Spontaneous Environmental Scanning.

Putting "putting into perspective" into perspective.

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PREFACE

This report is a result of a research project carried out at the Research Programme for Man and Organisation (PMO) at the Economic Research Institute at the Stockholm School of Economics.

This volume is submitted as a doctor's thesis at the Stockholm School of Economics. As usual at the Economic Research Institute, the author has been entirely free to conduct and present his research in his own way as an expression of his own ideas.

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Acknowledgements

I have spent a period of 5 years of my life making a fascinating journey, and this is the document describing it. The vehicle has been Stockholm School of Economics (SSE) and the journey has been a research process. It started with very little means. Short before entering the journey I left my work as business developer in a large Swedish company. At the time I was in my early forties and most of my friends thought it was not a very good idea to make such a shift in the middle of life. But I had no choice. There was a little devil in my head, called curiosity, that dictated my action. He had been trying to convince me for a long time and finally he succeeded.

I entered SSE with nothing else than a research question. I had no plan. In fact it was like starting a journey without a compass. But as my curious question was strong, it guided me in the beginning as the sailor can use the sun when deprived of a compass.

Luckily I entered SSE in a way that suited my question and personality. I established myself at the research programme "Man and Organisation" (PMO). It was a place where people did not have any answers, but lots of questions. It was a place where expression was free, all under the leadership of a very gentle and free-minded professor, Bengt Stymne. Even though I have made this journey mostly by myself it has been very valuable to belong to this group. I am not sure that the others in the group have benefited as much from me as I have from them, but I would like to express my hearty thanks to all my fellows at PMO. You have contributed substantially to the result of this project even though I must admit that your comments sometimes hurt a bit. I did not appreciate that at the time, but I do now.

I had a crew as well. My tutor committee: Bengt Stymne together with Jan-Erik Vahlne and Henry Montgomery. A group of interesting characters (besides being clever professors). Jan-Erik, a very emotional character, did not believe at all in my project at the beginning. I actually had to talk him into joining the committee. He argued that I must have a theory; I replied that I wanted to create a theory. His scepticism disappeared, however, and was replaced by an enormous enthusiasm. Ever since that day he has given much support to the process. Henry, a very analytic character, has already from the beginning examined the process in its bits and pieces, and delivered constructive advice at a steady pace. Bengt has all along been very anxious that the process is on track. More than once he was worried over my interest in "strange" theories. One of those occasions was when I took an interest in neurology. At one tutors' seminar Bengt turned worried to Henry and asked if what I came up with had substance and in his calm analytical way Henry could assure him that it was all right. Looking back it seems that my tutor committee has had the ideal structure. Henry, with his speciality in cognitive psychology. Jan-Erik, with his knowledge of organisational environments. Bengt, a heavyweight in organisational cognition. Gentlemen, I thank you all!

There is one other person who has been very influential in this process, without being directly involved in it. His name is Stevan Dedijer. He is the "godfather" of Business Intelligence (BI) in Sweden. During many years in the 80s he was the one constantly trying to persuade me to start researching. He gave me the first stimulus. Stevan has a very special gift in being able to stimulate curiosity. In fact he *is* curiosity personified. I am sure that without Stevan's contribution I would still be a businessman running around trying to make money. Thank you, Stevan, for saving me from that fate!

1. Basic Definitions and Background

As this research project concerns a specific phenomenon of organisational life, environmental scanning, I think it is appropriate to start the report by giving a short description of its context in time and space. But first a definition of the central concepts.

The most central concept is *spontaneous environmental scanning*. By *scanning* I mean the behaviour of attending to the events and phenomena in the environment. The *environment* could be anything material or social in the surroundings, close or distant to the individual. As I will elaborate on later, it is the experienced elements of the environment that are of importance, rather than the factual elements. By *spontaneous* I mean that the behaviour of scanning the environment is an effect of the initiative of the individual. Often this behaviour is not deliberately intentional, but rather an automatized behaviour.

In the sub-heading there is the word *perspective*. It is used in three meanings. Firstly, I mean that the scanning behaviour is influenced by perspectives and induces further perspectives on reality. Secondly, as I will expound later, I have studied the perspectives held by the individuals, which have served as a foundation for my own interpretation – perspective – of the nature of their scanning behaviour. Finally, this latter perspective has been further influenced by theoretical perspectives. So, perspective is a phenomenon that has been studied, an outcome of the study as well as factors influencing that outcome.

There are other concepts and labels in the study which I choose not to define here, but rather deal with as they become relevant in the text.

1. 1. History of Organised Environmental Scanning

Environmental scanning is a quite new phenomenon on the organisational scene. Only the latest 15 years has this topic started to be important on the agenda of many organisations. The question of environmental scanning has been raised in several contexts. One is the need of identifying changes in the organisational environment that the management thinks is important for the organisation. This kind of environmental scanning is often labelled *Business Intelligence (BI)*, a wording that reflects that it is often inspired by military intelligence. BI that has the specific purpose to increase the competitiveness of the organisation is often labelled *Competitive Intelligence*. If the intelligence activities are directed toward competitors in the business environment the phrase *Competitor Intelligence* is often used. *Market Intelligence* is directed toward the customers or users of the services the organisation offers. Another form is *Political Intelligence*, a label used when one monitors the political environment. Usually the term *intelligence* is used indicating that it is an organised activity and an interpretation of the environmental events, rather than the sheer information about them. Another characteristic of *intelligence* is that it is future oriented. By using organised intelligence activities one tries to forecast how relevant parts of the environment will develop in the future.

Even though organised environmental scanning under the label *intelligence* has just recently been used, it is by no means a new phenomenon. One of the oldest statements about intelligence dates back to the Chinese warrior Sun-Tzu. He lived in the State of Wu almost 2500 years ago and acted as general under king Ho Lu. Sun Tzu would probably not have been

Intelligence gathering has been one corner-stone in the Japanese strategy ever since the opening of the society to the West in the middle of the 19th century. The reason is of course that it needed a good intelligence ability in order to assimilate quickly the knowledge of the western world. Ever since the Japanese society has been superior in BI. This superiority, however, has been astonishing to themselves. As expressed by Yukio Otsu, the manager of MITI's international trading research office, at a press conference in June 1985:

"Japan was defeated in World War II partly due to the superior intelligence network developed by the American government. Why can't American businessmen develop the same kind of superior intelligence and strategy to cope with Japan today and be victorious? Most Japanese don't understand why American businessmen cannot win this war."

Looking at the events after this speech it seems as if it was the starting-point for an improvement of intelligence gathering in the western world. Now intelligence departments have been organised in a large number of companies. Many consultants provide BI services. The IT sector has developed tools for intelligence use. Membership associations have been formed to develop BI into a profession. The dominant association is SCIP, Society for Competitive Intelligence Professionals. Even nations have started to arouse interest for BI (Rossander & Borg, 1996; Borg *et al*, 1998). Some of them have even started intelligence programmes in order to support their industries. As the Cold War has faded away, with the fall of the Soviet Union, many of the former military intelligence units have been reorganised to monitor economic matters instead.

The history of organised environmental scanning is long and the interest in this area is quite great among business leaders and public administrators. Yet research evidence shows that the organising of environmental scanning is not unproblematic. On the contrary, the organising of BI operations usually meets obstacles.

1. 2. Structure of Organised Environmental Scanning

The management literature on BI has expanded very much the latest decade (Pagels-Fick, 1999; Gilad, 1996; Frankelius & Rosén, 1993; Hamrefors, 1992; Gilad & Gilad, 1988; Fuld, 1988; Sandström, 1988; Meyer, 1987; Jarenko & Wahlgren Wall, 1986; Hamrefors, 1984). The literature gives a very rich variation of advises how to build organised scanning. Even though each author has their own perspective, there are some characteristics in the organisation of BI that they have in common.

The purpose of BI is proactively to support information to the decision-makers for their actions. Often a distinction is made between tactical and strategic intelligence, which originates from the military intelligence tradition the authors of BI often come from. Furthermore the proactivity of BI often distinguishes between the ability of finding critical information, without the decision-makers having to ask for it, and the proactivity to anticipate future questions from the management.

The role of the BI function is often described as being autonomous and independent. In practice, however, the BI function is often a part of some function already existing in the company, the marketing department, the security department or the information department.

In a survey among the Fortune 250 largest companies it was found that 52 had an early warning system in place. Almost half of them were considered to have generated action (Roy & Chung, 1985).

Among 90 companies on the Fortune 500 list it was reported that 73% had organised environmental scanning. Small companies had it at a lesser extent than large companies. Respondents reported numerous advantages with the scanning activities (Diffenbach, 1983).

