dependant on the macro-economic business cycle. (Kipping and Lamberg 2003)

An interesting wild card in the Finnish pulp and paper industry is a consulting group, Jaakko Pöyry, which has given advice to all of the players in the Finnish pulp and paper industry. This company could have an influence in defining some rules of the industry by, for example, defining what type of investments are seen to be most likely to be profitable.

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#### **2.4.4 Conclusion**

This chapter considered the different issues influencing the cognitions of managers. All in all, the literature concerning issues that have an effect on managerial cognitions is somewhat scattered and inconsistent. There have been many studies that chart the effect of one or a couple of factors on cognitions in a certain industry. Yet there is practically no research that would consider the relative importance of individual, firm level and industry level cognitions, or the relative importance of different issues within those subcategories.

The issues considered in this chapter are summarized in Table 2-3. It would seem that the cognitive landscape of the pulp and paper industry changes slowly, and is largely dictated by industry-wide belief structures. These assumptions are supported by Melander's (2005) findings in the Swedish pulp and paper industry, concerning the issue of raw material shortage. The issue was more or less relevant and initiated many strategically significant actions during the whole observation period of the study (from 1945 to 1980). The significance of the issue varied depending upon who took part in the debate about the raw material shortage, and with which arguments. Thus it was clearly not only a fact-based issue, but also based on the beliefs of the participants in the debate. When it was assumed that wood was running out in Sweden, all companies faced the same challenge. A very strong indicator of the existence of industry recipes is that the companies responded to the challenges with surprisingly similar actions, and explained their successes and failures with the same arguments.

<b>Person level factors</b>	
Education	Many managers have similar educational backgrounds due to few places that offer education for the industry
Work background	People work in the same organization for a long time
<b>Firm level factors</b>	
Identity	Enso has probably a strong identity due to its background, but it is hard to predict its effect
<b>Industry level factors</b>	
Interfirm communication	Quite high due to public reporting nowadays and fairly extensive cooperation
Information availability	At least technical information readily available for everybody
The pace of change	Incremental, no revolutionary changes in a hundred years
Entry barriers	High, few new players enter the market, existing players stay in the market for a long time
Agents working across industry barriers	At least Jaakko Pöyry in Finland

*Table 2-3. Issues effecting the managerial cognitions.*

### 3 COGNITIVE RESEARCH METHODOLOGY

This chapter describes the cognitive research methodology. Chapter 3.1 starts by describing the various challenges posed by cognitive research, and explaining how they can be overcome. The chapter is summarized by explaining the choices made in the research strategy, in the light of this discussion. Chapter 3.2 gives an overview of the cognitive mapping approach that is used in the empirical part of the study. It also explains the process of coding and analyzing the data.

#### 3.1 Challenges in cognitive research

As cognitions are a highly abstract issue, researching them is challenging. The following issues create difficulties for cognitive research, and each will be dealt with separately:

- Limitations of the memory
- The observation of cognitions
- The complexity of cognitions

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### **3.1.1 Limitations of the memory**

A major issue discouraging the usage of interactive methods in cognitive research is the deficiency of the memory of the research subjects. Two kinds of memory limitations complicate research based on past recollections; distortion and memory failure (Minzberg, Raisinghani et al. 1976).

Distortion means that the memory tends to change recollections to the benefit of the manager. It has been widely shown that managers tend to remember being more rational than they actually were, and to take credit for success whilst blaming environmental factors or bad luck for their failures (Schwenk 1995).

Memory failure means that a research subject has simply forgotten some of the issues that affected the phenomenon under study. The possibility of memory failure is naturally directly proportional to the amount of time that has elapsed since the phenomenon under study occurred. Managers might face particular difficulties when remembering past cognitions, because events are normally remembered in the light of colorful happenstances (Kiesler and Sproull 1982).

Because of these memory-related challenges, the method for performing research on cognitions should be unobtrusive (Axelrod 1976). Therefore it is not wise to use interviews as the primary source of data. Practically all of the aforementioned difficulties can be avoided by deriving the managerial cognitions from archival sources. However, as the next section explains, archival study is also not without problems.

### **3.1.2 The observation of cognitions**

Probably the most prominent challenge of cognitive research is that cognitions are not directly observable. As was mentioned in chapter 2.3, the researcher has limited access to the research subject's mental models, and even the research subject themselves cannot articulate all of their cognitions. Because of this, creating an extensive picture of managerial cognitions is problematic, especially in archival study, because the documents only show what managers have chosen to say at that moment (Fahey and Narayanan 1989). Managers usually communicate with their peer group, which is rather well-informed about the situation and knows the industry

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logic. Thus many of the cognitions need not be articulated. Furthermore, in archival study, the researcher cannot pose supplementary questions in order to gain a fuller understanding of the subject.

The success of the archival study does not only depend on how thoroughly the managers express their cognitions. It is also highly dependent on the source material that is available. Axelrod (1976) mentions two common source material related challenges. The first concerns the limited recording of events. It often happens that no record is kept of some meetings that would be very important for the researcher. It is even more common that the only final protocols that are available are those that explain the decisions, but not the grounds for them. A second challenge is the availability of material. The source material that is interesting for research into managerial cognitions often concerns important strategic decisions. Companies might be unwilling to give such material for research and publication purposes.

In an interactive research method, such as interviewing, some of these challenges do not exist. If the researcher is unsure whether all important cognitions have been charted, he may always ask this from the interviewee. The research subject can explain some of the context-specific common knowledge that is hard to find out with archival study. The challenges of availability of source material are also less significant as the researcher can ask about what was discussed in a certain meeting. However, interviewing presents its own challenges for the observation of cognitions.

When carrying out an interview, the questions that the researcher can think of are guided by his own cognitions. It might therefore sometimes be hard to distinguish between whether the researcher is studying his own cognitions or those of the research subject. Even though a researcher may not lead the research subject to certain answers, the mere fact that the cognitions are articulated might have an influence on the phenomena under study. According to Weick (1995) a person makes sense of his environment by speaking his observations aloud. Thus, when a research subject answers a question, he might create new cognitions that did not exist before.

One further challenge that interactive methods like interviewing pose for the researcher is the accessibility of research subjects. This is especially acute in a longitudinal study, in which a long time span may mean that the people involved

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may have passed away or be inaccessible in some other way (Fahey and Narayanan 1989). Accessibility might also present challenges when studying a contemporary phenomenon, as managers are often busy and might not be willing to participate in the study.

The most powerful research method for cognitive study is probably participant-observation. It allows the researcher to be inside the process and thus to be present as cognitions emerge. Having another researcher outside the organization studied can increase the validity of the results. He can help bring to the surface the taken-for-granted assumptions that a person inside the organization might not be conscious of. (Gioia and Chittipeddi 1991)

However, participant-observation is a very time-consuming process, as the researcher must be working in the organization studied during the time-period that is researched. It is therefore simply not an option as a research method in many cases. Validity can be also increased by simply using more than one research method. In this study, the primary data source is archival study, but interviews will also be used to supplement the collected results and to increase understanding of the phenomenon to be studied.

### **3.1.3 Complexity of cognitions**

The challenge that faces any cognitive researcher, regardless of the research method, is the complexity of cognitions. Managers use their mental models in complicated ways and there is little generally accepted theoretical understanding of the subject, as the field of research into managerial cognitions is still fairly young (Walsh 1995).

There is quite strong evidence that organizational context and the framing of an issue directly affect the schema that the managers decide to apply to the situation (Elsbach, Barr et al. 2005). For example, Dutton and Jackson (1987) showed that managers apply different schema depending on whether an issue is framed as a threat or an opportunity. All in all, however, there has been very little study of how context influences managerial mental models.

It is very important for this study to examine cognitive maps that are comparable with each other. The main scientific interest of this paper is to compare mental

models employed within the same strategic context at different times. Thus the studied decisions are chosen such that they are parts of a major strategic shift that solved an organizational problem.

### 3.1.4 Summary

The challenges, and the means by which they are solved in this study, are presented in Table 3-1. As can be seen, many of these challenges can be overcome by using archival material as the primary data source. However as the archival documents were not created with cognitive research in mind, some of these managerial cognitions can only be discovered by interactive methods. Therefore, interviews are used in this study to supplement the results derived from the archival study.

Challenge source	Caused challenges	Solution
Memory limitations	Memory failure	Archival study as primary data source
	Distortion	Archival study as primary data source
Observation	Reaching of saturation	Interviews as supplementary data source
	Cognitive limitations of the researcher	Careful annotation of managers original comments
	Observation influences the phenomenon	Archival study as primary data source
	Research subject potentially unavailable	Archival study as primary data source
Complexity	Cognitions depend on organizational context	Careful choosing of studied issues

*Table 3-1. The challenges in cognitive study and ways to solve them.*

## 3.2 The cognitive mapping approach

To make cognitive research useful to managers, the cognitions should be presented in a form that is understandable to them. No manager is interested in an endless list of cognitions derived from documentary sources. For this reason it is useful to present the cognitions graphically. Graphic representation of key peoples' cognitions on strategic issues helps managers to understand where they stand and to potentially improve their ways of thinking (Fiol and Huff 1992). Graphical representation is also useful for researchers. It divorces the ideas from their speakers and thus enables comparison between the cognitions of different individuals or groups (Fiol and Huff 1992). As no map can capture the whole complexity of managerial cognition, it is

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necessary to decide what is included in the map. This is considered in the following chapter.

### 3.2.1 Different types of cognitive maps

Many tools have been created for the purpose of cognitive mapping. Huff (1990) has identified five types of maps, which are presented in the order of complexity in Figure 3-1. As the complexity of the map grows, the model created by the map draws nearer to the actual mental models of the managers. On the other hand, the amount of work is directly proportional to the complexity of the map. The chosen map ultimately depends on the purpose of the study. The following paragraphs explain the content of the various maps as well as what kinds of results can be achieved with them. The causal mapping method is explained in more detail in a separate chapter, as it is the primary tool used in this study.

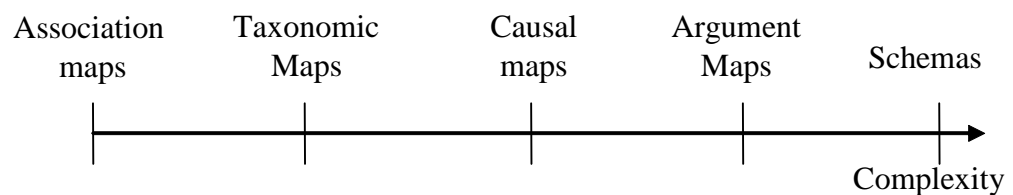


Figure 3-1. Different types of cognitive maps (Huff 1990)

#### ***Association and taxonomic maps***

Association maps and taxonomic maps deal with the use of words and their importance, as reflected by the frequency of their use. Taxonomic maps observe the hierarchy of different concepts, whereas association maps only deal with frequencies of words. These maps are excellent for understanding the central themes in strategy and managerial vocabulary. However, as they lack the power to explain how different issues relate to each other they are alone often insufficient for cognitive mapping of an issue. (Huff 1990)

The most primitive form of association maps are also used in this study. The results chapter of each case-study contains a table showing the frequency counts of the most common concepts in the documentary material. This table is used to support the process of finding the most important cognitive concepts. This is based on the assumption that managers tend to bring out important issues in their statements recurrently.

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### *Argument maps*

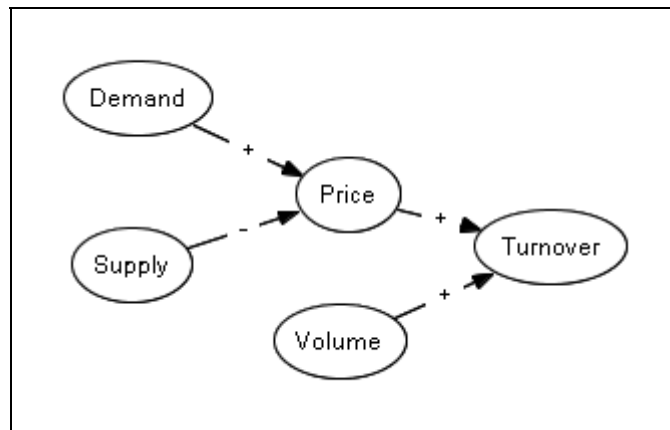
Argument maps try to explain why the research subjects have come to a particular conclusion. They chart the reasoning behind a decision by examining the backing that was used to support the argument. Argument maps can be complex and broad, which is one of their greatest strengths. They are strongly tied to action, because they try to explain precisely why a decision has taken place. Their most significant weakness, when compared to causal maps, which also explain the grounds behind decisions, is that these types of maps demand a lot of judgment from the researcher. It might be hard to track which arguments are nested within each other and which backing is used to support which claim. (Huff 1990)

### *Schemas*

Schemas are the most complex type of cognitive map. The research of schemas is based on a widely supported argument that previous experiences largely dictate current actions and that the cognitions are organized in frameworks that are used in certain kinds of situations. A clear strength of schemas is their ability to catch the commonalities of researched cognitions. With other mapping approaches it might be difficult to spot that some actions stem from the same cognitive schema. The schema mapping methods requires a lot of interpretation however, and is thus the most difficult type to replicate. (Huff 1990)

### **3.2.2 Causal maps**

Causal maps chart the causal linkages between different issues. A simple example of a causal map is presented in Figure 3-2. The causal map is the most widely used map in the management literature (Huff 1990). Causal mapping allows the researcher to observe the input of the strategy process (Fahey and Narayanan 1989). It creates an understanding of how managers make sense of contemporary events and act on their cognitive bases.



*Figure 3-2. A simple causal map.*

A clear strength of a causal map is its reliability. Because the causal mapping method is fairly simple, good results have been achieved in intercoder reliability (Axelrod 1976). Furthermore, because of its wide usage there is already quite a lot of evidence that causal maps' predictive power is good (Huff 1990). Causal maps have also been demonstrated to be able to shed light on many types of research questions (Axelrod 1976).

The first very obvious factor limiting the usefulness of causal mapping is the amount of work it requires. As it is a difficult task to notice all of the causalities, the process cannot be automated. According to Axelrod (1976), it takes from two to four hours to code a thousand words of text. Because of the labor intensity of the process, Huff and Fletcher (1990) advise researchers not to use the cognitive mapping approach when other methods can also explain a phenomenon.

Another significant limitation of the causal mapping method is its simplicity. Some compromises have been intentionally made to keep the mapping process fairly straightforward and thus to promote intercoder reliability. Axelrod (1976) mentions three significant limitations in the causal mapping method:

- Conditional or interactive causation cannot be coded with the causal mapping method. For example, from the statement “If A is high, B promotes C, but if A is low, B retards C”, only “B promotes C” and “B retards C” would be coded.
- Nonreversible causations are coded as normal causations. Thus a statement like “an increase in A causes an increase in B, but a decrease in A does not

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cause a decrease in B” would lose some of its information as it would be coded as “an increase in A causes an increase in B, a decrease in A causes a decrease in B”

- Nonmonotonic causations must either be left uncoded or be coded as monotonic causations. The heuristics of cognitive cause mapping do not cover causations that behave differently depending on the value of the cause variable.

However, these are not the most significant limitations. As the causal mapping method only documents causal statements, many of the managers’ cognitions are left uncoded. For example, the statement “We are a paper manufacturing company” would be left out of the causal charts, because it fails to indicate any kind of causal relationship. Yet it clearly contains a cognition concerning the identity of the company.

Identity related issues have in fact been the most significant source for criticism of the use of causal mapping. Fiol and Huff (1992) criticize authors in the management literature of overusing causal mapping. In their view, to create an extensive picture of the cognitive state of a company, researchers should chart the company’s identity, causal beliefs, and explanations of the conceptual vocabulary. Identity is especially important, because all of the company-related beliefs of the managers are reflected through it. The role of company identity in this study has already been considered in chapter 2.4.2.

This research concentrates only on causal beliefs because of the limited scope of the study. A mapping project such as the one described by Fiol and Huff (1992) would simply be too extensive for the purposes of this work. Causal mapping provides a good and reliable start for the cognitive mapping procedure with the case company. It also provides some insight into the identity of the company, although it probably does not describe it extensively. To get a clearer understanding of what is actually charted in this study, the mapping procedure is described in the next chapter.

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### 3.2.3 Description of the mapping procedure

Some systematic procedures for causal mapping exist in the literature, the most complex and extensive of which is probably that developed by Laukkanen (1994). It involves making multiple rounds of interviews and creating a database of the cognitions derived as a result. This procedure would be ill-suited for this study, as it researches historical maps in addition to contemporary ones. Furthermore, Laukkanen's procedure would be much too extensive in terms of workload for a study of this type.

The stages of this study's mapping procedure are presented in Figure 3-3. The mapping procedure follows fairly closely the stages originally described by Axelrod (1976). There are though some deviations, which are described in the following chapters in the description of the stages.

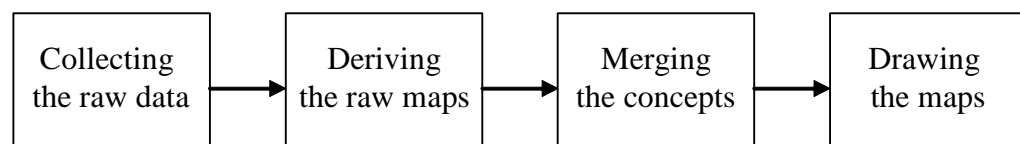


Figure 3-3. The mapping procedure

#### *Collecting the raw data*

There are quite a few requirements for good raw material that can be used for cognitive cause mapping. Axelrod (1976) mentions the following:

1. The source documents must reflect the features that are studied
2. The material should contain enough causal assertions.
3. There should be enough background information on the material so that the coder can understand the meaning of the words.
4. A document should be complete in terms of the investigation. This is to say that the speaker expresses all of his cognitions concerning the subject.
5. The source documents should be reliable representations of the speaker's or the author's message (so preferably an accurate transcript).