The general picture from this research is that the frequency of organising environmental scanning, BI units, is increasing, but the frequency of using their services varies considerably.

1. 4. Efficiency of Organised Environmental Scanning

Already Forrester (1965) argued that the structure of an organisation and the type of information channels are of vital importance for the ability to absorb and communicate knowledge.

There is evidence that shows the importance of structuring the scanning and distributing the environmental intelligence. For example, a computerised distribution network for intelligence in an organisation may increase the efficiency of integrating intelligence into the decisions (Roush, 1991).

When the environment is perceived as hostile or threatening, or the organisation depends heavily on the environment, more resources are allocated to the environmental scanning (Wilensky, 1967). Organisations living in more benevolent environments are not so scanning active (Child, 1974).

Yasai-Ardekani & Nystrom (1996) compared in a study the relationship between organisational context and the design of environmental scanning systems. Data from over 100 North American business organisations were analysed. Results indicate that organisations with effective scanning systems tend to align their intelligence gathering with the requirements of their context.

Klein & Linneman (1984) conclude in their study of successful attempts to organise functions for environmental scanning that it is related to a commitment to formalised strategic planning in those companies.

Reinhardt *et al* (1987) argue that it is important to organise decentralised functions for environmental scanning in order to manage a dialogue with a critical public. Another purpose of such decentralisation could be the intention to interest members of the organisation in issues of strategic change (Crable & Vibbert, 1985).

Small companies have a better ability to tailor their scanning operation to their information need, both on a tactical and a strategic level. In this way the small companies can make frequent use of informal sources. Often this scanning is directed toward a domain of the environment believed to be rather stable, but where even small changes might have a dramatic impact on the organisation (Smeltzer *et al,* 1988). Much of this ability can be traced to the

- Because the BI activity has been defined as a long-term exchange of information it has been possible to find a concrete area of responsibility that can be delegated to special people in the organisation. In the Japanese companies it is often the information department, called "Shogai Katsudo", that has been given the responsibility.

- As many organisations in the Japanese business environment have a similar philosophy about environmental scanning they have jointly created marketplaces for the exchange of information. These marketplaces consist of physical committees where information can be exchanged.

- The information that is exchanged in the committees has price tags. Each actor on this market has estimated a value of the information ready to be exchanged. The purpose of the exchange activity is to make a profit by trading less valuable information for more valuable information. As information is valued subjectively by each actor in the exchange the result is that everyone experiences making a profit from it. It is a win-win game.

From this research one can draw the conclusion that Western organisations have great difficulties in integrating their BI activities with their overall activities, whereas Japanese companies do not experience such problems.

Is there evidence for the connection between BI and re-framed organisational behaviour? It seems to be difficult to establish a relationship between BI and action in Western organisations. According to the authors just cited there seems to be an impact of BI in Japanese companies, at least in the short run. In what respect the Japanese environmental scanning helps people to re-frame their perspectives is more uncertain. As the Japanese environment is highly organised it can easily be assumed that it is very institutionalised. This may tend to homogenise the perspectives of the environment. As a result it can be presumed that this makes the scanning helpful to the re-framing process, but only within the limits of the institutionalised frame. To some extent the Japanese way of organising environmental scanning would be a way to conserve the institutionalised frame.

1. 5. Problems in Organised Environmental Scanning

Organised environmental scanning seems to be problematic in two basic respects.

The first problem is related to the scanning activity itself. People scanning the environment are attuned to their task and act as an environmental radar in identifying and analysing data related to environmental factors they judge to be important to that task (Narchal, Kittappa & Bhattacharya, 1987). Normally people search for information based upon the experience of a specific problem (Cyert & March, 1992). This makes the search narrow and directed toward a solution of the experienced problem. Normal information searching is therefore a product of convergent thinking. This gives the individual a sense of rationality. Mendell (1978) describes this as "the myth of rationality":

Most people like to believe that they are working on well-structured, "under-control" problems. We can apply rational methods to well-structured problems and get well-defined, permanent answers. But non-rational thinking has to be employed to solve ill-structured problems and this scares people. So people treat future

Moreover, when I later got involved in the consultant business of helping companies start up BI units I realised that it was not self-evident that these measures would be successful in the company. In some companies a BI operation caused internal disturbances, internal conflicts or even paralysis. In others the BI unit made wonders and the organisation really took off. Several organisations did not show any interest at all in BI but anyway made a very good job in scanning their environment.

Thus, the more I worked with BI the more confused I got. This aroused a curiosity: What processes in an organisation affect its ability to attend to its environment? And from this curiosity a need to conduct research in the field arose. That is my personal background to why I changed my life from being a practitioner in BI to be an academic researcher of BI.

An example from "Real life".

In my work with BI I had one particular experience from a case which served more than others as an inspiration to start the research project covered by this report. The case also serves as an empirical evidence for both the nature of information search in environmental scanning and the importance of focus. The case has previously been reported in Hamrefors (1992) but I choose to describe it here as well.

Although the passage of time has made the information less sensitive, I have given all the parties and facts fictitious names.

Once upon a time there was a man, let's call him Mr. Keram, who had a small firm that marketed High Voltage Insulators made of ceramic material on the Scandinavian market. His company was called Keramimport AB and represented the French manufacturer, Voltaire S.A. Keramimport AB had a very good reputation on the market, both because Voltaire's products were of a good quality and because Mr. Keram was a very honest and efficient businessman. The economic value of the company was not very high, though, as Mr. Keram had not had any interest in accumulating capital in the business. However, he had accumulated a quite considerable personal wealth from his business. The organisation of Keramimport AB was small. Beside Mr. Keram himself, who was an elderly gentleman and was planning to retire in 5 years time, there were one secretary and 5 young salesmen. Mr. Keram had a wish that his son would be interested in taking over the business after his retirement. The son, however, had not been showing any major interest in that, but his father, like many other fathers, still had this dream.

Suddenly one day, as business was running smoothly as always, the best three salesmen in Keramimport came into Mr. Keram's office and declared in a very self-conscious manner that they did not have the intention to work for the "old man" anymore, but to start their own business. No sooner said than done, they started the competing business, The Escapologists AB.

In the beginning there were two problems for the fellows of The Escapologists AB to solve. The first was whom they should represent. The second, how to get capital for their operation. As they were very good salesmen they had managed to obtain the Scandinavian representation for Voltaire's chief European competitor, the German company Produktor AG. The second problem was obviously more difficult for the fellows to manage. They were inclined to spend

- It was technically superior.
- It was easier to produce items of this material than conventional ceramics. One could use the same kind of casting technique on that occation used in south east Asia by the suppliers of Distributor BV.
- As production would be cheaper it implicated that the final product would be competitive in price.
- Finally, in one patent application it was found that the major application this material was meant for was... high voltage insulators!

Furthermore I quickly found out that Cera-Tech was a subsidiary to the big Finnish conglomerate Hyuvepeive Oy.

So the picture started to make sense. It was obvious that The Escapologists AB conveniently had got money from Mr. van Hulk because they were to be distributors of the new competitive product. This put Keramimport AB and Mr. Keram in a very awkward situation. He seemed to have no chance to cope with this new competition!

As I arrived at this horrible scenario I realised that Mr. Keram would not be very pleased to hear this and it was with anxiety I went to his office to tell him what I had found out.

While I was telling him the story I have just recapitulated here I found to my surprise that he was not upset at all. He actually laughed! And he said:

- I am sure that the Escapologist boys don't know about this. It would be just like them!

It suddenly struck me: Mr. Keram was able to draw conclusions I was unable to because he knew the Escapologists in a way I never could. He had them at his finger-tips!

Mr. Keram was suddenly in a great hurry. He realised that very soon Mr. van Hulk would approach the Escapologists with the message to degrade them from escapologists to ordinary salesmen in his new organisation. And this would reveal the truth to them. So Mr. Keram went to the office of The Escapologists AB and at the doorstep he stopped and looked melancholy at the boys in the room. After some silence he said:

- I have started to feel so tired. Perhaps it is my age. You know I have struggled so long to develop my business and now it seems that my son is not so keen on taking over.

This message caught of course the attention of the fellows as they had thought that Mr. Keram had started to get old quite a while ago. So it increased their self-esteem a bit more hearing him admitting his defeat. Mr. Keram continued:

-I have seen your actions and I must say I am very impressed. You are really doing a good job, boys!

This statement excited them even more. They all sat down for a cup of coffee and Mr. Keram listened to them bragging about their great business and solid finances. After a while Mr. Keram decided to break the news:

depended on his expertise in intelligence gathering and analysis and partly depended on my own capacity.