However, it is very difficult to fulfill all of these requirements. It is especially challenging to find any documentary material that could be said to be a complete

description of a person's cognitions. As was mentioned in chapter 3.1.2, a management researcher normally only has access to the revealed causal maps. Speeches and documents are typically used to promote a point of view and are thus inherently politically biased.

The main documentary sources used for this study are board of directors' minutes and annual reports. The analysis of sources according to the aforementioned criteria is presented in Table 3-2. Two different sources were chosen to satisfy the completeness criteria. The minutes of the board of directors are used in all cases in which these documents are available. The CEO's analysis of the market and the environment, that is present in most of the board of directors' minutes, gives a good understanding of the causalities present in the company's environment. The argumentation and discussion of decisions is also valuable data, because with this the managers present their reasons for carrying out the decisions. The annual reports supplement the cognitive map by describing the strategy of the company, which is not explained so extensively in the minutes.

	<b>Board of directors' minutes</b>	<b>Annual reports</b>
<b>Relevance</b>	Highly relevant - describes the day-to-day problems that the management faces.	Highly relevant - discusses the major events of the year and the strategic policies.
<b>Causal richness</b>	Varies by the manager and the secretary making the notes. Usually fairly high.	Varies by the time. The current annual reports contain much more causalities than the old ones
<b>Background information</b>	Fairly scarce - context is normally known to the listeners.	Satisfactory - issues are explained to the investors in adequate amount of detail
<b>Completeness</b>	Good - as the amount of material is significant, the key issues are revealed. However company's strategy is not clearly stated as it is clear for the audience.	Not so good - hard to determine, which issues are relevant as everything is mentioned only once. Also the description of environments' causalities is somewhat scarce. However the strategy of the company is defined in fair detail.
<b>Reliability</b>	Adequate - The material consist of reports and notes made by a secretary. Hard to determine the exact reliability of the notes as they are not an accurate transcript. However, the notes have been reviewed by the scrutinizers of the minutes.	Fairly good - it is likely that the managers examine carefully the text that comes to the annual reports.

Table 3-2. The empirical material considered in the light of Axelrod's criteria.

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Even though neither documentary source fulfills all of the points mentioned by Axelrod, they do complement each other well. It is therefore likely that with these two documentary sources, each case can build up a fairly reliable and comprehensive picture of managerial cognitions within the limitations considered in chapter 2.3.

***Deriving the raw maps***

Deriving the raw maps is a process of reading the source material and finding all of the causal statements within. Cause and effect are recorded and are given the appropriate linkage. The possible linkages are listed in Table 3-3. The first seven linkages have been created by Axelrod (1976), and the last four by Huff et al (1990), in order to extend the mapping method to record examples and equivalences. Huff et al (1990) assert that examples and equivalences illustrate well the level of interest a person takes in the issue being dealt with.

Symbol	Effect
/+/	Positively affects
/-/	Negatively effects
/⊕/	Will not help
/⊖/	Will not hurt
/a/	Affects indeterminately
/m/	Affects in some nonzero way
/0/	Has no effect on
/=/	Is equivalent to
/≠/	Is not the same as
/∈/	Is a member of
/∉/	Is not a member of

*Table 3-3. The possible different causations.*

According to Huff et al (1990) and Wrightson (1976) it is very important to derive all the cognitions of the source material in the first stage. This enables intercoder comparisons and repeatability of the study. Laukkanen (1994) further urges a researcher to create a database of the causal statements. In this study no actual database is made, but the raw maps are saved within excel-files that can be observed later when necessary.

Coding the causalities is not a trivial process. Many times the statements can be obscure and the causes and effects unclear. A rule of a thumb to be used when deriving the causal statements is that the job of the encoder is to denote, and not to interpret (Wrightson 1976). This is to say that the coder should not try to uncover

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reasons if they are not obvious in the text. The only causalities that should be recorded are those stated by the research subject.

The coding guide created by Wrightson (1976) helped on many occasions when performing the encoding work. Wrightson (1976) has developed several rules for finding and recording causalities, and these rules are also followed in this study. These rules increase the validity of the study. Many could not be applied in a perfectly straightforward way however, because the rules of the coding guide concerned English texts, whereas the source material of this study was written in Finnish.

### ***Merging the concepts***

When the causations have been derived, the next step is to merge different statements referring to the same cognitive concept. It is common that the managers describe the same issue using different terms. Merging the concepts enables simpler cognitive maps and creates the correct linkages between the different concepts. Merging is not a simple process and it always demands some interpretation from the researcher. (Wrightson 1976)

In this phase it is important that the researcher is, to some extent, aware of the terminology of the researched field (Laukkanen 1994). Only by knowing the jargon can the researcher know which terms refer to the same issue. In this study, expertise in the domain-specific terminology is developed by reading histories of the case firm and by studying the source material carefully. If a term is particularly unclear, it is clarified in the interviews that are carried out after the archival study.

In the source material of this study, many people explain their views of different issues. It is often so that different people explain issues concerning their area of expertise. To understand the basis for a particular decision it is important to map these speeches, because the issues that are presented are almost certainly shared by many of the people involved in the decision making, and have an influence on the decision. Thus the merged concepts are based on statements made by different people at different times.

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As it is difficult to say whether two people's definitions of a concept are similar, Wrightson (1976) advises approaching a cross-person concept merger with caution. However, when studying the company history of the case company, the only way to create an extensive picture of the cognitions influencing the decisions studied is by taking the statements of all powerful stakeholders into account. This is not expected to cause major problems, as there is very seldom a dispute between different issues or concepts in the source material. Furthermore, the most of the concepts have stayed the same for tens of years. However, as was stated in chapter 2.3, the resulting cognitive maps are not expected to chart the mental models of any single person, but rather are to be maps that state the most significant issues affecting the decisions studied.

### ***Drawing the map***

The last step of the mapping process is drawing the map. Before the map can be drawn however, the concepts to be presented on the map must be chosen. If all of the concepts mentioned in the source material were drawn on the map, it would become obscure and it would be difficult to spot important issues. Huff et al (1990) mention that in their process they keep a separate file of the issues that are linked to only one or a few concepts, whilst instead concentrating only on those concepts that are more richly linked. In this study, the only concepts presented are those that are mentioned in at least in two separate documents, and that are linked to other such concepts. It is probable that the issues that are truly important to the management are brought forth more than once.

The selection process is aided by the use an excel-macro, which creates a table containing all of the occurrences of different terms. Careful reading of the table normally also helps to spot most of the clerical errors that have occurred during the merging process. It is common that there are some typographical errors and that some concepts have been written in different ways.

When the table has been formulated, the drawing process can begin. With the excel search function, each link to a concept is found and drawn on the map. If a linkage is found more than once, the amount of occurrences is written next to the causality symbol to indicate the strength of the relationship. As the archive study is not an

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interactive research method, this is the only way to elicit the strengths of the linkages. The same method has been used by Fahey and Narayanan (1989).

To avoid complexity in the final map and to concentrate the reader's attention to the central issues some trivial concepts and linkages are not drawn on the map. These concepts are presented in Figure 3-4. The documentary sources often make for example statements indicating that the turnover of some division has grown because of the favorable price level. These kinds of linkages are drawn only if they are seen to have some strategic meaning (for example if there is a price crisis of some sort).

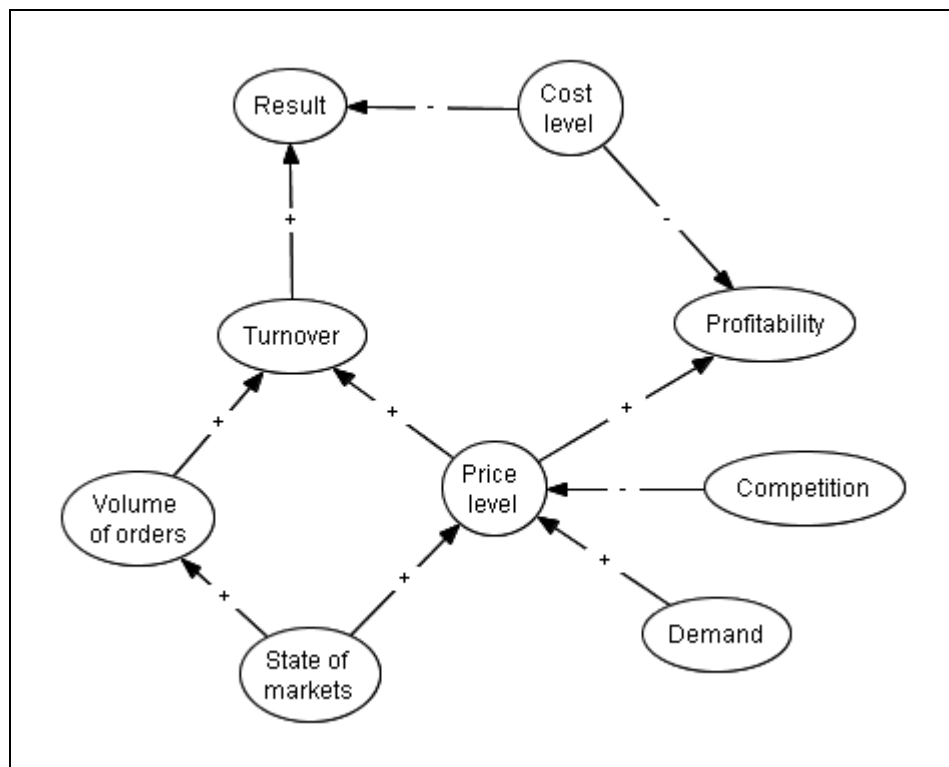


Figure 3-4. The map containing the trivial issues.

To help the interpretation of the maps Figure 3-5 presents the different figures that can be presented in the map. Reading them is fairly straightforward as almost all concepts and linkages are normal. However some concepts are drawn inside boxes. They should not really be drawn, according to the rule that each concept should be mentioned in at least two documents. However they are presented because they are considered important by the author for some reason. If there is a star over some concept, it means that it has a linkage to some other map within the case. This is possible as in some cases there is more than one map. Some linkages are drawn with

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a broken line, indicating an indirect linkage. This may occur because either there is a term that is not drawn because of the aforementioned rules, or because the linkage is not directly mentioned but is highly implicit.

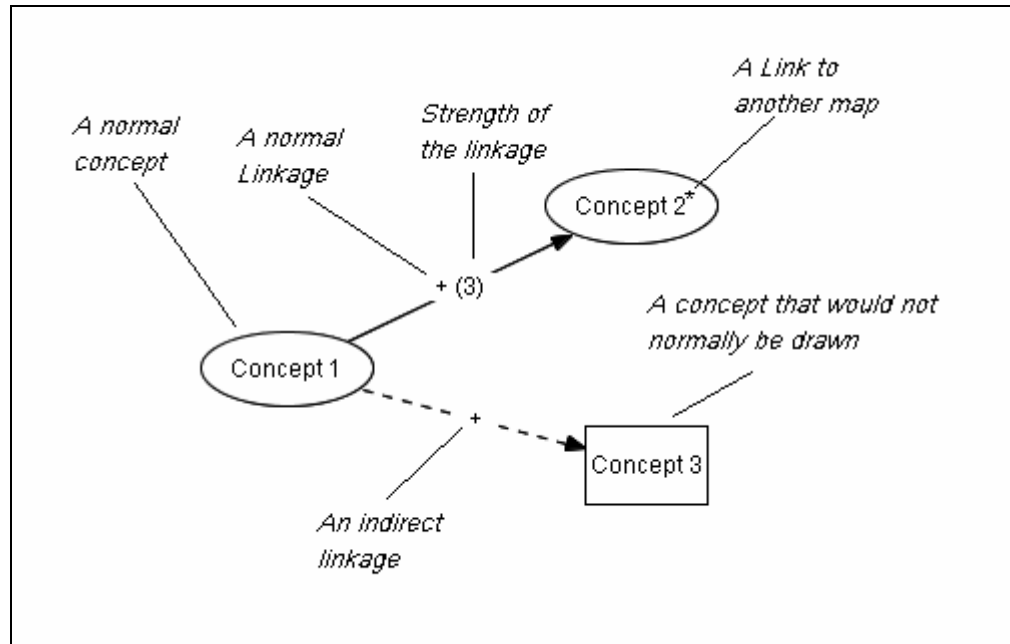


Figure 3-5. The explanation of different figures in the maps.

The product of the drawing process is the main result from the case study. The cognitive map is published with a table showing the occurrence rate of the different concepts. This should reveal what the most important issues for the managers were at the time, and how they were linked to each other. The results of this process are presented in the following case study.

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## **PART II**

### **4 THE CASE STUDY: ENSO GUTZEIT OY**

The case study creates a snapshot of managerial cognitions at four different time points in the history of Enso Gutzeit:

1. The beginning of an overseas activity in 1965
2. The major acquisitions of paper mills in 1987
3. The Stora-Enso merger in 1998
4. The current situation

Each of the first three cases has occurred during the mandate of a different CEO. This provides the opportunity to compare the similarities and differences between the mental maps, and to consider the persistence of the belief systems and the challenges faced by the organization.

The structure of the each case study is as follows. First there is a short introduction that presents the decisions that are observed in the case study and explains their strategic value, thus justifying their inclusion in the study. The first actual chapter presents the decision making process behind the decisions, considers the stimulus for each decision, and with this information establishes the time-span for the study. The second chapter presents the material that is used for each case and justifies its usage. The third chapter presents the results. The results are begun with a table showing the frequency counts of different cognitive concepts, which is followed by the cognitive causal maps. The chapter then continues by tying the actions to the cognitive maps. After this, the interesting parts of the maps are presented in more detail. Finally, each case study presents a discussion of which issues are not in the map, but could have a place in the managerial interest.

#### **4.1 Eurocan and Pineville kraft: 1963-1965**

The focus of the first case study is the decision to start operations overseas. Operations started with two major pulp- and kraftliner mill projects. One was built in the USA, at Pineville in Louisiana, and another was built in Canada, near the town of

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Kitimat in British Columbia. An affiliate firm was founded for both projects. The first was called Pineville Kraft Corp, and the other was Eurocan Pulp & Paper Co. Ltd.

The aforementioned projects were clearly strategically significant. Considering the economics of the projects, the combined budget was 162 million finnmars (Ahvenainen 1992). For comparison it should be mentioned that the profit of the company between years 1963-1965 varied between 5 and 10 million<sup>1</sup>. The projects were also like nothing Enso had ever done before.

The decisions studied were not Enso's first international projects, however. The firm had acquired a majority shareholding in a paper mill in Roermond, Holland, in 1963. However, the budget of this project was only some 20 million (Ahvenainen 1992). Furthermore, Enso had been selling its products in Europe for years, and it had existing machinery to market the products produced in Roermond mill (Ahvenainen 1992). By contrast, America was largely uncharted territory for the firm. Thus it is fair to say that the decisions of this case study started the international development of the firm.

#### **4.1.1 The time-span of the case study**

A very important stimulus for a strategic change at the beginning of the 1960s was a lack of raw material. The manufacturing of pulp and paper products had been growing rapidly and the supply of wood could not keep pace. This progress led to a rise in the prices of raw material and further jeopardized the profitability of the company's products, especially those with a low degree of value-added. Furthermore, as Enso could not meet demand, it was losing some of its clients. (Ahvenainen 1992)

A lack of wood is not the only explanation for Enso's internationalization, as other responses were being employed (including foreign imports and the usage of birch

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<sup>1</sup> The 1965 annual report of Enso Gutfzeit Oy

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pulp). A major stimulus that forced Enso to consider internationalization maneuvers was the activity of North American companies in the European market. Various players from the USA and Canada had acquired European pulp- and paper mills and companies, and were therefore presenting a direct threat to Enso's home markets. The CEO of Enso considered the threat of American firms as follows, whilst arguing that Enso should invest overseas:

*“It is notable that companies from the USA and especially from Canada strive towards European markets with vast building programs. The only way [to defeat them] is to use their own weapons against them, which is done by benefiting from their cheap raw material costs.”<sup>2</sup>*

The first date that the threat posed by the North American companies is mentioned in the board minutes is 28.6.1963. This is therefore chosen as the starting point for the study.

The decision making processes for the Pineville and British Columbia facilities (the so called Eurocan-decision) were remarkably quick. Both were initiated in spring 1965 and by 25.5.1965 the directorate of Enso Gutzeit had already applied for board of directors' authorization of the strategy. This was given three days later. Therefore, the end point for the case study is 28.5.1965. External reporting also continues for a while after the decision, and thus external documents published shortly after the decision have been included in the study.

#### **4.1.2 The material used for the case study**

The material that is observed for this study is:

- The minutes of the board of directors, 28.6.1963-28.5.1965
- The annual reports of Enso Gutzeit Oy, 1963-1965
- The press release concerning Enso's foreign investments, 21.6.1965

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<sup>2</sup> Translated from the minutes of the board directors 25.5.1965

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The people to be interviewed for this case are

- Kurt Ignatius, a member of the directorate before and after the Eurocan decision
- Mauri Skogster, the field manager of the Eurocan project

These people were actually interviewed for another paper concerning the Eurocan-decision, but the themes used make these interviews suitable also for this case study. The interview guide for these interviews is presented in appendix 2.