Why could Mr. Keram find the decision so easily? The picture fitted very well to what he usually experienced in his everyday life. That made it easy for him to put the pieces together into a business decision.

How was the information working as a trigger to immediate action? As he knew that the situation could change very rapidly he understood that it was important for him to act promptly. The seriousness in the situation also gave him an incentive to change his mind on one point: He gave up the thought that his son would take over his business. It was too late for that. So, he sold his business to the only potential buyer – the Escapologists.

It was questions like these that formed a basis for my research motives. My experience in this case was the single most important factor why I started the research process at all.

My conclusion from this experience is that organised environmental scanning, as well the scanning people do in everyday situations in organisations - *the spontaneous environmental scanning*, plays an important role in the formation of perspectives on the reality. It is important that the decision-makers do a good job themselves in monitoring their own business environment. Some of the environmental scanning can only be conducted by the ones who are going to use the information while some of the scanning must be done by people who are not involved in the decisions. By developing their own scanning ability decision-makers can develop their perspectives to be efficient receivers of diverging perspectives. Thus, total BI in an organisation is probably constructed of efficient scanning and analysis of the business environment in various segments, ranging from the most individual-related to the most macro-related environment.

This notion of the spontaneous and organised environmental scanning interacting with each other was the result from this case experience. It seems that the major problem in understanding how organised BI is interacting with decision-makers is to understand how decision-makers act themselves in their own environmental scanning.

Inspired by the case of Mr. Keram it was natural to direct the research toward the phenomenon how organisational members are affected by the organisational context in their scanning behaviour. In my interpretation of the behaviour of Mr. Keram I find it obvious that it was very much influenced by his experiences of the organisational context and the business processes he was used to. This constituted the point of departure for this research project.

1. 7. Point of Departure for this Research

I have previously described organised environmental scanning as a management area, with a long history but with a number of problems attached to it. Most empirical evidences support my personal experience, from cases such as the one concerning Mr. Keram, that there is an urgent need to deepen the knowledge of the behaviour of spontaneous environmental scanning in order to shed more light on the possibilities to improve organisational environmental scanning.

2. Research Objectives

When, after about 20 years' experience of business, I entered the academic sphere it was not my primary purpose to obtain a doctoral degree in management. I had rather a very urgent and well defined need to understand the particular problem which I have outlined in the previous chapter. My general objective was to shed some light on the phenomenon "environmental scanning" in order to bring more knowledge that could aid the establishment to more efficient BI operations in organisations. The point of departure for the research was rather a feeling than an insight, based on my practical experience that people in the BI function and the other functions in the organisation usually had difficulties in understanding each other. One normative stand on this problem could of course be to argue that it is only a managerial problem to make the rest of the organisation understand what the BI people come up with. My experience, though, told me that the problem is not that simple. The core of the problem seemed rather that the BI people had a different perspective of reality than the others, and this particular perspective was perceived uncomfortable by the others. I have often heard managers complain about their BI people bringing on more conceptions of problems, something the managers think they have enough of already. It might be that the managers feel that the prophesies of the BI people unnecessarily complicate their perception of the world, which does not enlighten them but tends to confuse them even more. Another common response is that the product of the BI people seems irrelevant, which gives the managers a feeling that the BI people do not really know what they are doing. Finally some of the information served by the BI function seems self-evident to the decision-makers, sensed like the "importance of the ocean for the shipping industry". All these reactions bear witness that the BI people are not commonly understood by the others in the organisation.

Instead of directly taking the normative stand as described above one could reflect reversibly on the problem. Maybe the core of the problem is not primarily that the BI people are not understood by the decisions-makers but rather that the decision-makers are not understood by the BI people! Let us pursue that line of reasoning for a while.

Such a reasoning could assume that when a BI function is implemented in an organisation it will act as an additive to something that already exists. Environmental scanning exists in an organisation even though there is not a special function for it, because people themselves scan. When such a function is implemented it has to co-exist with the on-going scanning in the organisation. The on-going scanning is not formalised. It is not organised. And its nature is usually unknown. The fit between the scanning conducted by the BI function and the scanning by the others becomes inadequate.

When I entered this research project I therefore had a very defined short-term objective and a vision of the long-term objective.

The short-term objective, which I hoped to reach within the scope of this research, was to generate a better understanding of the spontaneous environmental scanning in organisations. *I wanted to know how people in organisations scan their business environment and how the organisational context they belong to influences their scanning behaviour.* These became my research questions which was condensed into a short-term objective to create a *theoretical model* of the behaviour of spontaneous environmental scanning.

3. Research Design and Method

Every research project has a context. A project could be regarded as a temporal border area within the more general process the researcher is in; to walk through existence and understand its purpose and meaning. As Popper (1963) has pointed out the research process is always a search for truth, but can never bring the truth. Only, at best, is it possible to bring the state of knowledge a bit closer to the truth. The general process is also about doing the same. The truth seems, however, to be subjected to various perspectives. Whenever we think we have got the right perspective, a new one comes along. The purpose of research is to continue to build perspectives of the truth and to be content with the fact that we only get to know it a bit better each time, although we will probably never fully know it.

Western civilisation takes an ambivalent position on the conflict between idea and reality. The ambivalence can be traced back to the ancient Greeks. This has been illustrated by Raphael in a painting describing Plato standing pointing to the sky, as a symbol for the speculating thought. Beside him stands Aristotle pointing to the ground, reminding us of the importance of relating the knowledge to reality. Both of them, however, advocate the importance of categorisation as a means to produce knowledge. As I am a member of the western scientific tradition, with its ambivalence between idea and reality, this research is one more attempt, among several, of categorising the reality. But despite this abode, taken for granted, in the western culture's manner of categorising, I have had the intention to look at a phenomenon not by dividing it into pieces but rather to look at it from a holistic point of view. I regard the object of the study, the behaviour of spontaneous environmental scanning, as one entity.

As I have described in the beginning of the report the most common perspective on environmental scanning is the one inherited from military intelligence. It looks at scanning from above. The implication of that perspective is the belief that organisations can mainly improve their scanning ability by establishing special units for intelligence purposes, just as it has traditionally been done in military and political organisations. I have chosen to apply the reversed perspective; to look at the scanning conducted by the ordinary member of the organisation. This is a new perspective in contrast to the established perspective on BI. In order to make this new perspective as colourful as possible I have tried not to be trapped in any particular paradigm or methodological tradition. The methodological choices I have made have been rather practical – to find inspiration wherever I can find it. Methodologically I interpret the formation of a scientific *perspective* as the intention to generate a well founded view on a scientific problem under the restriction of certain system boundaries. In that case it is rather important to be true to the system definition rather than being true to any particular method.

To be locked into a certain manner of search behaviour when looking for a new perspective would probably decrease the probability to find it. This is the case in the professional work of BI and it is also argued to be the case in behavioural science, according to Kaplan (1964). He claims that social science in general over-emphasises methodological concerns, and puts his argument very nicely in a metaphor:

"An anxious concern for the condition of the body is not very likely to make for a healthy life."
(Kaplan, 1964: 25)

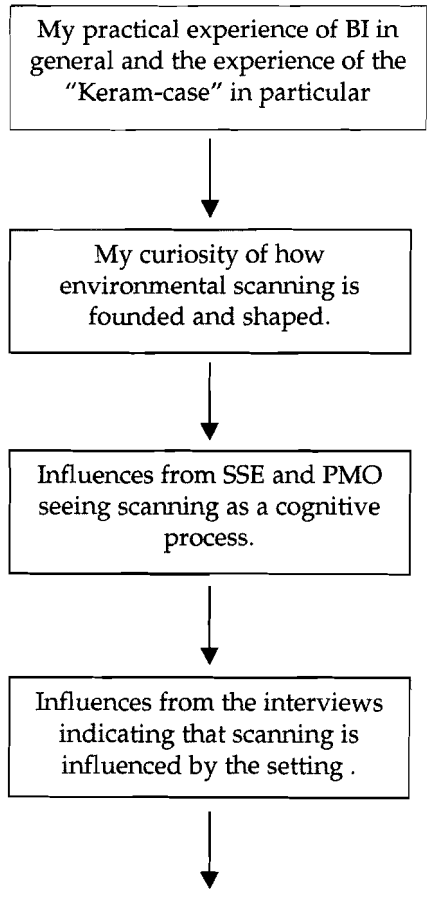
examples of different people in different situations. As the behaviour I was supposed to study was not very suitable for observation I had to find a method that could overcome that obstacle. All this added up to a number of methodological problems:

- What kind of organisations should I select?
- What kind of people should I interview?
- What approach of investigation should I select?
- What level of analysis should I select?
- What method of analysis should I select?