### 4.1.3 The cognitive cause maps

Lack of wood	27
American activity	20
Production cutbacks	18
Delivery reliability	9
Bottom line	9
Demand of kraftliner	8
Example	8
Price of kraftliner	8
Competition	8
Losing customers	8
Price of wood	7
England's import tax	7
Increasing degree of value added	7
Export of kraftpaper	6
Financing situation	6
Labor disputes in Finland	5
Demand of kraftpaper	5
Wood import	5
Profitability	5
Price of kraftpaper	5
Export cutbacks	5

*Table 4-1. The occurrence rates of different cognitive concepts.*



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There are three clearly separate sections in the map. This case study will concentrate on the largest one, which concerns Enso's strategy and business as usual. The causality mentioned in the smallest section which concerns the water power business is trivial, and was not a major issue for Enso's management. The section that concerns low value added products, such as kraftliner, kraftpaper and pulp, is in the map mainly for two reasons: low value added products were becoming unprofitable and the UK's import tax was hindering exports. The first of these points will be observed in the main map, because increasing the degree of value added was a major concern. The UK's import tax is not considered as a major strategic challenge in this case study, as it did not provoke any large scale counter measures, and thus its effects are not considered in detail.

The ties between the cognitive map and the actions in this case can best be illustrated with a map depicting the basis for the internationalization decision presented by CEO Pentti Halle to the board of directors in a meeting on 24.5.1965. This illustration is presented in Figure 4-2. As can be seen, the reasons for the actions are extremely well in line with the cognitive map. The decision to act can be seen as a result of two root causes, each of which has the highest number of references in this case: the threat of Americans and the lack of raw material. As can be seen from the cognitive map, delivery reliability and the aim to increase value added were both caused by raw material scarcity. This case will go on to explain the root causes and their consequences.

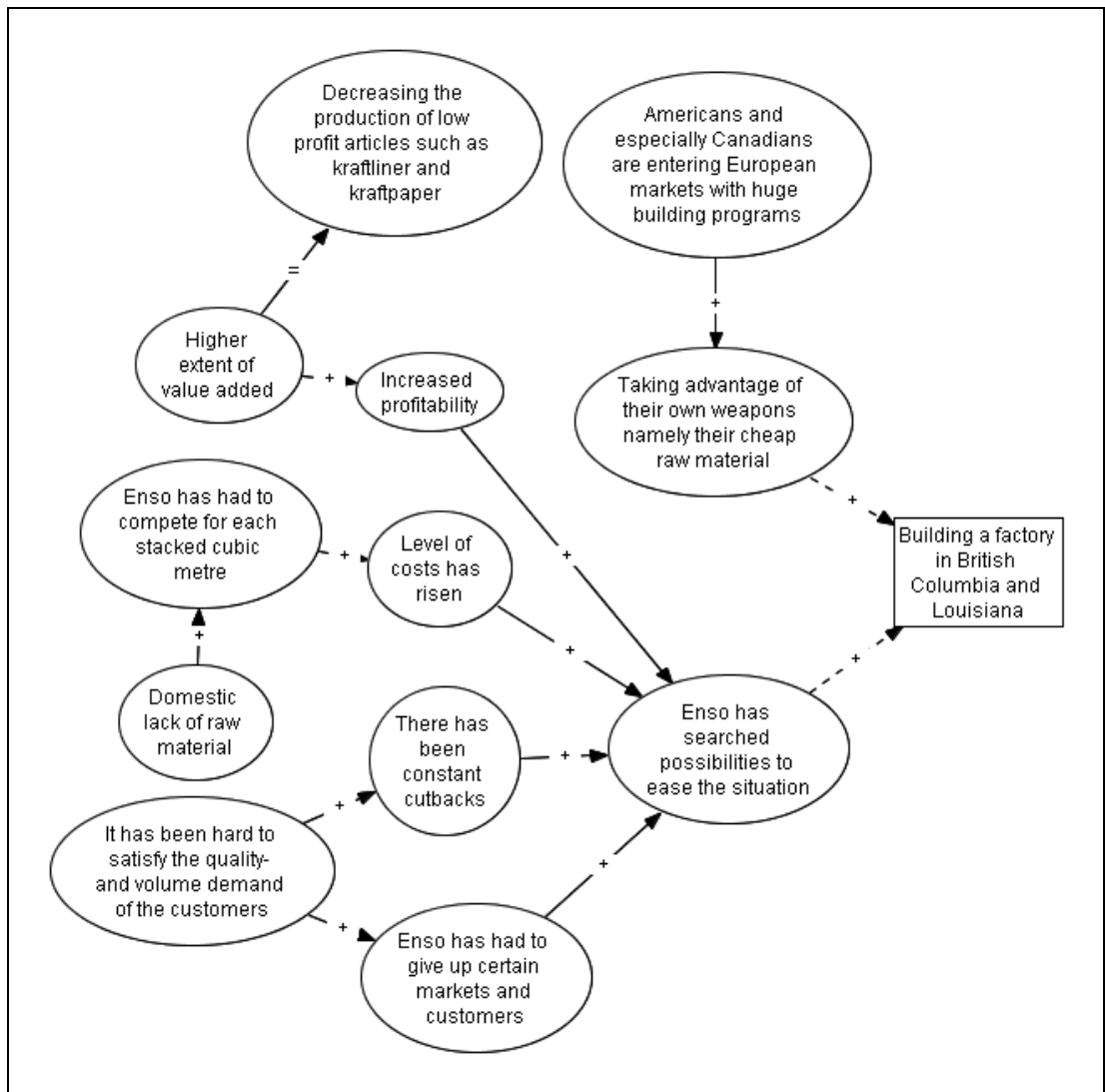


Figure 4-2. Halle's argumentation logic from minutes of board of directors 25.5.1965

The strongest link in the cause map of this study is the link between lack of wood and production cutbacks. During the years that were studied, Enso had had to reduce production in many of its production facilities because of scarcity of wood<sup>3</sup>, even though there would have been sufficient demand for full utilization of the plants. The low-value added products such as kraftliner, kraftpaper and timber products were first to suffer from the cutbacks. Thus lack of wood also directly increased the proportion of high value-added products in Enso's portfolio.

<sup>3</sup> See for example minutes of board of directors 19.7.1963

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As can be seen from Table 4-1, Enso was also concerned about its reliability as a supplier. Enso could not satisfy the demands of some of its regular customers. Because of this, there was a fear within Enso that customers would resort to other suppliers, and thus the production cutbacks would be permanent. Needless to say, this was very bad for business.

The map contains the most frequently mentioned methods which Enso used to improve the raw material situation: increased procurement activity in Finland, foreign wood imports, and trying to increase the activity of the wood market. Other methods, such as increased felling in Enso's forests, and usage of alternative materials such as birch pulp were also used. None of these actions could solve the problem, and could only work as temporary remedies. It was hard to develop a longer-term solution to the challenge, as new pulp and paper factories were still being built in Finland, and because as forest owners were waiting for a rise in wood prices, they abstained from selling.

As was mentioned, another significant strategic challenge besides the unfavorable raw material situation was the increased activity of Americans in European markets. Enso's management team found various explanations for this, such as the favorable development of European markets, slow growth in American markets, and the tariff union that was created in 1957 with the Roman contract. Ahvenainen (1992) also mentions that the Americans were trying to secure their presence inside the tariff union by buying factories in Europe. Whatever the reason, the Americans were seen as a significant threat.

As can be seen from the cause map, the increased activity of North American pulp and paper companies meant that competition in Enso's export markets was getting more intense, especially in the kraftliner and kraftpaper markets, where the Americans were particularly active. This was further exacerbated by Nordic kraftpaper overcapacity. This fierce competition forced Enso out of some of its export markets. It was not profitable enough to export products with the prices that the local mills could offer for their customers. The intense competition also provoked Enso to increase the degree of value-added in its product portfolio, as the prices of the already low-profit products such as kraftliner and kraftpaper were sinking.

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#### **4.1.4 Conclusions**

One immediate impression from the map is that the issues within cannot be said to be linked to long-term planning. The topics mentioned most frequently, and the strongest ties in the map, concern the most significant threats and the company's tactical measures to remedy them. The first actual strategic maneuvers made against the most significant threats were the internationalization decisions that this case study observes.

Another notable issue in the causal map is its concentration on production-related themes. On the basis of the map it would seem that constant capacity utilization, creating new capacity, and controlling costs were seen as the tasks of the top management. For example, issues concerning marketing, sales, human relations and research and development are totally absent from the map.

#### **4.2 Tervakoski and Ahlström acquisitions: 1984-1986**

The second case study examines the acquisitions of majority ownership in a fine paper producer, Tervakoski Oy (15.4.1986) and the purchase from A. Ahlström Oy of a production plant in Varkaus (19.12.1986). The latter was a very large purchase, as Varkaus plant contained a sawmill, a power plant and a pulp, cardboard, and paper mill. Furthermore, Enso acquired Ahlström's powerplant in Klåsarö, and one fifth of the electricity production of Mussalo and Kotkan Höyryvoima. In the same deal, Ahlström acquired Enso's whole machine shop branch, and a packaging factory in Lieksa.

There is no question of whether the Ahlström deal was strategic or not. The net price of the production plant was 935 million Finnish marks, which made it one of the largest deals in the history of Enso Gutzeit Oy (Ahvenainen 1992). The Tervakoski acquisition was clearly less significant. The price of the acquired stocks was 47 million Finnish marks<sup>4</sup>. It was, however, part of a wider strategic maneuver in which

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<sup>4</sup> The minutes of board of directors 4.4.1986

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Enso divested some of its none-core activities and concentrated on the production of pulp and paper products.

#### **4.2.1 The time-span of the case study**

As the decision to acquire Tervakoski is clearly less significant than the deal with Ahlström, the time-span of the study is considered mainly from the point of view of the Ahlström deal. The decision-making processes for the Ahlström-decision was short and straightforward, lasting only a couple of months.

According to Pentti Salmi<sup>5</sup>, the main stimulus for the Ahlström-decision was that Enso had just resigned from various cartels (such as Finnpap, Finnboard and Finncell). Therefore, reliable deliveries for newsprint customers were dependant on Enso's factory in Summa. This dependence on only one factory was very high risk, and thus Enso needed another high-volume factory to meet customer orders in case of production interruptions at the Summa factory.

Enso withdrew from the most significant cartel in 1986. Thus, the observation time span from the withdrawal to the acquisitions is fairly short. To gain a wider perspective about Enso's strategy and the business environment, the documentary analysis of this study begins from the time at which major investments became the strategic focus of Enso. The economic situation of Enso in the beginning of the 1980s was poor. Because of this, a major program to improve the economic situation was begun on 8.10.1981<sup>6</sup>. The final report from this program was given to the board of directors on 24.1.1984<sup>7</sup>. Pentti Salmi also mentioned that by the end of 1983, most of the rationalization efforts had been carried out<sup>8</sup>.

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<sup>5</sup> An interview with Pentti Salmi, conducted by Taneli Vaskelainen in Helsinki 3.11.2006

<sup>6</sup> The minutes of board of directors 8.10.1981

<sup>7</sup> The minutes of board of directors 24.1.1984

<sup>8</sup> An interview with Pentti Salmi, conducted by Taneli Vaskelainen in Helsinki 3.11.2006

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Enso avoided major investments until the end of the program. The firm concentrated instead on divesting investments that were not seen as part of its core business, and on rationalizing its existing profit centers. After the end of the program, Enso began a major investment streak, which reached its peak in 1987 when the transaction with Ahlström was carried out (for Enso's investments see Näsi, Lamberg et al. 2001). Thus it is reasonable to begin research from the start of 1984, and to finish at the end of 1986, when the deal with Ahlström was made.

#### **4.2.2 The material used for the case study**

Internal documentation was available for this study. However, it is unfortunately not very suitable for cognitive mapping, because during Pentti Salmi's reign the board of director's minutes' scarcely described the reasons for decisions. Thus the main documentary sources for this case are the annual and the interim reviews, which describe Enso's actions and environment in a fair level of detail.

The material that is observed for the study is the following:

- Annual reviews of Enso Gutzeit Oy 1984-1986
- Interim reviews of Enso Gutzeit Oy 1984-1986
- Board of directors' minutes of meetings, in which decisions concerning Tervakoski and Ahlström were made in 4.4.1986 and 18.12.1986
- Press releases concerning the acquisitions in 4.4.1986 and 19.12.1986

The people to be interviewed for this case are:

- Pentti Salmi, CEO of Enso Gutzeit 1975-1988

The interview guide for this interview is presented in appendix 3.

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### 4.2.3 The cognitive cause maps

Strength of dollar	22
Tervakoski	19
Varkaus mill	17
Result of Eurocan	15
Turnover	13
Price of pulp	12
Price of oil	10
Biggest investments of 1986	10
Definition	9
Price level	9
North-American competitiveness	9
Biggest affiliated companies measured with amount of personnel	9
Profitability	8
Packaging board Soviet trade	8
Capacity utilization of newsprint machines	8
Cost level	8
Gross margin	8
Price of fine paper	8

Table 4-2. The occurrence frequencies of the most common concepts of Tervakoski and Ahlström acquisition.





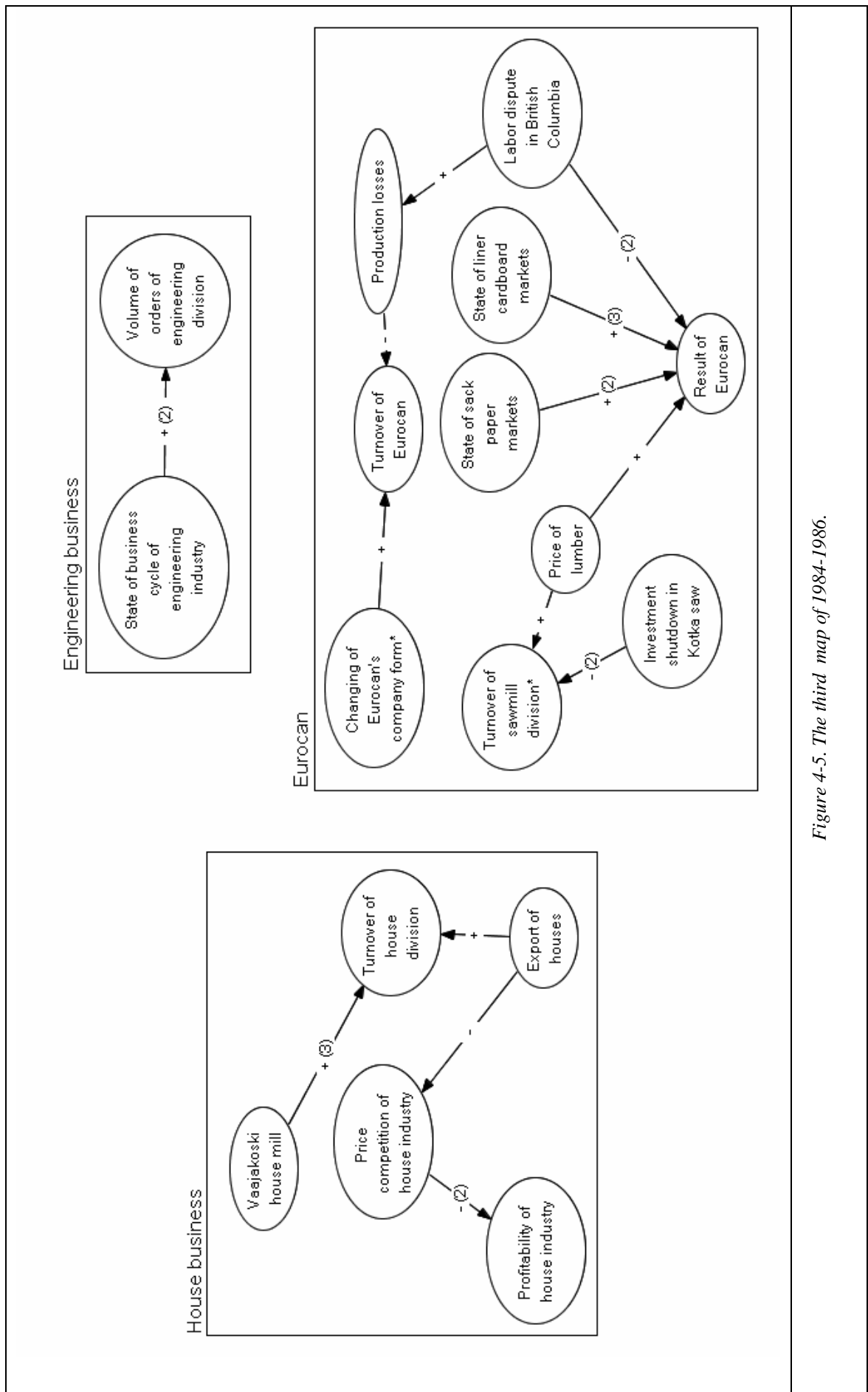


Figure 4-5. The third map of 1984-1986.

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In this case, the link between the cognitive map and actions is not so clear. Pentti Salmi<sup>9</sup> mentioned three strategic reasons for the Ahlström-deal:

1. As was mentioned in chapter 4.3.1, Enso had left Finnpap and its reliability as a supplier was threatened. With this argument the members of Finnpap tried to convince the politicians on Enso's board of directors to force Enso back into the union. The Varkaus mill provided Enso with reliability as a supplier and thus nullified this argument.
2. Enso wanted to divest all of the non-core business areas that it was involved in. The core competence of Enso was in the forest industry. The Ahlström-deal both strengthened Enso's strategic position in the forest industry, as well as giving an opportunity to leave the engineering industry.
3. The Varkaus mill supported Enso's strategic goal of achieving growth.