As I had chosen an inductive approach I consequently decided to make the empirical observation the point of departure and adjust the later stages of the process according to the results of the empirical data. After the decision to start with observations I chose the organisations to make the data collection.

This approach can be looked upon as bringing the perspective through a journey of a number of moulding experiences:

Point of departure:



interesting to study. The organisations wished of course to be able to use the results from the study as input for organisational improvements. In the last organisation, the County Council, there was the most concrete compromise as only heads of departments were selected. That selection of respondents differed consequently very much from the variations in the other selected organisations, in which the sample covered the whole range of organisational functions; salespeople, system engineers, bookkeepers, porters, business managers, market managers etc.

The sum total were 281 individuals selected and interviewed. The number was not given at the beginning but rather a consequence of my contract with the organisations I studied. I was financially supported by them and they wanted in return studies that covered large parts of their organisations. I had no reason to object to this restriction as it enabled me to make a great number of interviews that would increase the probability to generate a large number of various cases. The interviews did not have the function to provide the answers to my research questions, but rather to point to certain theoretical domains for my perspectives. Looking back at the research process I can conclude that the number of interviews demanded by the client companies added up to an amount of interviews which exceeded the number of interviews I found useful in the scientific process. But it certainly gave me a good variety of cases. The number of interviews in each organisation was:

The Sales Company - 80 interviews.

The Energy Company - 30 interviews.

The Chemical Company - 101 interviews.

The County Council - 70 interviews.

3. 4. Design of Investigation

I gave it a great deal of thought how to catch the behaviour I wanted to study. It would have been ideal actually to observe the environmental scanning behaviour itself. But I judged that such observations were practically impossible to carry out. First of all because the behaviour itself is not very explicit. It is very difficult to draw any conclusions of what is scanned from what could be observed to be scanned. Secondly, observations would take a very long time. As it was important to study as many examples as possible within a reasonable amount of time only one research method was optional; the interview.

To interview people about their scanning behaviour has of course its drawbacks, too. There are few guarantees that people tell how they scan their environment. They cannot probably tell that, because much of the scanning is done without thinking about it. I therefore chose not to ask them about their scanning behaviour but rather to establish a dialogue about their perspectives of the environment and jointly form hypotheses of what had influenced their particular perspectives. I call this interview technique *Perspective Dialogue.*

Each interview lasted for about one hour and was carried out in the respondent's office. I thought it was important that the respondent was located in his/her natural environment when

- Finally I had a dialogue with the respondent where we jointly compared the responses to the questions about the environment with the initial description of the experienced working situations and organisational contexts.

- The interviews ended with me asking the respondents to describe the possible relationship between the experience of the organisation and the perspective on the environment.

The philosophy behind the structure of the interviews was to set up a situation of dialogue with the respondents in which the researcher and respondents negotiated a description of the reality. This situation gave a wide latitude for the respondents to influence not only the content of the description but the language as well, which helped to address the recent concern about practical relevance among process researchers (e.g. Chakravarthy & Doz, 1992; Van de Ven, 1992). Of course it opened up a wide latitude for interviewer bias effects, as well. But as Guba & Lincoln (1989) point out such an effect would be present anyway. By using this kind of dialogue technique in the interview it became possible for the respondents to make a deeper self reflection on their situation, which balanced the interview effect and increased the possibility to reach into the deeper layers of their cognitive structures. One very common reaction to the interviews among the respondents was the appreciation that the interview had given them a better understanding why they focused on their environment the way the did. For me the interviews gave a good variety of perspectives of environments which were a good foundation for further investigation. So, both I and my respondents obviously got something out of the interviews. A nice win-win situation!

Every interview was first analysed in a non-theoretical way forming pictures of the coherence between the perspectives of the business environments and the perspectives of the organisational contexts, with special emphasis on how experiences of the organisational context influenced the perspective on the business environment. In the later analysis these pictures were analysed in the light of the theoretical model.

3. 5. Level of Analysis

The next crucial problem was the level of analysis. To some extent this problem had been addressed earlier as I chose to interview individuals about their perspectives. The focus on the individual had been given from the very beginning and stems from the focus I had on the problem based on my previous practical experience. The result from the interviews indicated very clearly, however, that the problem of environmental scanning was not only concentrated to the individual, but had a social dimension as well. I therefore defined the individual in the situational context to be the appropriate unit of analysis. By the choice I was guided into a domain of theories covering how behaviour is influenced by personal, social as well as organisational factors.

3. 6. Choice of Theoretical Domain

As situated cognition seemed to be the most appropriate perspective for my research I started to study a great number of theories about behaviour in general and scanning behaviour in particular ranging from the most basic neurological examinations of the brain functions to the

I used this technique as I went through different theoretical domains searching for perspectives on what influences people in their perception of reality. The object was the same all the time, but the perspectives differed a lot. The process was an "experiment" in the sense that I deliberately combined the different perspectives in different ways in order to find out how they could support each other. When all the different supportive combinations were assembled I could use them as a foundation of a speculative model.

In the second part of the analysis I used the speculative model to interpret the interviews.

3. 8. Research Process

The research process of this project can be summarised in the following figure.

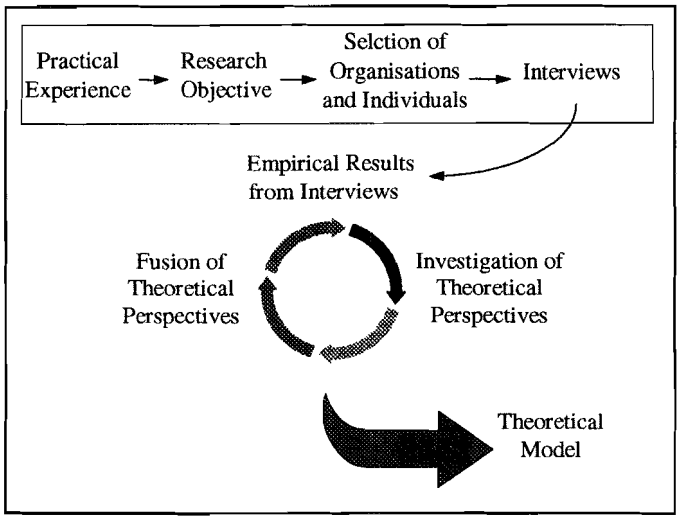


Figure 1: Illustration of the research process.

I admit that the research process has not been very controlled. The metaphor "journey" is quite appropriate. The whole process has been influenced by many factors. One important factor is myself. Both my previous experience and my manner to categorise reality have influenced the result. One might regard the observer influence as a bias in the research process, but I prefer not to. The relationship between the observer and the observed is inevitable, according to the well-known Principle of Indeterminism discovered by Heisenberg (1971). Several theorists rather regard the observer influence as something valuable in social research (e.g. Hejl, 1980). Guba & Lincoln (1989) bring this argument a bit further and claim that social research is always a matter of negotiation between the researcher and the respondent. My own opinion of the observer - respondent dependence is that I am a part of the researched material and the result of the research is a mirror of my own perspective, which I have reached in interaction

collecting data, before my mind was too much "contaminated" with fixed perspectives. I asked people explicitly about their perspectives, not their opinions about them. In that sense the data cannot be considered an outcome of a negotiation of opinions.

The proposed model is not a contribution to a debate, because there is no debate about environmental scanning. As I previously indicated, to a large extent environmental attention has been taken for granted for example in the literature on business strategy and business intelligence. Only lately have some researchers argued that this domain should be investigated. Therefore I give my proposition to a context in which only a few have asked for it. Even so I hope, now that I come up with a proposition, some more will take an interest in it. It would be ideal if this research could act as the ignition for an intensive fire of debate how we should organise to create more attentive organisations.

It is not proven in the sense that it has been tested either in the laboratory or in practical applications. It is therefore a hypothesis.

But I hold that the model is more than just a hypothesis. I believe that there are no possibilities to produce conclusive "evidence on the basis of proven facts" in social science. What one can do is to try to present empirical facts and theoretical arguments that makes the model plausible. In this research I have tried to do both. I have based my theory on theoretically accepted perspectives derived from various sciences. It can be argued, however, that I have picked pieces from each domain with the uncertainty how they fit together which gives my construct a theoretical weakness. That is an imperfection I had to accept in order to create something new. Even if it would be possible to find different factors that explain scanning behaviour and different ways to combine the theoretical inputs I think that the model has the advantage of depicting scanning behaviour as a phenomenon influenced by many factors ranging from basic neurological processes to social processes. Moreover, I have tried to construct a model with logical consistency. In constructing the model, I have used theoretical perspectives from many fields. This means that I have not felt restricted to any single set of epistemological and ontological foundations. I think such an "anarchistic" approach is warranted if the goal is to break new ground on a little explored field.

The way the empirical observations are made can also be questioned. Making qualitative interviews is naturally not a very exact way to measure. But in this case the objective was not to measure. In fact, the parameters were not known. The objective was rather to get ideas of which the parameters were. A qualitative approach is a more useful method than trying to use statistical methods which on the whole are designed to estimate already known parameters with great precision. I have let the explorative empirical study influence my search for usable theories. With their help I have constructed a model. The model has in its turn been used to explain the empirical observations I have made. It is often seen as a very week proof of a theory to use empirical material to construct a model and then show that the model fits the empirical material. But my model is not directly induced from the empirical material. I have included in the model only elements that have a strong theoretical basis. However, there is a stronger criterion than empirical support of a model's plausibility. That criterion is its heuristic value - is the model able to solve a hitherto unsolved important problem? The enigma starting this research I have metaphorically expressed in the story of Mr Keram. The model solves that enigma at least to my satisfaction. I have tried to present the material in this book in a way that gives the reader the possibility to judge if he or she shares both my perception that BI contains an unsolved riddle and that the proposed model solves that riddle on a theoretical level.

developed in his previous role as leader of a consultant company. He was very much aware of the insecurity that the personnel experienced and tried to reduce it by acting personally as an informant to them all. However, as the company was quite big he had difficulties in reaching everyone in the organisation and the result was that the information from the MD reached the personnel very unevenly. A minority, who had a good personal relationship with the MD, was very well informed. But the majority, who understood that a minority was well informed, only experienced lack of information which increased their feeling of insecurity, which in turn ended up in a feeling of alienation.

It was difficult for people to know what others were doing, because of low transparency in the organisation. A contributing factor to this low transparency was the continuous and rapid organisational changes. Consequently, many of the employees spent a lot of time and effort to figure out the next event of change in the organisation.

The logistics of the work flow was difficult to foresee. The Sales Company was very dependent on the performance of the mother company. It could only sell what the mother company would supply. The information about what the mother company could supply was very unreliable. There were problems to deliver non-standardised items. Another source of insecurity in this respect was the absence of procedures and routines to assemble resources in a sales project. If a salesman wished to activate the performance of other functions in the company it was difficult for him to do so in most cases. He had no formal authority to order other people to be helpful and he had to compete with other salesmen to get assistance from other functions, such as technical support.

The reaction among the employees to this invironment varied, depending on their position in the company. From the rich material of different scanning behaviour I have here selected two examples, the alienated salesman and the privileged one.

The "Alienated Salesman"

This salesman was very confused about most things in his situation. He was recruited on the promise of getting a high level of responsibility and of working with high level products toward high level customers. The reality had shown to be different. He had lots of responsibility, but he suffered from lack of authority. As he came from another company he had no previous experience from the mother company and no gateways into its organisation. His relation to the MD was weak. Not that there was any unfriendliness. On the contrary, the MD had great charisma and was much appreciated for his friendly attitude. The problem was that the salesman had no relations to the MD. He felt that the MD did not have time for him. This feeling was amplified by the awareness that the MD had time to deal with some other salesmen's problems (such as the "privileged salesman", see below). Another difficulty for the salesman was that the performance of the mother company was unreliable. He could not foresee what the mother company could supply and in what time. The information from the marketing department was insufficient regarding for example new products, obsolete products, schedules for campaigns and prices. And when occasionally he got information, it was later generally proven to be wrong.

The salesman was constantly in a situation to make a choice between trying to convince the customer to buy a long-term investment in a system installation or to satisfy the customer's short-term need of solving a problem. The customer was generally reluctant to make greater

sense of the comprehensiveness of the activity they were involved in. This made it easy for them to understand how the general process affected their work and what the work demanded.

As the structure of the organisation was operationally very much divided there were very few people with an overall view of the entire operation. Most of them had very limited experiences of the organisation. Generally speaking the employees could be divided into two groups:

1. Those who were still acting in an organisational context similar to or even identical with the old structures.
2. Those who were working with new tasks, not previously existing in the organisation.

People in the two groups reported very different perspectives of the environment.
The first group who worked in well established structures had very limited foci on the environment and these foci were much influenced by their organisational experiences. Let me take an example:

The Man at the Department for Energy Production

His job was to produce the energy demanded by the consumers in the most economical way. At his disposal he had different sources of energy: Hydroelectric power, nuclear power, power from incineration and others. Some of these sources were more economical to use in situations of high demand and some were more suitable for using in low demand. This man had to make a decision every 30 minutes during the day (as he had the day-shift), what energy sources to use.

He had only one specific interest in the environment: the weather. In order to get the best possible weather prognosis he subscribed on-line to a weather service from a consultant company. This company offered weather scenarios, based upon the weather forecasts produced by the public weather services around the world. The forecasts had been refined by a computer program and the man at the energy production department got these computer simulations from the consultant company. As he received the simulations on-line he fed them into another simulation program in his own computer system. In this system he had 50 years of weather statistics from his local area. Based on this material he produced new scenarios taking into consideration local variations.

This extremely sophisticated, and at the same time very narrow, intake of information made very much sense to his experience of the process he was a part of. The monitoring activity was quite intensive as he had a great deal of freedom of initiative. The decision of bringing in the information was entirely his own. His way of perceiving reality, however, was very narrow. Nothing else but the weather seemed to matter to him. I remember from the interview that I tried to find out if really nothing else interested him. I tried different questions and finally I came to one question that was really the topic of debate: the deregulation of the energy market. But when I asked him if this subject interested him, he just looked at me, or should I say he looked through me, and said: "Sorry, I must look at the weather now!" So that was the end of the interview.

The other category, those who were performing new tasks, was in a situation quite different from people such as the man at the department for energy production. Most of them had great difficulties in understanding the context of their performance. Let me take an example:

management was of a subtle nature. Very few orders were given, only recommendations, when asked for. Technically speaking the employees were very much left to themselves, but as people had generally stayed a long time with the company, they had developed a very comprehensive social structure both within the company and outside. The creative atmosphere in the company was obvious.

Unlike the two previous organisations the perspectives held by the people in this company were very homogeneous. They were mostly of the same nature, even though the contents of the perspectives were different as they were based upon the perception of each customer's needs. The common denominator of the perspectives was that people were very concerned about *events* in the enacted environment. And furthermore only events that could be connected to the chemicals of the company.

As previously mentioned the individuals in this organisation held quite individual perspectives, but there was one quite unique quality of those perspectives; they had an ability and a motivation to put themselves in the place of the others closely positioned in the production chain. People could very well figure out how the others were thinking and could adjust their behaviour from hypotheses about their perspectives. One example is the man at the service department.

The Man at the Service Department

This fellow was responsible for the installations of equipment at a particular customer's plant. His role was quite common in the organisation as much of the company's products were produced on-site at the customers' locations. He co-operated closely with some designers of that kind of equipment. In the interview we talked about his perception of flow in the work process and several times he described the ease by which he could form decisions of what equipment to install. I asked about the reason for this experience of ease, if it was due to clear instructions in the drawings and specifications he got from the designers. To my surprise he responded that these instructions quite often were not correct. Often the designers were not aware of the latest development in different items of the construction of the equipment. Especially valves. But that imperfection was easy to cope with, he said, because he knew how the designer had been reasoning in the design process and the serviceman could make his own choice of valve, different from the specification, that met the requirements better.

The ability and motivation of figuring out other people's reasoning were general in the organisation, all the way from the lorry drivers to the head of departments. Much of the co-ordination in the organisation could therefore be executed without much explicit communication. It was limited, however, to the normal activities within the core business of the organisation. Activities outside this domain, such as the operation and development of computerised information systems, were not subject to co-ordinated perspectives.

4. 4. The County Council

This organisation was actually constituted by seven different organisations as it covered seven different domains of activity within the County Council:

dependencies between them. They were all in one way or other linked together in the health care process. Some of the activities in this health care process held a more central position than the others and therefore came to play a more central role in the interaction. As the organisation had an internal buy-sell model these differences led to a certain internal competition between the units. For each clinic it was therefore important to keep up with this competition. Much of the clinic manager's time was devoted to negotiations with other clinic managers how to share costs and responsibilities.

Another distinctive feature of the clinic managers' attention was the devotion to the well-being of the patients. For some of them this was a matter of actually saving lives and for others it was a matter of giving the patients quality of life.