Of the aforementioned issues, the most important - reliability as a supplier - is not present in the causal map at all. The second issue can be seen in the 'strategy of business as usual' cluster, with the concepts of concentrating on the forest industry, and, in the same cluster, defining the wood processing industry as the core function of Enso. The concept of size is linked to both the Varkaus mill and Tervakoski. However, none of these concepts are mentioned very often.

Ties between the cognitive map and the Tervakoski-acquisition are equally unclear. However, this can be easily explained. Enso had always had a special relationship with Tervakoski's owner, Suomen Pankki (Bank of Finland), because the state of Finland was Enso's main owner. The top management of Tervakoski had been unsuccessful in leading the company and thus Suomen Pankki offered the mill to Enso. It was easy for Enso to agree, as the production of Tervakoski fitted with

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<sup>9</sup> An interview with Pentti Salmi, conducted by Taneli Vaskelainen in Helsinki 3.11.2006

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Enso's portfolio and the price was exceptionally low. Pentti Salmi<sup>10</sup> comments on the issue as follows:

*“47 million Finnish marks was nothing, as there were forests and estates belonging to the deal. A factory could simply not be bought for a cheaper price.”*

Surprisingly, the strongest links in the causal map and the concepts with the highest frequency counts have nothing to do directly with the major strategic decisions. Rather, they are mainly concentrated on macroeconomic issues that influence the business as usual, or on variables internal to the company that affected its profits.

The strongest macroeconomic issue of the time was the strength of the dollar and its effects on Enso's business. As the Finnish pulp and paper industry has always been very export oriented, currency changes have always had an influence on its success. The strength of dollar was particularly interesting, because Enso considered the North-Americans to be their fiercest competitors. This linkage is also the strongest linkage in the causal map.

According to Pentti Salmi<sup>11</sup>, the North-American's business logic was based on the assumption that factories should have a certain capacity utilization rate. Profits were gained from economy of scale benefits by keeping the capacity utilization constantly very high. If they could not sell their production in their own continent, marginal batches were exported to Europe, to the primary export markets of Enso. Competition was tough in the 1980s, but not exceptionally so. Rather it was just a factor that top management had to consider in their day-to-day business activities.

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<sup>10</sup> An interview with Pentti Salmi, conducted by Taneli Vaskelainen in Helsinki 3.11.2006

<sup>11</sup> An interview with Pentti Salmi, conducted by Taneli Vaskelainen in Helsinki 3.11.2006

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Another important macroeconomic trend at the time of this case study was the price of oil, which plummeted in 1986<sup>12</sup>. This had many effects on Enso's business. On the one hand it increased Enso's profits as the primary market area in Europe was growing and becoming more active, and as the cost of fuel and energy became lower. On the other hand, the sawmill industry and the packaging board industry were suffering, because the economic situations of their main export markets (the Middle East and the USSR) were dependant on oil revenues.

Of internal issues, the prices of pulp and fine paper were a central concern of top management. This was because there was an oversupply of pulp at the end of 1985, which was driving its price, and consequently also the price of paper down. However, this was a purely tactical issue that could be described as business as usual. Some other tactical issues that were covered heavily were the result of Eurocan, and overcapacity in newsprint and its detrimental effect on capacity utilization.

The only issue that could be considered a strategic threat, and one which was considered a lot in the source documentation, was the profitability of the mechanical forest industry. Pentti Salmi describes the situation as follows<sup>13</sup>:

*“The Finnish sawmill industry is right now going through the worst profitability crisis in decades. The consumption of buyer countries has decreased and their own production has increased. The over-capacity of export countries has led to over-supply. The price of raw material has been in a totally wrong proportion to sales prices.”*

Interestingly, Enso reacted to this crisis by acquiring more sawmills, which were at the time very cheap because of the crisis. The Kitee sawmill is also visible in the cognitive map. These acquisitions belonged to Enso's strategy of using the wood

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<sup>12</sup> see e.g. [http://inflationdata.com/inflation/Inflation\\_Rate/Historical\\_Oil\\_Prices\\_Table.asp](http://inflationdata.com/inflation/Inflation_Rate/Historical_Oil_Prices_Table.asp)

<sup>13</sup> Interim report in the end of 1985

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material as efficiently as possible - basically, the waste product of sawmills was the raw material for pulp factories.

Closely linked to the crisis in the sawmill industry, the concept of wood scarcity, which is already familiar from the former case, is also a significant factor in the cognitive map of this case. The fact that no drastic counter measures were taken to relieve the situation would seem to show that the management considered this to be a passing issue. This is further supported by the sawmill acquisitions.

#### **4.2.4 Conclusions**

All in all, the cognitive map of this era would seem to be quite a mess. The maps are highly scattered and the concepts mentioned mainly involve tactical games of the company. No strategic intent is visible and it is difficult to understand the rationale behind the decisions studied by only looking at the map. There are some concepts that tell about the vision of the top management, such as ‘concentrating on forest industry’, but these are clearly not the most significant issues in the map. The reasons for this, and its significance, are further considered in chapter 4.5.2.

Besides the lack of strategic issues, it is also interesting that even though twenty years have elapsed since the previous case, the cognitive themes have changed very little. The whole map is very production oriented. Marketing and research and development are only mentioned as being synergy benefits of the Tervakoski-acquisition. They are said to be important resources of Enso, but they are not linked to any of its business activities.

Totally new concepts, such as concentrating on the forest industry or a readiness to survive cyclical changes are not very central, at least when measured by their frequency. Some terms, such as the cyclical nature of the business and capacity utilization are mentioned in this map and not in that of the former case. However as the business has been always cyclical and the profits always based on economies of scale, it is likely that they were just not mentioned in the preceding case.

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## 4.3 The Stora merger: 1995-1998

The third case of this thesis concerns Enso's merger to Stora Kopparberg in June 1998. There is no question about whether this merger was strategically significant or not. Both companies were already significant players in the global pulp and paper market, and together they formed a company that is one of the biggest producers in the world.

### 4.3.1 The time-span of the case study

The main stimulus for the merger was a need for aggressive growth. Esko Mäkeläinen<sup>14</sup> commented on the necessity for growth as follows:

*“We analyzed the Canadian companies for quite a long time... They were considered to be the strong companies in forest industry. Then suddenly in the 90s they were all debt-ridden and on the edge of bankruptcy. This led to the discussion of how a company, which is operating in a country with very high fibre costs can compete in globalizing markets against companies using recycled fibre and eucalyptus fibre. Conclusion was that the fibre unit costs had to be drastically reduced by higher volumes and factory specializations”*

Factory specialization meant producing only one paper type with a certain weight in each factory. This reduced the downtime of the paper machines and thus increased production capacity. However, in order to achieve this, the number of factories had to be increased.

The first growth wave was carried out by acquisitions and with different kinds of arrangements in Finland. In the former case it was mentioned that Enso bought large factories in Varkaus from Ahlström in 1986. The forest industry parts of Tampella were bought in 1993, and in 1995 Enso merged with Veitsiluoto. Enso also made significant moves abroad, such as the building of Sachsen papier, a factory making

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<sup>14</sup> An interview with Esko Mäkeläinen, conducted by Taneli Vaskelainen in Espoo 6.10.2006.

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newsprint partly from recycled material, and the acquisition of a 50% share in the Holzmann paper mill in Germany.

Yet even after the first growth spurt, Enso was still too small. To be able to compete against the low-cost producers in the long run the company had to get its hands on their competitive weapon: low-cost fibre. Building major production facilities halfway around the world was out of reach for a company as small as Enso. Continuing to grow by acquisitions and greenfield investments was also out of the question as the first growth period had left it so highly indebted<sup>15</sup>. Thus, large-scale mergers became a potential way to promote growth. A merger with a major player was now possible as Enso had grown substantially as a consequence of the acquisitions and mergers in it had made. Esko Mäkeläinen<sup>16</sup> commented on the issue as follows:

*“Domestic consolidation helped in creating the critical mass to be an equal partner in the merger negotiations. Surely we would have been nothing to Stora Kopparberg as the old Enso Gutzeit... It would have been a direct acquisition on Stora’s behalf, if anything. There would have not been any merger negotiations.”*

The merger process with Stora Kopparberg started in February 1998. Beforehand, Stora Enso had already considered merging with other Finnish players but had found a merger with them to be either unwanted or impossible (because of the competition authorities of Finland). There had also been serious merger-negotiations with Mo och Domsjö AB, but there had been some disagreements as to how the merger should be carried out. According to Esko Mäkeläinen<sup>17</sup>, because of those negotiations, the

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<sup>15</sup> An interview with Esko Mäkeläinen, conducted by Taneli Vaskelainen in Espoo 6.10.2006.

<sup>16</sup> An interview with Esko Mäkeläinen, conducted by Taneli Vaskelainen in Espoo 6.10.2006.

<sup>17</sup> An interview with Esko Mäkeläinen, conducted by Taneli Vaskelainen in Espoo 6.10.2006.

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Stora merger could be carried out very quickly. In the beginning of June 1998, everything was ready for the merger to take place.

The time-span for this case study begins after the Veitsiluoto merger in 1995, because from that point Enso started searching abroad for major players with which to merge. The time-span ends with the merger deal being sealed in June 1998.

#### **4.3.2 The material used for the case study**

Unfortunately, as the merger with Stora happened quite recently, no internal documentation could be acquired for the case study. Fortunately the annual reviews from the time preceding the merger are quite extensive and consider the company's environment and strategy in great detail. However, as only one annual review is published per year, the amount of documentation is rather low. As only the concepts that are mentioned in at least two separate documents are presented in the maps, there is a risk that some important concepts might not make it to the maps because of the rule that the drawn concepts should be mentioned in at least two sources. This risk is mitigated by splitting each annual review into two different parts; the CEO's letter to shareholders, and the annual report of the board.

The material that is observed for in study is the following:

- Annual reviews of Enso Gutzeit Oy (Enso Group from the beginning of 1996) 1995-1997
- The press releases concerning the Stora-Enso-merger in 2.6.1998

The people interviewed for this case are:

- Esko Mäkeläinen, Financial Director of Enso at the time of the merger

The interview guide for this interview is presented in appendix 3.

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### 4.3.3 The cognitive cause maps

Strategy	20
Main product categories	16
Result	15
Synergy benefits of Enso and Veitsiluoto	14
Holzmann	14
Net revenue	14
Continuous improvement	13
Systematic evaluation	12
ENSO STAR	11
Basic industry	11
R&D	10
Paper machine 7 of Oulu mill	10
Packaging boards	10
Fine papers	9
Departments	9
Growth	8
Divident	8
Environmental policy	8

*Table 4-3 The occurence frequences of the most common concepts of Stora-merger case.*

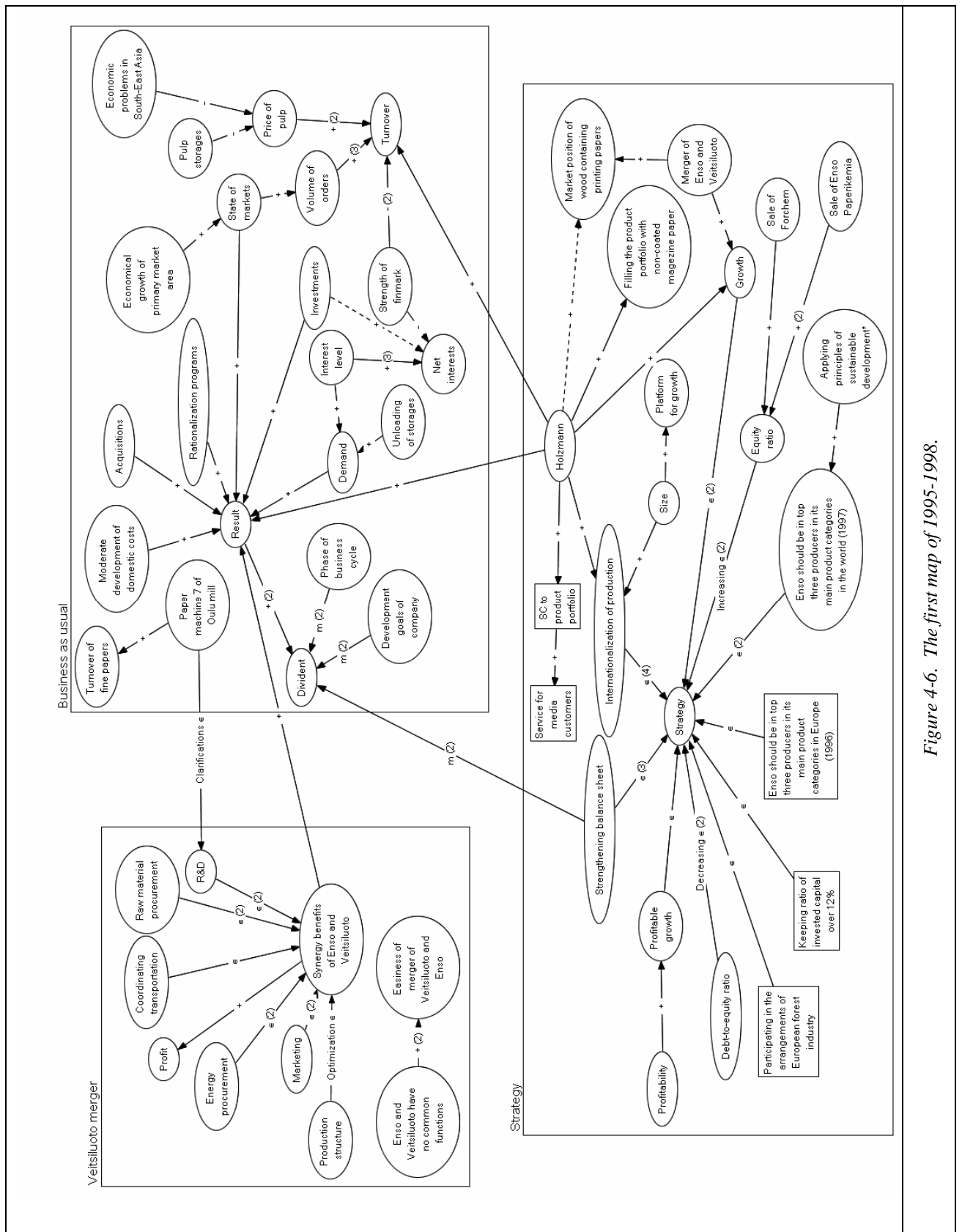


Figure 4-6. The first map of 1995-1998.



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In this case the actions and cognitive maps are very closely related. As can be seen from the map, most of the issues directly linked to Enso's strategy concern two important themes: internationalization and growth. These issues were also mentioned by Esko Mäkeläinen<sup>18</sup> as being the cornerstones of Enso's strategy at that time. Interestingly, the map does not tell the means by which Enso was planning to grow. However, as mentioned in chapter 4.3.1, mergers were the only way of expanding at the time.

Stora Kopparberg served Enso's goals of growth and internationalization well, because it was a large international player. Furthermore, Stora had some other significant strategic benefits that are not mentioned in the map<sup>19</sup>:

- The synergy benefits were substantial. Both organizations had huge global marketing and transportation organizations which could now be combined.
- Stora's product portfolio supplemented that of Enso nicely. Stora was strong in the magazine paper business, whereas Enso had a strong newsprint division. It was important to be strong in both businesses as competitors gained a competitive advantage by giving volume discounts for printing houses, who ordered their magazine paper and their newsprint from the same supplier.
- Stora had a wholesaler network serving the fine paper business, which Enso lacked. Wholesalers were necessary in fine paper distribution, as customers normally ordered small amounts at a time.

Synergy benefits were of course a direct consequence of growth, and the resulting economy of scale benefits. The goal of supplementing the product portfolio can be seen in the map in the context of the Holzmann acquisition, which brought super-calendered paper (SC) to Enso's portfolio and thus increased its capability to serve media customers. It would seem that the wholesaler network was a bonus that was

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<sup>18</sup> An interview with Esko Mäkeläinen, conducted by Taneli Vaskelainen in Espoo 6.10.2006.

<sup>19</sup> An interview with Esko Mäkeläinen, conducted by Taneli Vaskelainen in Espoo 6.10.2006.

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not on the top of the list of strategic issues, but still that had a positive effect on Enso's strategic position.

Issues that are linked to the concept of strategy, and that are not directly or indirectly connected to growth concern the financial situation of Enso. As was mentioned earlier, Enso's debt-to-equity ratio was very high, and it was an important strategic goal to get this lower. This is mentioned in the map in many ways, such as decreasing debt-to-equity ratio, increasing equity ratio and strengthening the balance sheet.

Other strategic issues that rank highly in the frequency count list are the recent moves to grow the company: the Veitsiluoto merger and Holzmann acquisition. As covered in chapter 4.3.1, these were both parts of the first growth wave that prepared Enso for a large merger. The ENSO STAR-program and its main principles; systemic evaluation and continuous improvement, are also high in the frequency count list. ENSO STAR was a comprehensive quality management program, which began in 1995.

One further issue that is high in the frequency count list is Enso's organization. There was nothing notable happening in Enso's organization at the time of this case, but the reason that this is mentioned so often are the documentary sources chosen for this study. The annual reviews, which were the primary documentary sources, always cover the organizational structure of Enso and thus it is also included in the map.

#### **4.3.4 Conclusions**

This map shows a clear separation between business as usual and strategy. The strategy in the map is fairly crude, containing only three themes (growth, internationalization and debt-to-equity ratio) and probably does not give a perfectly accurate picture of all the strategic themes that were topical at the time of the merger. However, from the interview with Esko Mäkeläinen<sup>20</sup> it became apparent that at the

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<sup>20</sup> An interview with Esko Mäkeläinen, conducted by Taneli Vaskelainen in Espoo 6.10.2006.