Theses two foci, the internal competition between the clinics and the devotion to the health of the patients, were in combination forming a notion of which kind of "game" they were in. It was "a struggle for survival" - both for the patients to survive and also a survival of their own clinics. In this struggle the perception of the internal strength of the clinic's process was very important. If a clinic manager experienced his own activity as strong he could more easily avoid distracting signals from the environment and concentrate on those issues he felt relevant to the activity.

There were two groups of factors that built this notion of strength. The first was the relative importance which was related to the nature of the internal activities of the clinic. The second was the position of the clinic in relation to other clinics in the general health care process.

The clinics that, based on these factors, got a position of strength in the health care process were scanning their environment very selectively. The experience of strength in the working process obviously gave good guidance on what to focus in the environment.

The clinics that did not experience such a strength presented a much more varied behaviour in the environmental scanning. Some of them had a very loose connection to the general health care process and had more interaction with units outside the hospital organisation. Psychiatry was an example of that. The head of the department of psychiatry was very active in building a vast network with schools, social welfare and other actors in the environment.

Care Centres (CC) Within the Non-Institutional Care

The CCs had structures that differed very much from the clinics at the hospitals, especially those with independent and strong working processes. They were subjected to non-consistent demands. On the one hand they got specifications from the political buying-committees of what kind of service they should deliver to the society. On the other hand they daily got direct demands from the patients which did not match very well with the demands expressed by the politicians.

In a CC there was generally a dominating view of how to run such an operation. Contrary to the clinics in the institutional care this view had its roots in tradition rather than technical factors. CCs usually worked at a rather low technical level.

The "game" the CC manager tried to get a grip on could be characterised as "a struggle to create order". There were many factors that contributed to the disorder. First of all there were

Folk High-Schools(FHS)

FHSs differed considerably in nature. They often had a very long tradition as many of them had their primal roots in the big campaign for adult education a hundred years ago. The social mission of these schools was very salient. Effectiveness, in a sense actually to accomplish something that society really appreciates, was their central objective. Each FHS had become very specialised in one particular discipline, such as media, electronics, music or whatever according to their tradition. The teachers of the FHSs were very devoted to the mission and the field of specialisation. Usually the staff could quickly be organised into task-forces, when an educational opportunity emerged. This gave the headmaster of a FHS a very specific platform for attention. He (usually a man) was concentrated on finding opportunities for running courses in the field of specialisation of the school. Within 2-3 weeks after the detection of a demand he could usually organise a fully staffed education program. The FHSs can be considered the "guerrillas" of the education system. Of primary importance for the FHS headmaster was to understand the ever-changing political environment. Unlike many other activities within the County Council, the FHSs used the political currents as nutrition. It was by understanding the political climate that each FHS could interpret the demand for education. In order to get the right feeling for the political climate the headmasters often played an important role in the political environment both locally and on the national scene.

Real Estate Administration (REA)

The county council administrated many buildings and a lot of infrastructure in the region. The major part was hospitals. Unlike many other activities this was very centralised. Within the county council there was a general tension between the objectives of the different activities, which gave priority to their own internal efficiency, and the over-all efficiency of the county council. For an activity as the REA the tension became very goal conflicting. In fact the conflict had three major components:

1. The demand from the direct "customers"- the clinics at the hospitals and other operating units. They generally demanded service that fitted their general objective. This meant fast measures of acute problems at a small cost, or non at all.

2. The demand from the political authorities to manage the REA taking large-scale advantages into consideration.

3. Technical realities and demands for minimum requirements according to law.

The working process in the REA was relatively stable and was generally a question of fixing malfunctions. That was quite traditional for all kinds of REA, not only in the county council. What was special in this case was the conflicting foci of the work. The most obvious conflict was to what extent it should be run after a long-term or short-term objective. Adding the requirements that regulations and law put on this kind of activity the conflict went beyond the limit of what was manageable. Consequently, this was a conflict even more severe than the CC and the senior high schools experienced. Just as in the case of the CC this conflict was reduced by giving higher priority to the demands expressed by the clinics. The political signals were rejected to a great extent. The difference though from the case of the CC was that the REA in this way only would solve the conflict in the short-term perspective. The problems in the long

directly printed it on her computer. I understood that she would not find me in her file as I was not a patient so I hesitated to say that I had an appointment but not as a patient. My sheer presence as an interviewer was breaking the rules. Before I had a chance to say anything she continued:

- Are you an emergency case?

I realised that it was high time for an explanation and replied:

- I have made a reservation to interview the head of the clinic, Mr. Svensson.

The nurse showed clear signs of worry and said:

- I don't know if he has got the time, we have such a tight schedule...

The last part of the sentence was expressed as she turned away from me. I started to walk out of the reception. The silence came back. I felt a bit uncomfortable to have disturbed the order and instinctively moved to a chair in the waiting room and opened a magazine as everyone else. It made me feel more comfortable. The nurse had disappeared and I sank into the world of tooth-implants. That was quite a fascinating experience. The word aesthetics was frequently mentioned in the magazine and the texts were about new ways to improve the look of your smile. My associations went to plastic surgery and I wondered if the dental services were in the cosmetic business.

The door from the inner space of the clinic suddenly opened and there he was, the head of the clinic. The silent waiting-room was suddenly filled with a sense of urgency and quick decisions.

-You wanted to talk to me, he said shortly.

After a short introduction, while walking in the corridors to the coffee-machine we sat down at chairs in the pantry. Feeling definitely being the wrong person in the wrong situation I started the interview by asking jauntily but strained:

- And what are you working with?

He did obviously not understand the question. I feared that this was going to be one of those short interviews. But suddenly I could see a change in his face. He was amused and archly replied:

- I try to live up to the demands made on me.

I definitely got the feeling of a dialogue and proceeded confidently:

- Can you describe these demands?

- Well, they come from both sides. From below and above. From below the demands are that I must listen to the members of the team and sense the atmosphere. It is important to notice in time if someone doesn't manage the job any more or starts to get bored. The spirit of the team must be kept intact. Another thing is the co-ordination. Often we have five rooms going at the

It increased the value of work for everyone. The funny thing is that once a process like this has started it runs by itself. Often the nurses take initiative in suggesting new things they can do. It comes when they start to get bored by what they are doing. We also have regular meetings at the clinic where we discuss how to improve our work. Often they become brain-storming sessions. Very thrilling, indeed! To summarise, I would like to describe the situation as stability and instability at the same time. It is stable because we know what the frames look like and the latitude of action we have within the frames.

- Sounds like a perfect situation. Do you manage that all by yourselves?

- Well, both yes and no. We manage very well on our own. We are not depending on external resources to do our job. It's much like a shop. The patients come. We fix their teeth. They leave satisfied. Hopefully anyway. Only in exceptional cases do we have to consult a specialist, such as jaw-surgery. This new feeling of freedom of action has also opened us up to the environment. When we want to change our ways it is often difficult to do that in our own clinic. We use much more networking nowadays. I use lots of time to monitor how others work. Not only other dental clinics, but other kinds of businesses as well. When we realise that someone in our teams needs a shape-up in competence I look around where he/she can get new stimulation. And if I find some place, which I mostly do, we send the person to practise for some months. When he/she comes home he/she can act as a catalyst in our teams. Those who have been away for a while have learned a new way of thinking all the way to their hands - and hands are necessary for change!

Before I had a chance to continue this interesting conversation, a nurse popped in and said it was packed with patients to take care of. My conversation partner concluded firmly but politely that the interview had to be ended but said that I could walk around in the clinic to watch the work in action.

The building was obviously constructed for housing a clinic. There was a corridor running from one end to the other. All rooms were located next to each other and there were doors between them. When I walked through the corridor I noticed a seething activity in every room. It was almost like looking at different scenes from the same theatrical drama. As I stayed in the corridor for a while I could see two dentists walking in and out of the rooms. One of them was the fellow I had just interviewed, the head of the clinic. In the beginning he stayed only a short time in each room until he had visited them all. Then he entered a room and stayed there for a while. I interpreted it as he first scouted the status of the situation in each room in order to set the priorities. Then he first chose the case he had given the highest priority. I decided to enter the room as well and could see him treating an elderly patient. The operation was obviously to replace a damaged tooth with a synthetic substitute. There were two nurses in the room. The dentist leaned over the patient and the others were standing next to him. During the operation they spoke to each other in low voices. It seemed as if the dentist was not making the diagnosis but rather acted as a questioner. He put forward the alternatives. The nurses answered to his proposals. The decision seemed to hang in the air for quite some time during the process. Suddenly the decision seemed close. And after a moment of silence the dentist concluded calmly:

- Well, then we have no other alternatives.

5. Theoretical Perspectives

In this chapter I will cover the theoretical perspectives I have used in the construction of my own frame of reference of the nature of environmental scanning behaviour and how it is influenced by organisational factors. My experience from the interviews inspired me to look at different domains of knowledge, with an emphasis on cognition. At the end of each sub-section I make a summary of the aspects of the theoretical domain I have found most useful for my own theoretical construction. I use the word "Focal Point" as I am not making any far-going conclusions of the theories but rather highlight the aspects I consider useful in the construction of my model.

At the end of the chapter, in section 5.7., I make a final interpretation of major aspects of the process of spontaneous environmental scanning in the light of these theoretical perspectives. This is in turn the foundation for my own theoretical construct – *the model* – which I present in chapter 6.

5. 1. Organisational Dependence on the Environment

There is a rich flora of literature dealing with the interdependence between an organisation and its environment. As the nature of that dependence is not within the scope of this research I will not make a complete report of it all. I limit myself to the literature I think is the most relevant to my perspective. The objective is rather to ground a notion that there is interdependence between an organisation and its environment which makes it important to scan the environment.

The most basic model of the relationship between an organisation and its environment is the *open system model.* This model has a long tradition back to the second law of thermo-dynamic law of physical systems as well as findings from biology. Researchers in the open systems tradition observed that living systems could avoid coming to a standstill (entropy or death) by being able to develop an internal differentiation of functions that makes them capable of sustaining themselves on an exchange of energy with the environment.

In organisational theory this thinking was introduced by Emery & Trist (1965), who proposed a framework for the relationship in the form of a matrix of connections. Their model is based on three essential ideas:

1. The organisation is imbedded in its environment.
2. Some organisational processes are confined inside the organisation.
3. Other processes entail an interaction between the organisation and its environment.
4. The major character of the environment is shaped by processes going on entirely in the environment. However, these processes could have profound effects on the organisation since they change elements in the environment that the organisation has direct interaction with.

Contingency theory analyses the correspondence between organisational internal factors building up its structure in relationship to the environment (Morgan, 1986). Technology has been regarded as an important contextual characteristic that has to be matched by the way work is organised (Woodward, 1965). Others have pointed out that the internal structure must

The *resource-dependence* perspective complements Thompson's theories by investigating how organisations form relationships with certain sectors of their environments and develop internal structures based upon their dependence on key resources (Pfeffer & Salancik, 1978).

Institutional theory emphasises the importance of external factors for organisational structuration (Powell & DiMaggio, 1991). The most important values and norms are those taken for granted in day-to-day life. These ever-present and ever-changing values influence organisations as well as every other part of society. Many of the values and the norms concern the design of components in the organisation. Therefore important parts of the organisation may become unrelated to its acclaimed strategies or operational tactics (Brunsson, 1989). To this institutional perspective can be added the complication that the behavioural choices made in the organisation are the product of a coalition between actors (Child, 1972). Thus, the process of reaching an understanding of a situation might be quite complicated and the result of the sensemaking might not be closely related to any particular rationality or individual preferences.

In the theories of *environmental enactment* (Weick, 1979; Smircich & Stubbart, 1985) the organisation is a part of the environment itself. The environment and the organisation stand in a mutual dependence on each other. In every situation actors enact their reality through their actions and these actions tend to be the origin of later actions. The experience of the environment is purely cognitive and subjective. In this perspective the environment is but a representation constructed in the minds of people interacting a social setting - it is a social construction. Furthermore the environment is both a condition for action as well as an effect of it. Based on the enactment theories it is possible to define an *enacted environment*. The difference between the task environment and the enacted environment is that the former is the effect of the definition of the task while the latter is the effect of choices of action.

5. 1. 1. Focal Point

There is a fairly well established consensus among theorists that organisations stand in some kind of relationship to the environment. The central feature is that organisations are open for influence from the environment and that the environment is open to influence from the organisations. From the present knowledge on organisations' environmental dependencies I extract the following for my own theorising:

- An organisation both transmits signals to and receives signals from its environment.
- The organisation's structure to interpret signals from the environment is influenced by the environment.
- People in organisations can exercise more or less boundary-spanning behaviour in their interaction with the environment.
- An organisation has limited ability to deal with its environment in general and therefore concentrates its main attention to the task environment.
- The signals from the environment are always affected by interpretation based on various cognitive, social and institutionalised factors as they are adopted by the organisation.
- The way the organisation is acting affects its exposure of signals from the environment, it is creating its own enacted environment.

5. 2. 1. 2. The Mechanism of Memories

The memorising function of the brain is not like the hard disk of a computer. There are different kinds of memories, which I will elaborate on further under the heading "Cognitive Psychology". Here I will describe the way the brain constructs and de-constructs memories.

In every moment of existence the brain produces memories, even when we sleep. Each memory is composed of stimuli that the brain has put together in the moment of experience. The components of the memory have their origin both from the stimuli that the brain has brought into the mind during the moment of experience and components already in the memory from previous experiences. As a memory is stored it is labelled in several ways. One kind of label is the features of the stimuli that the memory consists of. Another kind is the logic and the reasoning that the memory represents. By having a great assortment of labels attached to it the memory is made accessible even though it is stored in the unconscious part of the brain. This storage system makes it possible to find memories based on many different kinds of experiences. An experienced smell, a word someone says, a feeling, or a movement can bring forth a memory. The list can be endless. Every time a memory is activated by a stimulus it is influenced. It is refined - we call it learning. It is changed - we call it distortion. Learning and distortion are two sides of the same coin.

What happens if the brain does not get any stimuli? If an individual is deprived of stimuli for a considerable period (a few weeks are enough), he/she will develop a state of mind called *sensory deprivation* (Solomon, 1961, Zubeck 1969). In this condition the memories are rapidly deteriorating and the individual becomes more and more confused. This mechanism has been used in the military world to brainwash prisoners. Abuse of drugs can have the same effect. Memories from the period of time an individual abuses drugs tend to be weaker or even disappear (Ingvar, 1991).

The reason for this effect of sensory deprivation is that the memories deteriorate if they are not being activated. The memories are actually kept alive by being used. The daily flow of stimuli is the nourishment for the memories. The more nourishment up to the point of saturation, the more they will prosper and the more new memories are produced.

In this way the memories become the driving force for attention. The attentive brain is always a "prisoner" in its own memory structure and that imprisonment is the guiding light in its search for understanding the world. This has three important implications for the way people process information.

Firstly, the brain always gives priority to stimuli that have relevance to the memories. In fact, there is one special memory function taking care of that, the *transient sensory store* (Neisser, 1967). It is located in the limbic system and works as short term storage of information. Every stimulus reaching the brain from the sensory organs rests in the transient sensory store for about 5 seconds. If the brain does not think the stimulus has any relevance to the memory structure it will not be adopted and will disappear after about 5 seconds. Then it has really disappeared and is not possible to retrieve. The implication of the function of the transient sensory store is that it helps the individual to cope with the exposure of massive overload of relevant information. The problem of *information overload* is therefore not so much a problem with irrelevant information as it is with relevant information (see also Schroder *et al*, 1967). If the individual is exposed to information totally irrelevant to the brain it will sort it out without

The third implication of the way the memory system works is that the memories are not what they seem to be. As an individual remembers he/she relates the memory to a certain event. Even at the time of the event, when the memory was originally constructed, it was distorted by previous experiences. Not even then it was an exact representation of reality. From the beginning a memory is an interpretation of the meaning of reality. It is the product of an act of sensemaking. The sense that a memory makes is afterwards changed as the individual experiences new situations. So, the memories are constantly being reshaped. Furthermore expectations of the future will be built into the memories, with the effect that the individual refers a memory to an event that may not even have existed, but rather to what will be expected. The only truth about memories is that they are always false as a description of the past. They tell more about the individual's sensemaking of reality and the expectations about the future than they accurately describe the past (Ingvar, 1985).

5. 2. 1. 3. The Unconscious Trigger

Libet (1985, 1989, 1992) has found that the initial brain signals that trigger behaviour are unconscious. After half a second from the moment of an electric potential in the brain that initiates behaviour, the person gets aware of a wish for this behaviour. This electric potential occurs even if in the end the person decides not to carry out the behaviour.