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time of the merger there was a feeling that there was a need for haste in preparing Enso for the challenges of rapidly globalizing markets.

In this map there are clearly some new cognitive concepts that did not belong to the vocabulary of the management in the former cases. The most obvious is of course strategy, which is visible for the first time as a separate theme. Another important development to notice is that internationalization has a central role in the map, whereas in the map from the former case it was not mentioned at all.

Some new functions are also present in the cognitive map. Quality management and the ENSO STAR program are both very high in the frequency count table. Interestingly, however, the program is not linked to any other area of business, but remains as a separate group in the map. New themes are environmental policy and applying the principles of sustainable development, although these are not so central in this case. These concepts are indirectly linked to Enso's strategy. Issues concerning human relations are mentioned for the first time in this map, in the form of different bonus systems. However, they have a fairly insignificant role and are totally separated from the rest of the map.

Despite the existence of some new terms, the map and the most important concepts are still very production-oriented. As in the former case, marketing and research and development are also mentioned here only in the context of synergy benefits. Therefore it would seem that the task of management has not changed dramatically from former cases.

## **4.4 Current situation**

This case is not based on any significant decision, but it rather attempts to chart the top management of Enso's current cognitions about the firm's strategy and environment.

### **4.4.1 The time-span of the case study**

The choice of time-span can not be made on the same basis as in the preceding cases. As there is no decision to be studied, there is also no real stimulus that would start the observation period. In this case, the deciding factor for the time-span is the length

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of time that the observation period should be in order to develop a comprehensive picture of the strategically important cognitions of managers. Thus, experience gained from the former cases will be used to decide the starting point for the study. In the former cases, particularly the Stora-Enso case, which had very similar documentation to this, the two last years were enough to reveal the significant cognitive themes. Thus the starting point for this study is set as 2004.

#### 4.4.2 The material used for the case study

Material-wise this case is much like the Stora-Enso case. As the studied time-span is very recent, no internal documentation can be used. However, the annual reviews have become even richer in detail compared with those from the time of the merger. In this case the reviews are also divided in to the letter to shareholders and the annual review of the board, in order to increase the amount of documents.

The material that is observed in the study is as follows:

- Annual reviews of Stora-Enso 2004-2005

#### 4.4.3 The cognitive cause map

Profitability	18
Paper merchant acquisitions	15
Profitable growth	14
Acquisitions	10
ROCE	10
APR	10
Low-cost fibre	8
Veracel mill	7
South America	7
Russia	7
Moving closer to end customers	7
Emerging market strategy	7
The strength of US dollar	6
Debt-to-equity ratio	6
Profit 2007	6
Emerging markets Enso is concentrating on	6
Strategy	6

*Table 4-4. The occurrence frequencies of the most common concepts of current situation.*

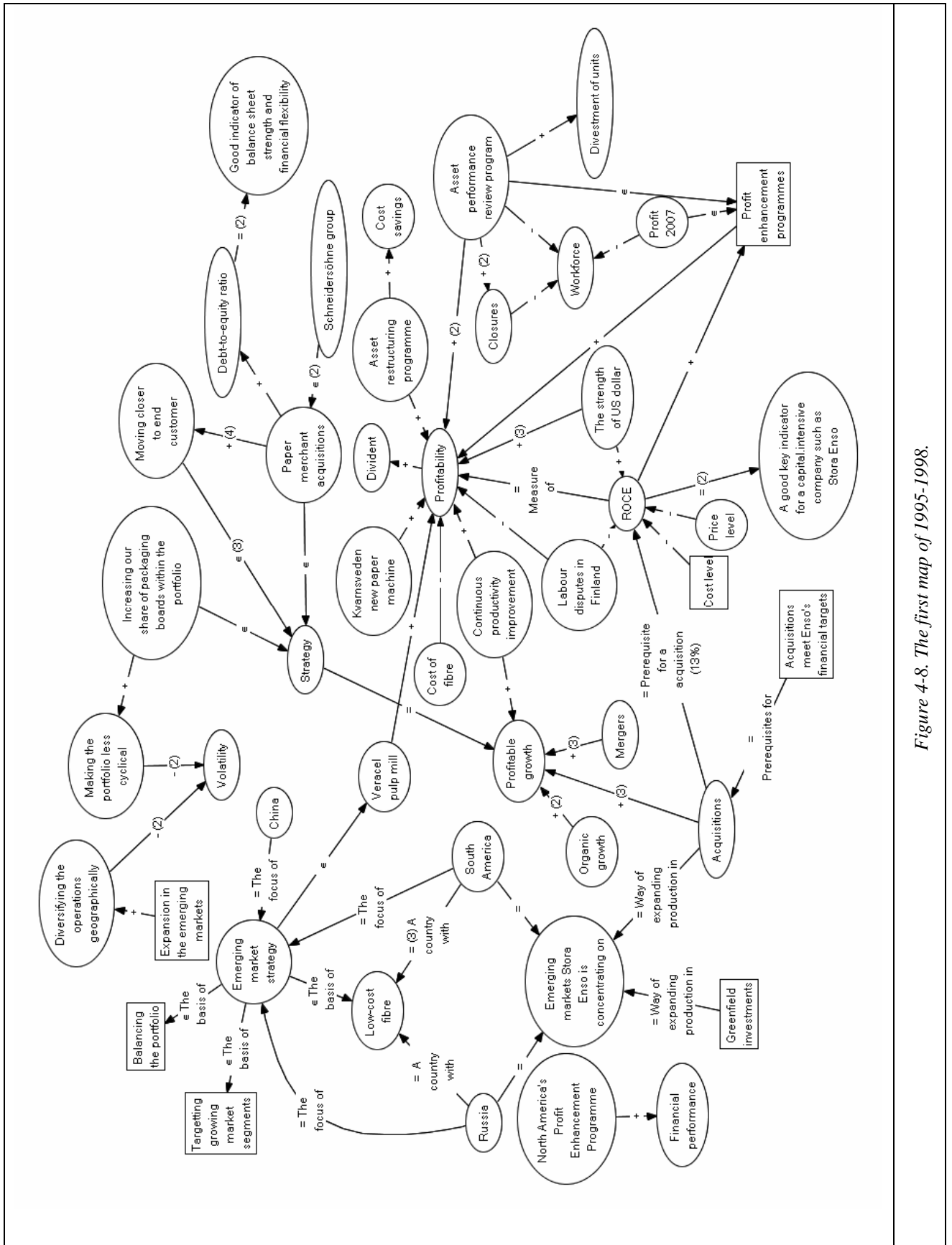


Figure 4-8. The first map of 1995-1998.

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This map almost exclusively contains strategic themes. In the center there are the two strategic goals that all Stora-Enso's activities aim towards; profitability, and profitable growth. Around them are the different means to reach these goals.

The means that Stora-Enso uses to promote profitable growth are acquisitions, mergers and organic growth. Of these three, acquisitions would seem to be the most important method. Each acquisition must meet Stora-Enso's financial targets, which are<sup>21</sup>:

- It has to be EPS accreditive after one year excluding synergies
- It has to be Cash Earnings per Share (CEPS) accreditive after one year excluding synergies
- In the near term, returns from the acquisition must exceed the Company's pre-tax weighted average cost of capital of 8,7%
- In the long term the acquisition must support the ROCE target of 13%

In the upper right corner there is Stora-Enso's emerging market strategy. Stora-Enso's primary goal in emerging markets is to tap the low-cost fibre resources of these regions. The main area containing low-cost fibre is South America with its eucalyptus plantations. Russia provides cheap fibre to Stora-Enso's Finnish factories. The secondary goal in emerging markets is to get a strong presence in those areas, where growth of paper consumption is rapid and markets are large. China is especially important in this respect.

The lower right corner of the map presents Stora-Enso's main strategic theme in countries with high cost levels: the profit enhancement programs. The profit enhancement programs, such as Profit 2007 and Asset performance review, try to raise the profitability level of Stora-Enso's units to meet the financial targets of the company. Units whose financial results are not adequate are placed under scrutiny

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<sup>21</sup> Annual review of Stora-Enso in 2004

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and asked to raise their profitability. Those that fail to increase their performance, or whose situation is hopeless, are closed or divested. Naturally these programs lead to lay-offs in some units.

Above profitability there is an important new part of the growth strategy; paper merchant acquisitions. Lately Stora-Enso has been integrating towards the customers by buying large paper merchants. Two large paper merchants were bought in 2005: Papeteries de France and the Schneidersöhne group. The second acquisition is especially significant as the Schneidersöhne group is second largest paper merchant in Europe.

Next to the emerging market strategy, the maneuvers that Stora-Enso carries out to reduce the volatility of its business are presented. To make its portfolio less cyclical, Stora-Enso intends to increase the proportion of packaging boards in its portfolio. Packaging boards constituted 23% of Stora-Enso's sales in 2005, whereas the share of fine papers was 18% and the share of publication paper 33%<sup>22</sup>. The aforementioned products are the three biggest categories in Stora-Enso's portfolio. Besides changing the structure of its portfolio, Enso also reduces cyclicity by expanding its business geographically. This is mainly done by expanding operations in emerging markets.

#### **4.4.4 Conclusions**

The map of this case is clearly more strategic than those in the former cases. The map contains almost no issues that concern business as usual, but all concepts consider Stora-Enso's planning in the long run. The map is also highly consistent, and concepts form a tight and logical network.

Compared to the earlier maps, international business clearly also has a bigger role. The concept of internationalization has disappeared, but it has been replaced with

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<sup>22</sup> Annual review of Stora-Enso in 2005

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specific strategies in specific areas. Stora-Enso's focus of operations has shifted from Finland to the entire globe.

Growth, a major theme in the former case's map, has also changed. In this case's map profitability is valued more highly than size. Growth is also desirable, but only if it meets Stora-Enso's financial targets and only in certain geographical areas. In the preceding case it seemed that aggressive expansion was more important than profitability. There was a hurry to achieve critical size in order to be able to seize the opportunities which were already being exploited by competitors.

The cognitive map contains several new terms, which reflect Stora-Enso's changed strategy in a changed world. The most important is probably 'low-cost fibre'. In the two first maps, as the market was not truly global, Enso was not so interested about these resources. In the preceding case it was a significant threat driving the growth of the company<sup>23</sup>. In this case it would seem to be more of an opportunity for Enso to drive costs down and thus increase profits.

The concept of paper merchant acquisitions is also very interesting. Earlier Enso had expanded by increasing its production with acquisitions, mergers or by building new factories, or by diversifying into new business areas such as shipping or engineering. Enso is now growing by increasing its presence in the paper value chain.

The profit enhancement programs present a new theme of the strategy as well. In the preceding case, rationalization programs were mentioned, but it was not a systematic top management level issue that it is in this case. This reflects a shift of attention from growth to profitability.

The final major new theme is measures to be taken to reduce volatility. The cyclical nature of the pulp and paper industry is present in all of the cases, but only in the

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<sup>23</sup> An interview with Esko Mäkeläinen, conducted by Taneli Vaskelainen in Espoo 6.10.2006.

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maps of the current situation are there concrete measures that are taken to reduce the volatility caused by cyclicity.

Even though the map of this case is relatively different from those of the preceding cases, many issues have also stayed the same. That the task of top management is to concentrate on production is even clearer than in the two former cases. Marketing, sales, research and development, environmental policy and human relations issues are totally absent from the map of this case.

## **4.5 Cross-case analysis**

The cross-case analysis is arranged as follows. The first chapter observes the changes in the business model and the role of top management. The next two chapters consider the issues that have changed incrementally; the role of strategy, and internationalization. The final chapter concludes the cross-case analysis by making some predictions for Enso's future actions on the basis of these maps.

### **4.5.1 The business model and the role of top management**

Table 4-5 presents the persistence of different concepts that concern the business model of Enso. The terms have been arranged in order of appearance. Thus, the first terms in the table are those that existed in the early cases but that disappeared later, and last are the terms that did not exist at all in the first cases, but later came into use. The concept of internationalization is not presented in the table as its role has changed so much over the years, and it is thus presented in a separate chapter.

One very important observation from Table 4-5 is that the terms are fairly persistent considering how much the world has changed in the last 40 years. Many concepts that were important during the time of the first case were still considered in the Stora-Enso merger case, and a few even after that despite two companies with long traditions and different management styles having merged.

	1	2	3	4
Increasing degree of value added	y	y	n	n
Scarcity of wood	y	y	n	n
Result	y	y*	y	n
North-American competitiveness	y	y	i	n
Economic growth of primary market area	n	y	y	n
Turnover	n	y	y	n
Wood procurement	y	y	y	y
Raw material costs	y	y	y*	y
Profitability	y	y	y	y
Growth	a	i	y	y
Labor disputes	y	y	n	y
Cyclical nature of business	n	y	y	y
Price level	n	y	y	y
Strength of US dollar	n	y	y*	y
Acquisitions	n	i	y	y
Debt-to-equity ratio	n	n	y	y
Mergers	n	n	y	y

Table 4-5. Presense of presistent themes in the cases. y=yes,n=no, i=mentioned in the interview, a=implicitly apparent, y\*=mentioned in documentary sources, but did not make it to the map.

To clarify Enso's management logic further, Figure 4-9 presents the persistent themes in a causal map. Using the terms of cognitive mapping this could be called the cognitive scheme (for the description of a scheme see chapter 3.2.1) of Enso's top management. It should be noted however that this map is as reliable as the cognitive cause maps of the separate cases, as this map integrates the visions of many separate managers and is also affected by the cognitive limitations of the author.

The map contains some concepts that are not mentioned in Table 4-5. Transportation network, marketing network and research and development are either totally absent from the cases, or only seen as committed costs and thus potential sources of synergy benefits. They are persistent in the sense that they are consistently not considered to be central issues for top management. Factory specialization has been added to the methods of achieving economies of scale. Although this was probably not an issue in the first cases, it was a major motivation for aggressive growth at the time of the Stora-Enso merger. Internationalization is also on the map. However, in this chapter its role will only be explained superficially.



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Overall it would seem that even though the tools of the trade have changed, the goals have not. The persistent strategic goals that have endured over the over the years have been growth and profitability. This can seem like a fairly trivial finding at first, but it tells a lot about the stability of the business model of the pulp and paper industry. In the case periods there has not been a time at which Enso would have considered, for example, diversifying or moving to new business areas, or even differentiation through aggressive marketing. As was argued in chapter 2.4.3, the pulp and paper industry has not experienced rapid and revolutionary technological change, nor faced a serious threat in the form of substitute products. Pulp and paper companies have had therefore been able to continue to grow their turnover and optimize their profitability.

The means to grow and increase profitability have evolved somewhat over the years. At the time of the first case, growth was achieved mainly through greenfield investments. Capacity was increased by building new factories in Finland. At the end of the case period it seemed that Finland's capacity for pulp and paper factories was starting to be full, as the raw material supply was getting scarce. Thus Enso decided to find growth opportunities abroad by building a mill in Canada and acquiring a factory in Louisiana. At the same time the new factories were meant to increase Enso's profitability as production of some of Enso's low-value added products, (kraftliner and kraftpaper) moved to an area with low raw material costs. The Finnish mills would then be able to concentrate on higher value-added products .

In the second case, growth was mainly achieved by targeted acquisitions. Pentti Salmi<sup>24</sup> comments on these issues as follows:

*“We tried to get more growth by acquisitions that fit to our strategy. That way we got directly into a moving train.”*

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<sup>24</sup> An interview with Pentti Salmi, conducted by Taneli Vaskelainen in Helsinki 3.11.2006

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The Tervakoski and Varkaus mills were in practice the only possible acquisition targets available for Enso at the time of the second case, because none of the other companies in Finland were selling their factories. The Ahlström deal also increased Enso's profitability, because it was an opportunity to divest the fairly unprofitable engineering business, and provided larger economy of scale benefits as production volume increased and the proportion of committed costs decreased.

By the time of the third case, acquisitive growth was insufficient for Enso because of the threats brought by globalization. There was a limit to how many companies Enso could acquire, as it could only take on a limited amount of debt. Thus Enso decided to use a new tool for promoting growth; mergers. The merger with a company of Stora's size doubled the size of Enso at once and built a platform for taking the new opportunities presented by a globalized world. The Stora merger also had a large impact on Enso's profitability. Both organizations had large sales, marketing, r&d and transportation organizations, all of which were sources of considerable synergy-benefits in the merger<sup>25</sup>. Furthermore, as the number of factories increased, there was a possibility to specialize factories and thus increase capacity utilization.

In the current map, all possible ways for future growth are mentioned: organic growth, acquisitions, mergers, and greenfield investments. Acquisitions would seem to be the main source for growth, whereas greenfield investments are avoided. A new trend in this map is expansion in the value chain, as opposed to the old model in which expansion was only achieved by creating more production capacity. Profitability is constantly monitored and measures are taken to increase it. In the existing plants this is achieved by introducing profit enhancement programmes, which cause divestments, closures and lay-offs. In new investments, profitability is ensured by making careful advance calculations of whether the investment can support Enso's financial targets or not.

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<sup>25</sup> An interview with Esko Mäkeläinen, conducted by Taneli Vaskelainen in Espoo 6.10.2006

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Other ways to increase profitability, other than those mentioned in the preceding chapters, belong principally to the tactical game of the pulp and paper industry. The main issue that the top management monitors is the price level of different products, which is basically set according to the law of supply and demand. An increase in demand increases prices, whereas increase in supply decreases them.

The only methods that have been used to control the price level are the cartel institutions. The price level was set on a Nordic level and the players controlled their production to avoid the situation of overcapacity<sup>26</sup>. Nowadays this is of course not possible, because the European Union and different competition authorities ensure that this kind of activity does not take place. However, these were the predominant mechanism in the two first cases.

The fact that there are now no possibilities to control prices, shows that there is really little differentiation in paper industry. The pulp and paper companies are at the mercy of supply and demand. Interestingly, the reasons for the fluctuations of supply and demand are considered very little in the documentary sources. From the interviews it emerged that mechanism for setting the supply and demand is cognitive in nature.

The only thing that has been seen as having an influence on overall supply is the state of the business cycle. The reasons for cyclicity are described by Pentti Salmi<sup>27</sup> as follows:

*“Cyclicity is the consequence of all the industry players investing in the same time. As all the players make investments in the light of the same market information, a temporary overcapacity is created, which lowers prices.”*

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<sup>26</sup> An interview with Pentti Salmi, conducted by Taneli Vaskelainen in Helsinki 16.11.2006

<sup>27</sup> An interview with Pentti Salmi, conducted by Taneli Vaskelainen in Helsinki 21.11.2006

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Thus, cyclicity is based on managerial expectations of future conditions. This is highly interesting for the cognitive research community. The implications of this are further elaborated in chapter 6.3, when considering topics for further research.

Unfortunately, on the basis of this research there is little information about the reasons behind the level of demand for Enso's products. The obvious reason, that was mentioned many times, was the economical state of primary export markets in Europe. However, it would seem from various documentary sources that demand would be set with very similar mechanisms as supply. If customers expected that the prices of the products would rise they would build up reserves, and when development seemed inverse they refrained from buying (see e.g. annual review 1995).

It is interesting that in most cases it would seem that the volatility caused by demand and supply fluctuations is an accepted fact, and it is only the last map that shows systematic efforts to reduce cyclical volatility. The concept of reducing the effects of cyclicity also feature in the second case, but it would seem to be more of a consequence of the production structure, which was renewed in the rationalization efforts. It might be that only now Stora-Enso feels that it has the power and the resources to truly influence its environment.

Besides demand, supply, and the price level, optimizing capacity utilization has also belonged to the tactical game of the paper industry. Because downtime and start-up of paper machines is very expensive, capacity utilization should be as high as possible. In order to keep factories running there must be a steady raw material flow. In the two first cases this has been a problem and it has led to production stoppages in some factories. Raw material flows are increased by various measures, such as importing wood other countries (especially Russia), or by increasing fellings in the firm's own forests.

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One further persistent tactical issue are labor disputes. Even today, much of Stora-Enso's production is in Finland, in which the labor union is very strong. British Columbia in Canada is another place in which Enso has had a strong presence over the years. The Canadian unions are even more difficult, and strikes can last for months<sup>28</sup>. Thus from time to time there is a labor dispute in some factory or some region where Enso does business. No distinguishable strategic countermoves to reduce the effect of the strikes could be seen in the case studies. It might be that one motivation to internationalize is also to get to locations in which labor is not as strong as it is in Finland. It might also be that different managers have different ways of handling these issues. Pentti Salmi, for example, kept a close relationship with the elected officials and contacted them personally if there was a strike<sup>29</sup>.

The only environmental threat that is among the persistent themes is the competitiveness of North American companies. As was mentioned in chapter 4.2.3, the North Americans exported to European markets when their domestic demand was low and their competitiveness was high, especially when the dollar was weak.

It is interesting that the North Americans are considered to be the fiercest competitors in all of the maps. For example, the threat of domestic competitors is not mentioned at all. It is something of a mystery that the North Americans were considered to be such a threat. After all, they never really tried to take over European markets, but rather used them to maximize profits. One explanation could be that the North Americans were considered to be highly competitive and they were a regular target for benchmarks<sup>30</sup>. In the two first cases at least, the cartel institutions could explain why Nordic competitors were not considered to threaten Enso as prices were

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<sup>28</sup> An interview with Esko Mäkeläinen, conducted by Taneli Vaskelainen in Espoo 6.10.2006

<sup>29</sup> An interview with Pentti Salmi, conducted by Taneli Vaskelainen in Helsinki 16.11.2006

<sup>30</sup> An interview with Mauri Skogster, conducted by Taneli Vaskelainen in Espoo 23.3.2006

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set to a certain level. However, the map of the current situation also includes the concept of the strength of the dollar, but nothing about other competitors.

It is noteworthy that all of the issues considered above concern production. As in the maps of the cases and the generic scheme of Enso, issues such as marketing, research and development, and the transportation network have a function only as cost items. It would seem that throughout the years, Enso's top management's task has been, in a nutshell, to increase production, control prices, keep the factories running and reduce costs.

The fact that management has been very production-oriented shows that there is seen to be little room for differentiation. The only factor that affects orders in the long run is the price. Thus to gain competitive advantage, companies have had to keep finding economies of scale benefits in order to decrease costs and to think of ways by which to sell more paper to customers. This naturally means that entry barriers grow as the machinery gets more expensive, and that there is room for fewer players in the industry. This can also be seen in the Finnish paper industry. The number of Finnish pulp and paper companies dropped from 20 to six from 1986 to 2000 (Näsi, Lamberg et al. 2001). The assumption that economies of scale benefits are the best way of generating profits in the long run would seem to be taken for granted by managers, and is therefore not mentioned in the documentary sources.

Another issue that is taken for granted by Enso's management is the fact that pulp production is integrated to paper manufacturing. Wood, and later also recycled paper, have been raw materials for Enso. However there are also companies that have concentrated only on paper manufacturing and therefore bought the pulp from outside the company. This has been an especially profitable strategy when the pulp price has been low<sup>31</sup>.

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<sup>31</sup> See e.g. Enso Gutzeit Oy's interim review may-august 1985

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This chapter has mainly considered the issues that have largely remained constant over the years, so the next chapters will consider the most significant changes. The first issue to be considered is Enso's strategy.

#### **4.5.2 Strategy – from emergent to planned**

The biggest internal change in the management logic concerns the concept of strategy. The following chapters consider, chronologically, what the role of strategy has been at different times, and to discuss the reasons for these observations.

As was mentioned in the first case, the role of long term planning is next to non-existent on the map. The lack of strategic issues is probably at least partially caused by the leadership policy of Enso in the 1960s. Enso's CEO Pentti Halle was a very strong leader who was single-handedly responsible for company strategy<sup>32</sup>. Thus the strategy was mainly a vision in Pentti Halle's head and is not stated explicitly in the documentation examined in this case study.

In addition to the leadership style it is also likely that the scarcity of strategic themes is also caused by a lack of long-term planning. Top management mainly concentrated on struggling with current challenges, and reacting to the threats posed by the environment. At the time of the observation period of this case study, plans were not demanded from the management. According to Pentti Salmi<sup>33</sup>, through the years the board of directors mainly consisted of politicians that had no idea about the business. Thus only a few of them could have questioned the economic rationale behind the decisions made by top management.

On the other hand, the fact that the state of Finland was Enso's largest owner and that most of the members of the board of directors were politicians complicated the task

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<sup>32</sup> An interview with Kurt Ignatius, conducted by Taneli Vaskelainen in Helsinki 23.2.2006

<sup>33</sup> An interview with Pentti Salmi, conducted by Taneli Vaskelainen in Helsinki 3.11.2006

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of the top management of Enso. Pentti Salmi<sup>34</sup> commented on the political nature of the business as follows:

*“One key thing that must be remembered in Enso’s strategy was that even though it was never stated aloud, our [the top management’s] duty was to create competitive industry in Finland to increase employment rate and to create currency flows into Finland.”*

In the time period of the first case it would seem that the politics have only a slight effect on Enso’s business. The only exception found in the documentary material is when the board of directors reject the directorate’s suggestion that the logging area should be expanded to Northern Finland because of regional policy<sup>35</sup>. In Salmi’s time politics had a huge role, mainly because of Olavi J. Mattila.

Despite the heavy resistance of the acting top management and the board of directors, Minister Olavi Mattila was nominated as the chairman of Enso’s directorate in July 1973. The selection of Mattila was strongly promoted by Finland’s president Urho Kekkonen, and as the state was Enso’s main owner there was really nothing the top management do to prevent the nomination. (Ahvenainen 1992)

Mattila’s agenda in Enso’s management was purely political. Pentti Salmi<sup>36</sup> comments Mattila’s actions as follows:

*“It is difficult when a person whose personal goals deviate totally from the company’s goals is put into a state owned company. Olavi J. Mattila did not care about the success of the company. His ambition was to be the successor of Urho Kekkonen, the president of Finland. Thus the strategic moves that could cause*

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<sup>34</sup> An interview with Pentti Salmi, conducted by Taneli Vaskelainen in Helsinki 3.11.2006

<sup>35</sup> Minutes of board of directors 19.9.1963

<sup>36</sup> An interview with Pentti Salmi, conducted by Taneli Vaskelainen in Helsinki 3.11.2006

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*negative publicity,, such as rationalization efforts and layoffs, were an outrage to him.”*

When Mattila was forced to resign in 1983, the economic state of Enso was disastrous. Interest from the firm's debts took 11% of the company's profits and sometimes there even was not enough money to pay them. Lead by Pentti Salmi, Enso began a bold rationalization program in which it sold some of its businesses, dismissed some personnel, renovated the production machinery and increased the degree of value added. The program was a success and in 1984 Enso was again clearly profitable.

Ergo, at the beginning of the observed time-span of the second case, Enso had got back on its feet. The turbulent recent past is likely to be one of the reasons why the maps in the second case present almost no concepts that concern strategy. The focus of the top management had just recently been shifted from putting out fires to planning the future. However, there are other reasons as well.

Enso was involved in many businesses and it would seem that few links were seen between different business-areas. The submaps of this case are either totally separate or linked by some generic concept such as company turnover. It would seem likely that the diverse businesses that were integrated within Enso caused unwanted cognitive complexity for the top management. It was difficult to be the best in many fields at once. The creation of an over-arching company strategy was probably hard, as different businesses had different needs. Top management indeed wanted to change this situation and to concentrate on the area that was considered to be Enso's core competence; the forest industry<sup>37</sup>.

The management style probably also increased the tactical nature of the maps. Concentration of power was very similar in the era of this case as it was in the former. Pentti Salmi was a strong leader, who kept much of the decision making

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<sup>37</sup> An interview with Pentti Salmi, conducted by Taneli Vaskelainen in Helsinki 3.11.2006

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power to himself. It is very likely that most of the strategic vision of Enso at the time of this case remained in his head and was never presented in the written documentation. This is further promoted by the reporting practice of the time. The minutes of the board concentrate on explaining the details of the decisions made, but do not state the reasons behind them.

One final reason for the lack of strategic concepts is the fact that even though Mattila was not affecting decisions anymore, politics was still heavily influencing Enso's business. For example, the decision to rebuild the Uimaharju pulp mill in 1992 was made entirely on the grounds of regional policy<sup>38</sup>. Thus Enso's management could not develop a strategy that would only have considered the economic success of the company.

There were also other reasons why state ownership was harmful for Enso. American investors avoided investing in companies in which public authorities had a strong foothold. Therefore Enso had difficulties getting foreign capital. Because of this, the Finnish state started to loosen its grip on Enso and in the end of 1997 it gave up its control entirely.

In the time-span of the Stora-Enso merger case it is thus likely that the strategy was designed solely with the economic success of Enso in mind. Partially because of this, the concept of strategy is visible for the first time on the map and the most important goals for the future are clearly stated. It would seem however that the term 'strategy' had just been invented, and there really was no clear plan of action - the strategy only contains three main methods of being successful and not, for example, the reasoning behind them or concrete actions to support them.

Probably the most significant reason for the explicit strategic intent in the Stora-Enso case is that Enso's business model was seriously threatened for the first time. Because of the globalization the markets were opening to producers that used

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<sup>38</sup> An interview with Pentti Salmi, conducted by Taneli Vaskelainen in Helsinki 3.11.2006

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cheaper raw materials and whose labor costs were also lower than Enso's. Therefore a long term plan was needed to be able to compete in the new situation. The threat of globalization and Enso's reaction to it is further discussed in the following chapter.

There are also other factors that motivated the management to make a clearly stated strategy. As Enso grew, and the proportion of shares owned by foreign investors increased, the need to report on actions and the rationale behind them increased. The external documentation of the Stora-Enso case describes Enso's actions and the thoughts of managements in far richer detail than those of former cases. The sheer length of the annual reports has increased quite a lot. An annual report of 1965 contains 20 pages, that of 1986 contains 60 pages, and that of 1997 contains 83 pages.

Besides presenting the notion of strategy, the map of the third case is also much less operation-centric than that of the two first cases. The personal backgrounds of the CEOs might have something to do with this. Unlike Pentti Halle and Pentti Salmi, who are masters of science in technology, Jukka Härmälä is a bachelor of science in economics<sup>39</sup>. He also has been working in the banking business as opposed to Halle and Salmi, who had both been in the pulp and paper industry for their whole professional career.

It is clear that the Stora-Enso merger had a significant impact on managerial cognitions. Both companies have long traditions. Enso's roots are in the 19<sup>th</sup> century whereas Stora Kopparberg was founded in the 13<sup>th</sup> century. The influence can also be seen on the map of the current situation. Even though the fundamental logic of the pulp and paper industry has not changed, almost everything else has. Almost all means to achieve the goals of the company are new. Unlike in the map of the former case, the strategic plan is systematic and it gives a detailed description of the strategic toolbox that the top management is going to use to get to the stated goals.

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<sup>39</sup> See [http://www.storaenso.com/CDAvgn/main/0,,1\\_-5412-1202-,00.html](http://www.storaenso.com/CDAvgn/main/0,,1_-5412-1202-,00.html)

Within the scope of this study, it is impossible to say reliably how the cognitions have been formed in the last map and which parts have been brought in by Stora. There are many other possible reasons that could affect the map as well. For example, the focus of the company is no longer solely in Finland, but it is now truly a global player with production facilities all over the world. This has probably also affected the company's understanding of its own possibilities and its position compared to competitors. Also, as one of the world's largest firms in its industry, it is likely that its ownership structure has changed to some extent. The new owners might require different kinds of reporting than the former ones.

Table 4-6 summarizes what Enso's strategy has been at different times, and what are the likely reasons for it. As can be seen, for the longest time the strategy has been emergent. The strategic vision has been in the mind of the CEO, who has been searching for opportunities to realize it. This has been mainly caused by the strong individuals that have been leading Enso. Political agendas have also hindered making strategy solely on economic terms. Only recently has the strategy been expressed in documentation as globalization has made it a necessity to make plans for the future, as the state has decreased its control and as Enso is being led by a CEO with a financial background.

	Link between map and actions	Type of strategy	Reasons for strategy type
Case Eurocan	Clear	Emergent, visionary	High concentration of power Lack of long-term planning
Case Ahlström	Unclear	Emergent, visionary	Political atmosphere Recent rationalization maneuvers High concentration of power Scarce documentation style
Case Stora-Enso	Clear	Partially planned	Threats caused by globalization Declining state control Increasing demand for reasoning in documentation Economic background of CEO
Current situation	Actions not researched	Planned, systematic	Changed ownership structure? Influence of Stora?

*Table 4-6. Summary of Enso's strategy in different times.*

This chapter told the story of Enso's strategy at different times, which was the most significant internal issue that changed during the years. The next chapter considers

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the role and significance of the biggest challenge presented by the external environment; internationalization.

### **4.5.3 Internationalization – from Finland-centric to global**

Esko Mäkeläinen comments the role of internationalization as follows:

*“In the first years [of Mäkeläinen’s career, meaning the beginning of the 1970s] the business was very export-centric. Products were produced in Finland and if there were not enough exports the state was asked to intervene the situation by weakening the strength of the currency. The mind setting was ‘we are here and the customers are elsewhere’. Nowadays both the market and production network is global. Production is actually a bit Europe centric, but within Europe the country borders do not matter anymore. The guiding thought in production control is to think what would be a good place to sell the production to make transportation work and to keep capacity utilization high.”*

This summarizes the development very nicely. The following chapters consider the role of internationalization at different times in more detail.

Enso’s market became international long before its production. Enso only started producing in foreign countries in the 1960s. Enso also already started to sell to its primary export markets in England and Central Europe after the Finnish civil war in 1918 (Lamberg and Pajunen 2006). Even before that, Enso had been selling its products to Russia. Thus this chapter mainly considers issues concerning the internationalization of production.

In the 1960s Finnish companies had their first chance to invest abroad since the Second World War. Until that point the currency situation was not favourable and all spare resources went into domestic investments (Ahvenainen 1992). Furthermore, international monetary transactions were regulated and controlled by Suomen

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Pankki<sup>40</sup>. Thus it was difficult to get foreign capital. These regulations loosened as Finland joined Efta at the beginning of the 1960s.

The search for potential investment opportunities in Enso had been going on since the beginning of the 1960s, yet none had turned out to be fruitful<sup>41</sup>. The possibility was so new at the time that it is no wonder that the concept of internationalization is lacking in the cognitive map of the first case.

What is really interesting in the first case is that, when the directorate asked for authorization for the decisions to build factories halfway around the world, no one doubts Enso's capability of successfully carrying out such a manoeuvre (at least there are no impugning comments in the documentary material). This is quite remarkable because no one in Enso's top management, and actually no one in Finland, had broad experience of major internationalization projects.

There are probably at least two reasons for Enso's high confidence. Firstly, Enso was the flagship of Finnish exports and thus it had a strong identity. Secondly, as was said in the former chapter, the power was concentrated to large extent with the CEO, Pentti Halle. Therefore it could be that there were doubts, but they were never stated aloud, because they would not have been much use. A fact that supports the latter argument is that other managers in Enso's directorate tried to force Pentti Halle to resign over the internationalization decisions at the end of 1965 (Ahvenainen 1992).

The factory in Kitimat got its machinery up and running in 1971. Before that, the concept of internationalization was synonymous with the current projects of Enso. Building the factory was a very difficult job and many challenges had to be overcome before production could be started (Ahvenainen 1992). Minister Olavi J. Mattila came to the directorate of Enso in 1973. It would seem likely that during

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<sup>40</sup> An interview with Esko Mäkeläinen, conducted by Taneli Vaskelainen in Espoo 6.10.2006

<sup>41</sup> Interview with Pentti Halle, conducted by Pekka Lehonkoski in Helsinki 18.1.1988 and interview with Kurt Ignatius, conducted by Taneli Vaskelainen in Helsinki 23.2.2006

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Mattila's time, internationalization did not have a major role, and no significant new manoeuvres were started abroad (Näsi, Lamberg et al. 2001).

Interestingly, the cognitive map of the second case is very Finland-centric. The cluster handling Eurocan is the only one that concerns international projects in any way, and even that is almost totally separate from the mapping of business as usual and strategy. Compared to the earlier case, Enso now had far greater resources and experience of international projects. It is therefore rather odd that internationalization does not exist at all in the map.

The concentration on domestic issues is probably partially explained by the political nature of the business, as described in the last chapter. Enso's board of directors considered that the main task of the top management was to promote Finland's national interest, so internationalization was not considered to be important.

Another cause is related to Enso's CEO Pentti Salmi. At the end of the 1980s he wanted to merge Kymmene Oy and Enso Gutzeit. This attempt failed because of the resistance of some board members, including the man who was later to become CEO, Jukka Härmälä. Salmi<sup>42</sup> highlighted the fact that the merger would have created a strong company under Finnish control. Salmi was also of the opinion that the Stora-Enso merger was a bad move, and complained that the spirit in the Finnish factories has suffered as the current managers are perceived not to be interested in Finland anymore. It would thus seem that Salmi's mindset was concentrated strongly on Finland. He was probably interested in internationalization to some extent, but not in making Enso into a multinational conglomerate.

Shortly after Jukka Härmälä had inherited the post of CEO, internationalization became a necessity. It is fair to say that globalization is the only significant threat for the Finnish pulp and paper industry. As companies whose cost levels were significantly lower than that of Finnish forest industry were entering export markets,

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<sup>42</sup> An interview with Pentti Salmi, conducted by Taneli Vaskelainen in Helsinki 3.11.2006

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Finnish companies were forced to start a fierce race to keep their businesses profitable.

Declining profitability was not the only significant threat resulting from globalization, and Enso was not the only company that was aware of the necessity of consolidation. For example, Kymmene had enjoyed rapid growth in the beginning of the 1990s (Näsi, Lamberg et al. 2001). Enso also needed to grow rapidly so that it would not be swallowed by another company.

It would seem that the effect of the threats posed by globalization has been the most important motivation to change managerial cognitions. Firstly, the top management could no longer wait for opportunities, but it had to create careful plans to keep the business profitable in the long run. Thus management had to create a long-term strategy. Secondly, internationalisation had to become part of business-as-usual. As Enso did not alter its business model, it could not have competed if having only production facilities in Finland.

Within the scope of this study it is impossible to say which issues have influenced the map of the current situation, because Enso is no longer the same company after merging with Stora. The impact of globalization is clear, however. Internationalization is no longer a concept as such, but has divided into separate terms concerning strategy in different countries. Finland does not have such a special place in cognitions anymore, and it is just one country in which Enso has production facilities.

Table 4-7 summarizes the role of internationalization at different times. Internationalization has played a significant role in all cases except the second. Its importance peaked during the Stora-Enso merger, as globalizing markets threatened to bring an end to the Finnish pulp and paper industry. Because of this, Enso had to develop a long term strategy and to shed its Finland-centric mindset to ensure profitability in the long run. Nowadays internationality is the de-facto state of affairs.

	Role of internationalization	Reasons for role of internationalization
Case Eurocan	Significant	Solution to strategic challenges
Case Ahlström	Insignificant	Political nature of business Finland centric mind-setting of the CEO
Case Stora-Enso	Significant	Threats of globalization
Current situation	De-facto state of affairs	Global mind-setting

*Table 4-7. Summary of the role of internationalization in different times.*

#### **4.5.4 Future prospects**

This chapter considers what the likely courses of action of Stora-Enso are in the near future. This is mainly done with the help of the cognitive map of the current situation, but the former cases are used, especially in predicting what is likely to change and what not. The annual report of 2005 is used in some issues to increase the detail level of the analysis.

As was written in chapter 4.5.1, the fundamental logic of the forest industry has remained almost constant during the observation period of this study. It is therefore likely that it will not change in the near future, unless some environmental change threatens to make the business model obsolete. This means that it is likely that Enso will keep growing and try to increase its market share to gain a cost leadership position. As there are other companies making similar attempts, the number of companies in the pulp and paper industry is probably going to keep decreasing.

Another thing that can be expected to remain fairly constant is Enso's identity. Enso was fairly diversified during the time of the first two cases, with over 30 % of revenues coming outside of the forest industry (Näsi, Lamberg et al. 2001). However, it would seem from the attention that the forest industry has received compared to other lines of business, that at all times Enso has seen itself first and foremost as being a pulp and paper company. It is therefore unlikely that diversification would be increased substantially.

A major theme in the map of current situation is the emergent market strategy. There is a high probability that Enso's presence in emerging markets is going to grow. The impression that the Veracel pulp mill in South-America has made on Stora-Enso's

top management has been so good that the company has announced preliminary plans of building a second pulp line<sup>43</sup>. Veracel is going to export pulp to Enso's factories in Europe and China. In fact, Enso has a longer term plan to replace other sources of short fibre with eucalyptus pulp in all European fine paper production.

In addition to being a source of low-cost fibre, South-America is also a growing market in which Enso tries to grow its presence. However, the biggest and most aggressively growing market which Enso is targeting is in China. Stora-Enso is active in China in many ways. On one hand it is securing the local fibre supply by buying fibre plantations, and on the other it is increasing its production capacity in the country. Efforts are also being made to grow the local sales organization. It would seem that at the moment, operations in China are still in their infancy. As can be seen in Table 4-8, Enso does not have any capacity in China for publication papers, packaging boards and forest products, and only four percent in fine paper.

	Publication paper	Fine paper	Packaging boards	Forest products
Finland	22 %	48 %	48 %	28 %
Sweden	21 %	17 %	27 %	14 %
Germany	24 %	5 %	7 %	
North America	19 %	21 %	7 %	
Austria				25 %
Russia				3 %
Poland			6 %	
China		4 %		
Belgium	7 %			
France	7 %			
Netherlands		6 %		
Czech republic				12 %
Estonia				12 %
Latvia				3 %
Lithuania				2 %

*Table 4-8. Enso's production capacities in different countries.*

The third important country in the emerging market strategy is Russia. Its importance to Enso is twofold. Russia is an important source of fibre for Nordic and Baltic mills. Russian long fibre is far less expensive than that of the Nordic countries and the

<sup>43</sup> Stora-Enso's annual review 2005

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country has vast forest resources. Russia is also an important and growing market, especially for Stora-Enso's packaging board and sawmill businesses.

The role of Finland is quite the opposite to that of the emergent markets. Economically speaking, Finland's only strategic advantage is the supply of a competent workforce. Cost of both raw materials and labor are high, and the most important markets are far away. Yet Finland is still Stora-Enso's biggest producer country (see Table 4-8). Thus, it is very probable that cost saving measures will be targeted to Finnish mills. This is further promoted by the fact that fine paper capacity was increased at the beginning of 2000 as the dollar was strong and export prospects were good<sup>44</sup>. Now that the dollar is weakened there is an overcapacity of fine paper. To summarize Finland's prospects, lay-offs are inevitable and some closures and divestments are also likely.

In the longer term, if Stora-Enso's business model remains constant it would seem that Finland will increasingly lose its significance. It would seem that Finland does not have any special place in managerial cognitions and that there is no economic rationale to keep production in the country. Thus the focus will increasingly shift to the areas mentioned earlier; South America, Russia and China.

Stora-Enso will not be alone in the emerging markets. There are many other companies operating with the same business model in declining markets. As has always been, the North Americans are probably going to be Stora-Enso's strongest competitors in the future. Growth in many paper types in the USA has stagnated, and has stopped completely in newsprint. Thus International Paper, for example, will be forced to come out of its domestic markets and to fight over market share in the growing markets. Competition will be fiercer than it has been before, because the Nordic companies now have to compete head-on with the Americans. Earlier competition took place in the European markets, which were considered to be a secondary market for the Americans. This is especially true for Enso after it acquired

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<sup>44</sup> An interview with Esko Mäkeläinen, conducted by Taneli Vaskelainen in Espoo 6.10.2006

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Consolidated Papers, as it is now already competing in North American domestic markets.

A further theme that will grow in significance is the vertical integration of the fine paper business. The annual report of 2005 states that the goal of the fine paper merchant business is to take the lead in the industry. Taking over a larger part of the value chain is a way to promote growth, considering Stora-Enso's identity as a pulp and paper company and Stora Kopparberg's assets in the fine paper wholesaler business before the Stora Enso merger.

Personnel issues were not mentioned at all in the map of the current situation, but they will almost certainly be an important issue in the future. The only country with an adequate amount of skilled paper engineers is Finland<sup>45</sup>, and as was mentioned earlier, Finland is not the future development area of Enso. Therefore Enso must either consider how it is going to promote education and attract talented people in its target countries, or somehow motivate Finnish engineers to work abroad. There are already some attempts to control this issue, as the human resources part of the 2005 annual report describes some activities that Stora-Enso uses to attract Chinese students as future employees.

In the long term it is difficult to say what will happen to Stora-Enso. Competition will be fierce as the growth in more and more markets stagnates and even stops. The internet will also slow growth as many documents are moved to an electronic form. This has already happened to a large extent, for example with annual reports<sup>46</sup>. On the other hand, electronic trade has had a positive effect on the growth of packaging boards, as more products have to be shipped over distances<sup>47</sup>. The company has quite a good position in the pulp and paper industry and therefore it is poised for future

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<sup>45</sup> An interview with Esko Mäkeläinen, conducted by Taneli Vaskelainen in Espoo 6.10.2006

<sup>46</sup> An interview with Esko Mäkeläinen, conducted by Taneli Vaskelainen in Espoo 6.10.2006

<sup>47</sup> An interview with Esko Mäkeläinen, conducted by Taneli Vaskelainen in Espoo 6.10.2006

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competition for market share. All in all the company has quite a good position in the pulp and paper industry and a good business model that has developed over decades. However, it is unlikely that Enso will be able to change its business model rapidly if a threat in the environment would require it to do so.

## **5 VALIDITY AND RELIABILITY**

As the cognitive maps are the most important research results of this study, the analysis of this chapter will mainly concentrate on them. Interviews are mainly considered as a way to increase the reliability of results.

The most important question concerning validity in this study is how well the cognitive mapping method used measures the actual cognitions of the decision makers. This can be further divided into three sub-questions, each of which will be considered separately:

1. Were the right people studied?
2. Are the issues presented on the maps the real cognitions of the decision-makers?
3. How exhaustively are the cognitions presented on the map?

Before considering the results at all, there should be certainty that the right people were studied. Each case studied the cognitions of the top management of Enso. If in some era, for example, the board of directors had used its authority to control and change the propositions made by top management, it would be sensible to study their cognitions. After all, as each case tries to tie the cognitions to the decisions, it is important to find out about the cognitions of the actual decision makers.

It would seem that this research concentrated on the right people. As was said in chapter 4.5.2, the board of directors consisted of politicians who had no idea of the business. Thus they normally accepted without hesitation of the propositions of the top management. There were also exceptions to this. It would seem that the board had a significant impact on initiating the Uimaharju pulp mill decision and the ending of the Kymmene merger process mentioned earlier. However the interviewees indicated that the top management was in charge of the decisions studied.

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The second sub theme of validity concerns the issue of whether the managers told their real cognitions in the documentary material. Managers might keep from telling the truth or tell only part of it to hide their real agenda. Axelrod (1976) mentions two methods for considering the sincerity of the assertions:

- Evaluating whether a manager has a reason to be insincere or not
- Considering whether the assertions can be checked against the actions

The first issue is rather challenging in this paper. On the one hand, public documentation in the pulp and paper industry can be expected to give a fairly accurate picture of the managers' thoughts, because the competitive advantage is not based on major breakthroughs that should be kept secret. On the other hand, especially in the early cases, managers might have had a motivation of keeping their purposes secret in situations in which the economic and the political benefits came into conflict.

Because it is hard to evaluate the validity with the first method, the main instrument for validity assessment, will be by comparing the alignment between actions and cognitions. It can be expected that in each case, the top management could have been brought to account for their actions. In the first two cases internal documentation was also used. Axelrod (1976) points out that normally decision makers tend to be more sincere to their colleagues than to general public, as they have the necessary background information to question the logic of a manager and thus reveal potential hidden agendas. In the two latter cases no internal documentation was available, but in recent times the demand for more verbose rationalization of decisions has increased substantially. Thus the more recent external documents probably contain fairly sincere assertions.

The connection between decisions and cognitive maps is clear in the first and the third case. Also, considering Enso's recent actions, the map of the current situation would seem to be well in line with the results. In the second case there are some issues in the map that give hints about the decisions but a strong link cannot be built between the two. However, the actions and the cognitions are not in contradiction with each other. The interview with Pentti Salmi also did not give any reason to doubt any assertions made in the documentary material. The causalities mentioned

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just concerned fairly tactical issues. Thus it is likely that the problem lies in exhaustiveness.

Exhaustiveness refers to how complete a picture of the manager's business related cognitions the maps give. As was said in chapter 2.3, it is unrealistic to assume that the research could give an accurate image of a person's cognitions as everyone has subconscious mental models that are unknown even to the person that is studied. However it should reveal the strategic thinking of the managers, independent of whether the strategy process is emergent or planned.

The completeness criteria was not fulfilled perfectly in the second case. There are several possible reasons for this. First it seemed that partly because of the chaotic situation and partly because of the leadership style of Pentti Salmi, strategic decisions were made quite spontaneously. At least the Tervakoski and Ahlström mill did not come into the possession of Enso as a result of long term planning, but rather as lucky happenstances. However this does not explain why the main reasons for the decisions stated in chapter 4.2.3 do not exist in the map. This was probably due to the fact that the verbosity of the documentation is fairly poor.

All in all the validity is quite good. The resultant maps explain Enso's business logic well and the link to actions is clear. In the second case a link was established with the help of the interviews. Thus the research method chosen for this study measures managerial cognitions well.

The coding rules and procedures made in the literature give a good basis for the reliability of this study. Axelrod (1976) has reached inter-coder relationships as high as 92% in the coding decisions and 88% in the merging process in extensive tests, and Barr et al (1992) also document rates of over 90%. Thus the method in itself has reached reliability and is compatible with the standards of good quantitative work (Axelrod 1976).

As there was only one coder in this study no inter-coder testing was done. To keep the reliability as high as possible, coding rules written by Wrightson (1976) and further developed by Huff et al (1990) were applied as carefully as possible. This was not entirely simple as the documentary material of all the cases except that of the

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current situation was in Finnish, whereas the rules are developed for English documents. However most of the rules could be applied directly, as the two languages are structurally not too different.

The biggest risk to reliability in documentary coding is the phase in which concepts are merged. Basically, as this process cannot be totally automated, the result is always partially dependant on the researcher's memory. When the coder finds a concept that has been mentioned in the material before, he must remember the existence of the former mention in order to be able to merge them. The wording is seldom totally similar and so the merging process cannot be left to a computer.

In this study the reliability of the merging process was increased by an excel-macro, which counted the frequency of occurrence of the terms and organized them into an array. As the concepts were in an array format, it was easy to spot spelling errors, which divided one concept into several. It also decreased the memory burden as each term was mentioned only once. Additionally it was easy to perform systematic inspections, by checking each term on the array. In each case all of the concepts were gone through at least twice.

Another factor increasing the reliability of the merging stage were the rules that were created for the formulation of the concepts. As concepts were always translated and marked in the same way, it was easier to spot the candidates for merging.

The coding process as a whole is likely to be very reliable. As the experience of the coder grew, it was easy to spot the cognitions from the documentary material. The early coding work was later re-checked to be sure that similar coding processes were used in all cases. The material was quite straightforward as disagreements concerning causalities between different people were practically non-existent.

The reliability of the resultant cognitive maps was further increased by triangulation. The interviews were another source of data that provided the possibility to check the results against each other. Each interview provided supplementary information for the cognitive maps, but none of the cases presented a stark contrast between information received from different sources.

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As the validity and the reliability of the study are both good, the study provides relevant answers to the research questions. It is possible and even likely that some minor cognitive themes have been left unnoticed. As was said in chapter 3.1.2, it is very hard to reach saturation in cognitive study. However, the themes that are considered central in this paper had a strong signal in all information sources. Thus it can be expected that this study tells the story of at least the most important themes for Enso.

## **6 DISCUSSION AND CONCLUSIONS**

The main task of this chapter is to tie the most important results to the theoretical framework. The first chapter begins by summarizing the most significant findings and explaining their relevance from the point of view of the body of knowledge. The second chapter presents the limitations of the study and on that basis explains the generalizability of the results. Finally the last chapter gives suggestions for further research.

### **6.1 The most important findings**

The purpose of this study has been to observe the persistence of cognitions. This was achieved by carrying out case studies of significant strategic decisions in the Finnish pulp and paper company Enso Gutzeit Oy. By comparing the individual cases, persistent and changing themes could be found.

The most significant finding of this study is that managerial cognitions are indeed very stable constructs. The fundamental business model has changed very little over the years. In the maps of the two first cases few significant additions or removals can be seen. Of course the structure of the company in the second case is different from that of the first; Enso is involved in more business areas than earlier, and thus the latter case contains more submaps. However, the business logic has stayed pretty much the same and no new strategic intentions are visible.

Only a major threat to the existence of Enso's business has launched a major change in its cognitions. In the observed time spans the only such phenomenon was globalization. It did not change the business logic of Enso in a revolutionary way, but

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it shifted the firm's focus out of Finland and probably contributed significantly to the creation of a formal strategy.

All in all it would seem that major strategic actions in Enso have been the result of reacting to threats. In the first case raw material scarcity threatened Enso's growth goals and the Americans threatened profitability in its export markets. In the second case, after the secession from the Finnpap cartel, reliability as a supplier was threatened. Finally in the third case, the profitability of the whole Finnish pulp and paper industry was threatened. The results of this study would thus support the argument made by Dutton and Jackson (1987) that labeling strategic issues as a threat increases the probability that organizational responses will be internal and of large magnitude.

There are consequences to the unwillingness to change mental models. According to Gavetti and Levinthal (2000), only using a company's previous experience to dictate future actions can lead the company to a so-called competency trap. This means that by making only incremental change efforts a company degrades its performance in the long run. In the context of the pulp and paper industry this would in practice mean that applying a cost leadership strategy and striving for greater market share can damage profitability in the long run. Creating a new business model could enable differentiation and thus increase profits dramatically.

Apparently pulp and paper from USA have already suffered from the effects of the competency trap. As was mentioned in chapter 4.2.3, the American business logic was based on keeping capacity utilization constantly very high. This meant that factories were specialized and produced bulk products. Now in globalized markets Americans have suffered losses as it is difficult for them to reach a cost leadership position over South American producers, for example<sup>48</sup>. The Nordic producers have been in a better position as they have also invested in increasing the degree of value added and not just trusted to scale economies.

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<sup>48</sup> An interview with Pentti Salmi, conducted by Taneli Vaskelainen in Helsinki 21.11.2006

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As was mentioned in chapter 4.5.1, concentrating on creating scale economies is one of industry axioms considered to obvious by the managers. It is very hard to even see any other way of doing business. Indeed in a very mature industry in which business models have been developing for years, it might be difficult to find alternative paths to success. It is not however impossible. A very interesting example of alternative way of thinking can be found in the steel industry. The classical logic of the steel industry is very similar to that of the pulp and paper industry: the more a factory produces the larger are the cost savings and the bigger are the profits. However, a company called Nucor<sup>49</sup> has been very successful with a totally different business model. They create micro-mills near urban areas and use the recycled metal produced by consumers to make steel. Thus it is likely that ‘bigger is better’ is not the only and not necessarily even the best way to go.

The fact that Enso has been mainly reacting to threats would seem to indicate company’s unwillingness to change. However, it did manage to change its mind-set from Finland-centric to global. This is not a trivial change as the company had for years been tied strongly to the Finnish state. The change was probably partially made possibly by Enso’s CEO Jukka Härmälä, whose focus according to the cognitive maps and his actions was more international than his predecessors. The effect of globalization is the other significant finding of this study, along with the persistence of cognitions. This is partially due to the fact that it is a little- studied subject.

It is highly likely that there are a multitude of organizations that have had a strong domestic focus and whose success has been dependant on the ability to shift the focus to the international level. This depends first and foremost on a change in managerial cognitions. As in the study by Barr et al (1992), companies can probably see the effect of globalization as foreign competitors come to their market, but have difficulties in seeing how it affects their business. Thus it can be expected that the

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<sup>49</sup> See <http://www.nucor.com/>

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cognitive inertia preventing companies from reacting to the threats brought by globalization can explain the demise of many organizations.

The contributions of this study are not related only to its results, but its methodological implications are also important. The field of cognitive research in general and cognitive mapping in particular is fairly narrow and new. Thus the following chapters consider what can be learned methodologically from this study and also how it could have been performed better.

The most important lesson from this study for the field of cognitive research is that studying a company's history is very important when trying to understand the origins of managerial cognitions. This is especially true for mature industries such as the pulp and paper industry. Some concepts and their linkages were in all of the cases of this study and trace their origins a long way back in Enso's history. These concepts are carried in the organizational memory as the top management is normally chosen from people that have been working in the organization for years.

As major cognitive changes happen fairly rarely, it would be interesting to concentrate on them in particular. This thought reflects the idea of Dutton and Dukerich (1991) that cognitive research should be issue-centric rather than decision-centric. They (1991) define strategic issues as follows:

*“Issues are events, developments and trends that an organization's members collectively recognize as having some consequence to the organization”*

According to Dutton and Dukerich (1991), decisions are just the results of thought processes and by concentrating on them a researcher can be hindered from seeing the interesting and important mental models that are not directly connected to the decision. Weick (1993) also criticizes decisions as starting point by saying that decisions are often externally driven and thus not initiated by those who implement the actual actions. Thus the actions and the decisions can be loosely coupled.

This study could have also produced more valuable results for the scientific community by concentrating on a particular issue and then considering how it affected the cognitions of management. For example, to really understand the

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globalization issue, one would have to start observing cognitions from the Ahlström deal that began the growth spurt. However, it is very hard to say when a cognitive change has actually happened without an intimate knowledge of the company's history. Thus some kind of a pre-study would in any case have been required to see the important issues. A study of this scope could only observe one or two issues at most. Thus such a study could not in the same sense be longitudinal in nature.

The particular strength of this study is that the long time-span creates a clear separation between passing issues and themes that endure over time. The maps give the opportunity to identify the industry determinants that the managers take for granted. These are the deep cognitions, research into which can give interesting information about the cognitive processes in the industry. A good example of this is the role of cyclicity in the pulp and paper industry, which is considered in more detail in chapter 6.3.

To summarize the content of this chapter, the most significant finding of this study is that managerial cognitions have been remarkably persistent over the years. However, Enso managed to make a significant cognitive change by raising its focus from Finland to the international level.

## **6.2 Limitations and generalizability**

The biggest limitation of this study is that it has been carried out in a single Finnish company in the pulp and paper industry. Thus the consideration concerning the extent to which findings can be generalized is very important. As this study researches cognitive persistence and change as the main basis for cognition, it is important to find industries with the same kind of need for cognitive change and the sources for new ideas. Industry is chosen as a unit of analysis as it sets the bounds to what kind of business models are favored (Huff 1982).

Chapter 2.4.4 presents a table summarizing some of the potential sources of cognition. As the table suggests, personal-level aspects of the managers are unlikely to be a significant source for revolutionary renewals of the business logic. This is supported by the fact that Enso's business model has changed little, at least before the merger with Stora Kopparberg. Härmälä seemed to bring the capability for Enso

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to achieve true internationalization, but the threat came from outside and, as will be considered in the next chapter, the whole industry made the same movement at the same time.

Thus as was suggested in chapter 2.4.4, the pulp and paper industry would seem to be an industry in which industry-wide belief systems largely dictate the actions of single companies. As industry is slow to move, major changes are rare. The results are likely to be valid in similar kinds of industries. The primary area for generalization is thus manufacturing industries at the maturity stage of their life cycle. The companies in these industries are large and a relatively small number of players rule the market. Products are produced in bulk and competitive advantage is mainly based on economies of scale. These kinds of industries could include steel and mining, for example.

The results can in no way be generalized to industries that are very immature and which show greater inter-firm cognitive variety. In these industries, cognitive inertia is likely to be fatal and firms must reinvent themselves often in order to survive. Changing is also fairly easy, because companies are small and do not have long traditions. This is an important issue limiting the generalizability of this study because there is a considerable amount of evidence indicating that in so called hypercompetitive environments, where change is constant, cognitive processes work in a different manner than in industries where mental models have time to freeze (Eisenhardt 1989; Bogner and Barr 2000).

It is very hard to say to what extent the results can be generalized to service industries. The stability of the pulp and paper industry comes to a large extent from the fact that the products are standardized and consumers do not have specific wishes for the features of the product. In a service business there are various factors hindering this kind of standardization, such as the fact that service is perishable and very often a customer interacts in its creation. However, service businesses in which customer interaction is minimal could present the same kind of persistence in cognitive models. For example, postal services could be such an industry.

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### **6.3 Suggestions for further research**

As has been said, cognitions in the pulp and paper industry can be expected to be guided to a large extent by industry-wide mental models. There are many pieces of evidence that would give an indication of this, such as cyclicity, which would seem to be caused by the fact that everyone interprets the market information in the same way. This was explained in more detail in chapter 4.5.1. Another issue indicating that the belief systems in pulp and paper industry are fairly conforming is the fact that Enso's business model did not fundamentally change when it was merged with Stora Kopparberg. It is likely that Stora's business model was not that different from that of Enso.

Even more convincing evidence can be found from the external literature. As was mentioned in chapter 2.4.4, Melander (2005) noticed that the lack of wood in Sweden was mainly based on a common belief, the strength of which depended on who took part in discussions about it. In the Finnish paper industry, when the strategic moves of the various players are observed, it is easy to spot patterns in actions (see Näsi, Lamberg et al. 2001). For example, Enso, Yhtyneet Paperitehtaat, and Kymi decided to internationalize at the same time. The large mergers also happened almost simultaneously.

There have been quite many studies of the factors that affect the likelihood of the creation of industry-wide belief systems (e.g. Porac and Thomas 1989), and some studies of which particular beliefs are normally shared (e.g. Porac, Ventresca et al. 2002). However, research into how these beliefs come about is sparse.

One very interesting issue to be studied is, what are the communication channels spread the cognitions in the industry. As was said in chapter 2.4.3, there were several possible ways in which knowledge-transfer across company borders could happen, such as the cartel institutions, personal relationships and consultants. This kind of study could possibly be extended to the Scandinavian level. According to Pentti

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Salmi<sup>50</sup>, the Scandinavian business model was pretty uniform and separated clearly from that which was used in America. The Scandinavian price cartels may have affected this.

Another interesting topic for further research that is closely related to the creation of industry-wide mental models is to how managers come to believe in different issues; a topic worthy of meticulous micro-level examination. In the Finnish pulp and paper industry, the growth spurt of various companies in the 1990s that led them to become the largest players in the industry would be a very interesting topic to examine. In particular, research into who or what made managers believe that the threats of globalization are severe and that companies need to grow would bring new and valuable information to the scientific community.

Micro-level research described above would not only give very important information about how cognitions are created. It would also provide information about who has the power to influence their creation. Dutton and Dukerich (1991) assert, for example, that the members of peripheral functions of the organization, such as sales, have a big impact on the mental models as they can frame issues as threats, strategic problems, or opportunities.

The final research topic has little to do with those previously mentioned, but it is interesting from the viewpoint of this study as it is directly derived from its results. This study has considered persistence of various cognitions. However, commentary about which cognitions are particularly persistent can be carried out only at a fairly superficial level. It would in any case seem that some elements of the mental models are more easily changed than others. It would be interesting to know what affects the strength or persistence of a particular concept. This kind of research could significantly increase the knowledge of what kinds of changes are easy or difficult for managers.

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<sup>50</sup> An interview with Pentti Salmi, conducted by Taneli Vaskelainen in Helsinki 21.11.2006

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## APPENDIX 1: COGNITIVE SIMPLIFICATION PROCESSES

<b>Goal formulation/problem identification</b>	
Prior hypothesis bias	Decision makers tend to stick with the prior hypothesis despite the amount of controversial evidence.
Adjustment and anchoring	Final estimates of critical variables' values are biased toward the initial estimates.
Escalating commitment	If a gap is perceived, the decision makers might deny its significance, because of high commitment in the project. Problem is tried to be solved with increased resources rather than change in strategy.
Reasoning by analogy	The use of analogies oversimplify managers' view of a challenge and prevent them from seeing gaps in their strategies.
<b>Alternatives generation</b>	
Single outcome calculation	Decision makers concentrate on single goal that they have and a single course of action for achieving it.
Inferences of impossibility	Managers try to identify negative aspects of non-preferred alternatives to convince themselves that they are impossible to execute.
Denying value trade-offs	Managers deny to see the trade-offs in their favoured alternatives.
Problem set	A repeated use of one problem solving strategy makes it harder to develop alternative strategies.
<b>Evaluation and selection</b>	
Representativeness	Decision makers overestimate the extent to which their knowledge of the situation represents the whole situation.
Illusion of control	Managers overestimate the extent of their personal control and expect that they can win the possible challenges with increased personal effort.
Devaluation of partially described alternatives	Decision makers prefer alternatives that are accurately described

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## **APPENDIX 2: THE INTERVIEW GUIDE FOR THE FIRST CASE**

Tämä on kysymysrunko Enso Gutzeitin Eurocan-projektia koskevia haastatteluja varten. Haastattelut tulevat osaksi tutkimusta, josta tehdään opinnäytetyö (erikoistyö) Teknillisen korkeakoulun tuotantotalouden osastolle. Tutkimus keskittyy varsinaiseen Eurocan-päätökseen. Tavoitteena on siis ymmärtää, miksi Kanadaan lähdettiin ja miten päätös syntyi.

Kysymysrunko lähinnä ohjaa haastattelua. Jos siis jotkin teemat ovat päätöksen kannalta vähemmän merkityksellisiä, voidaan ne jättää vähemmälle huomiolle tai kokonaan huomiotta. On myös toivottavaa, että haastattelutilaisuudessa otetaan esille sellaisia teemoja, jotka eivät ole haastattelurungossa, mutta olivat Eurocan-päätöksen kannalta tärkeitä.

### **Kysymykset**

#### **Taustakysymyksiä**

Miksi haluttiin kansainvälistyä?

Miksi nimenomaan Kanada? Oliko halpa puuraaka-aine ainoa syy?

Kuinka perusteltu käsitys puuraaka-ainepulasta oli? Mille olettamuksille se perustui?

Kuinka tärkeänä Eurocan päätöstä pidettiin? Kuinka merkittävä investointi se oli?

Minkälaisia vaikeuksia hallinto osasi odottaa?

#### **Päätösprosessi**

*Periaatteessa päätösprosessin taustojen selvittämisen voi kiteyttää seuraavaan kysymykseen:*

Mitä ylipäätään tehtiin ennen varsinaista päätöstä?

*Kuitenkin ainakin seuraavat teemat tulisi käsitellä:*

Milloin idean hankintapäätökseen voidaan sanoa syntyneen?

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Kuinka kauan päätöksentekoprosessiin meni aikaa sen jälkeen, kun tieto mahdollisuuksista Kanadassa tuli ilmi?

Miten hakuja halvasta puutavarasta suoritettiin 1960-luvun alussa?

Milloin Roomassa käytiin?

### **Rationaalisuus**

Mille markkinoille tuotteita oli tarkoitus myydä?

Miten päätöksen kannattavuutta analysoitiin?

Oliko strategisille päätöksille olemassa jonkinlaisia formalisoituja tapoja, millä esimerkiksi sijoituspäätökset aina tehtiin?

Noudattiko päätös Eurocan-projektiin lähtemisestä tyypillistä päätöksentekoa Enso Gutzeitissa?

### **Poliittisuus**

Kuinka keskittynyt strateginen päätäntävalta oli? Miten oli Eurocanin tapauksessa?

Kehittyikö päätöksenteossa jonkinlaisia valtaryhmittymiä, joilla oli eriävät mielipiteet Eurocaniin lähtemisestä?

Mitkä olivat syyt, jotka johtivat johtokunnan kapinaan?

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## **APPENDIX 3: THE INTERVIEW GUIDE FOR THE SECOND AND THE THIRD CASE**

Haastattelun ensisijainen tavoite on ymmärtää, miten Enson ylin johto hahmotti liiketoimintaympäristönsä ja strategiansa ennen [pääöstä] ja miten nämä käsitykset vaikuttivat kauppojen syntyyn. Haastatteluiden tehtävänä on diplomityössäni nimenomaan selittää taustoja johdon käsitysten ja valintojen takana. Työni ensisijaisena datana toimivat päätösten aikaiset dokumenttilähteet. Niissä usein selitetään tapahtumat riittävällä tarkkuudella, mutta syyt tapahtumien takana jäävät usein osin hämärän peittoon.

Kysymysrunko lähinnä ohjaa haastattelua. Jos siis jotkin teemat ovat päätöksen kannalta vähemmän merkityksellisiä, voidaan ne jättää vähemmälle huomiolle tai kokonaan huomiotta. On myös toivottavaa, että haastattelutilaisuudessa otetaan esille sellaisia teemoja, jotka eivät ole haastattelurungossa, mutta ovat tutkittavan ilmiön kannalta tärkeitä.

### **Ahlström-kauppa ja Tervakosken osakkeiden osto**

Kuvaile [pääöksen] päätöksentekoprosessia.

Mitkä olivat pääasialliset syyt [pääökseen]?

Miksi tehtiin juuri [pääös]?

### **Enson strategia**

Kuvaile Enson strategiaa [pääöstä] edeltävänä aikana?

Miten [pääös] liittyivät Enson Strategiaan?

Minkälaisilla taloudellisilla mittareilla Enso mittasi omaa ja tulosyksiköidensä menestystä?

Mitkä olivat [pääöstä] edeltävän ajan suurimpia haasteita?

Mitkä olivat Enson merkittävimmät menestystekijät [pääöstä]edeltävänä aikana?

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## **Liiketoimintaympäristö**

Mitkä tekijät liiketoimintaympäristössä vaikuttivat Enson taloudelliseen tulokseen?

Millä perusteilla Enson merkittävät strategiset päätökset [Esimerkkejä] yleensä tehtiin?