The implication of Libet's finding is not very easy to understand. If it is combined with what I have described above about the function of the memory it gives a clue to the nature of the early stages of attention. The sensory organs are passive receivers of information, but the brain is not. They are, however, managed by the brain. So, the attentive function of the sensory organs is governed by the brain, but as the brain directs the attention of the sensory organs to a particular part of the environment it cannot inhibit them from picking up information. It can only sort out what it wants in the transient memory. This means that the sensory organs are directed to certain parts of the environment which implies that what they find is no coincidence. By the expectations of reality based on the memories, the brain chooses a certain part of the environment to be experienced. I would like to look upon that process as an act of enactment – the brain chooses reality. But the choice is not made consciously. As the brain is in a constant relationship to the outer world by the mediation of the sensory organs there is always triggering stimuli that it uses to relate to the memories. Doing that it gives more incentives to attend, and the individual is not aware of this part of the attention at the very beginning. Consequently, there is little intelligence present at this early stage, there are mainly emotions.

My interpretation of the implication for the attentional process of Libet's finding is that in the beginning of every attentional sequence there is an unconscious moment where the individual is not aware of the direction of and reason for the attention. This gives room for emotions and more primitive desires for needs satisfaction constantly to initiate attentional processes. But as soon as the individual becomes aware of the attention the system for intelligent judgement is activated.

in a study of planners in 175 churches in Arkansas, Odom & Boxx (1988) found that the planners' perceptions of the environment were not necessarily influenced by objective environmental measures. Therefore the planning process became only loosely connected to the environmental circumstances.

The bias of people's perception could lead them to notice too little of what is possible to notice or contrarily believe they notice things that are not there. It could also be biased causing them to misinterpret what they notice or direct their attention wrongly. There are also cognitive factors that facilitate scanning. So, every individual is subjected to influence that facilitates as well as it inhibits or distorts. Below, I have tried to summarise the literature on this subject, even though I do not claim that I have managed to cover the whole area as it has become quite enormous.

5. 2. 2. 1 Perception.

The early works of Piaget (1936) is a point of departure for the analysis of the way humans make mental constructions of reality. He argued that the little child constructs its sense of reality through perceptual and conceptual experiences. Thus, previous experiences influence later experiences.

Modern cognitive psychology tells us a great deal of how people perceive stimuli (Anderson, 1995). Generally speaking there are two competing forces in the perception process. The first is related to the strength of the stimulus. This aspect has a bearing on the features of the stimuli (see also section 5. 2. 1. 2.). It is well known that certain features of stimuli catch attention. Some theorists (e.g. Suchman, 1987; Greeno *et al*, 1993) have argued, inspired by James J. Gibson, that the structure of the context, rather than the structure of the mind, influences cognition. This assertion has lately been revived in the development of social cognition, which I will elaborate on later in this report.

The second force is related to the perceived meaning of the stimuli, which is an interpretation of the stimuli under the restrictions of the preconceptions one has about the stimuli or class of stimuli. Also in this perspective the features of the stimuli play a role. Choosing between reacting upon a stimulus based on its features or based upon its meaning, the individual will generally respond to the meaning (Anderson, 1995). It is virtually impossible for a person to disregard the perceived meaning, based upon the preconceptions of the stimulus. The stimulus can, however, be disregarded, based upon its features, for many reasons. This finding has some implications for environmental scanning behaviour. It can be assumed that people scan the environment based upon their preconceptions. The more meaningful these preconceptions seem to the person, the more strongly they act in the sensemaking process.

During the perceptual process, however, the individual is gradually building up the interpretation of the meaning. Marr (1982) has presented a model of the early stages of perception describing the flow of information from the environment to its perceptual representation. It starts with the individual extracting the features of the stimuli. The second stage is to verify the stimuli in their location in space. In the third phase the stimuli are verified as an object by the gestalt principles of organisation (Wertheimer, 1912). Finally the information about the object and the context is combined into a recognition of it. There are two fundamental contributions of this model. Firstly, it shows that perception is constructed

5. 2. 2. 3. Construction of Memories

Information is transferred to the memory structure via the transient sensory store. The first part of the memory structure that the information reaches, after passing through the transient sensory store, is the working memory. It is not located in the limbic system, like the long-term memory, but in the frontal cortex. It can be regarded as a temporal storage of concepts, tied to the language representation and the image representation of them (Baddley, 1986), that are relevant to the perceived situation. In the working memory there is a confrontation between imagination and reality. In order to make this confrontation efficient the working memory is divided into different parts, specialised in different aspects of reality (Goldman-Rakic, 1992).

The working memory has a limited capacity and this makes it vulnerable to information overload. Schroder *et al* (1967) have presented a model of human information processing describing the relationship between environmental complexity and level of information processing as an up-side-down U-shape. Up to a certain degree of complexity of the environment, the information processing increases. But as the complexity has increased up to a certain point further increase is met by diminishing information processing. The interpretation of these results is that an individual's perception of environmental complexity is based upon the individual's judgement that the information is relevant. The experience of complexity is based upon the ambiguity of the information. If the information is considered relevant the individual has few possibilities to disregard the information. But if the amount of relevant and ambiguous information has reached a level that the individual cannot process in the working memory, confusion starts to set in and the processing declines. True information overload is therefore the situation where the individual is exposed to too much information that takes too much effort to combine and analyse because it seems relevant. If the information was easily considered irrelevant it would never reach the working memory as it would previously be screened out in the transient sensory stores.

The working memory relates to the long-term memory. Memory traces in the long-term memory are activated when they are associated with concepts in the present situation (Anderson, 1993). The activation of a memory trace is facilitated by the recency and frequency of practice in the memory (Loftus, 1974; Anderson, 1976). The use of a memory also facilitates the activation of associated memories (Meyer & Schvaneveldt, 1971). These findings indicate that the more a memory is activated, either directly or by association, the stronger it becomes and this makes it even easier to activate. This is an explanation of the previously described phenomenon of sensory deprivation.

The efficiency of storing information in the memory is subjected to a marginal decrease. This is referred to as the *power law of learning* by Newell & Rosenbloom (1981).

5. 2. 2. 4. Retention and Retrieval of Memories

There is a similar effect in the retention of memories as in the power law of learning, and that is the *power law of forgetting* (Wixted & Ebbesen, 1991). Very soon after a memory has been formed it starts to loose its content, but the loss diminishes with delay. All retention functions are subjected to this decay; practice just postpones it (Anderson & Schooler, 1991).

5. 2. 2. 6. Problem Solving

The perception and the memory are important for the problem solving. The problem solving is purposeful and involves the choice of a strategy for the operation. Kotovsky *et al* (1985) found that a means-ends strategy is most efficient for problem solving. It means breaking the larger goal of the operation into sub-goals. The reason for its superiority is that the process of handling complex information is in the working memory and it is easier to maintain them in this memory divided into sub-structures (Anderson, 1993).

The way a problem is represented is often biased. One bias is *functional fixedness* (Maier, 1931); a fixation on an object's conventional function and failure to represent its novel function. Another bias is the *set effect* (Luchins, 1942); the preference to solve a problem in a certain way based on experience. This is also referred to as *Einstellung effekt.*

The ability to solve a problem does not always occur as the individual is trying, but comes after resting from the task for a while. This is referred to as the *incubation effect* (Silveira, 1971). The interpretation of this effect is that putting the task away decreases the influence of the set effect and lets the imagination work for a novel solution. The use of language tends to increase the set effect in problem solving and to decrease the possibility to find new solutions to the problem (Schooler *et al*, 1993).

According to Watzlawick *et al* (1974) a change in problem solving presupposes a change of mental state - a *re-framing*. If this re-framing is manifested in activities it may lead to a new kind of learning of "second order". The kind of learning that takes place within the present frame of reference is by the authors labelled "first order". Argyris and Schön (1978) have given the distinction between the two learning situations the labels "single loop learning" and "double loop learning", where the former refers to the situation in which the learner learns under the restriction of the present frame of mind, while the latter refers to the situation where the learner learns in a process of re-framing.

In a longitudinal investigation El-Sawy & Puchant (1988) examined how 17 professionals developed frames-of-reference regarding the emerging technology of cellular telephones. Three interrelated elements were developed to describe frame-of-reference shifts:
1. Templates, i.e. frames of reference through which a given issue is perceived; 2. Triggers, i.e. stimuli that might cause the templates to shift; 3. Twitches, i.e. results of tension between or within templates caused by a trigger. Results suggest that studying the dynamics of frame-of-reference shifts can provide new insights that may be more meaningful than just studying the comparative states of frames of reference.

5. 2. 2. 7. Decision-Making

Decision-making is based on reasoning. Reasoning is thinking related to logic and probability. There are two basic paths of reasoning.

Firstly, there is the reasoning about conditionals - "What... if...". People are inclined to develop a *permission schema* for the logical connect "if" (Cheng & Holyoak, 1985); an expectation of what ought to be the case "if". These schemas tend to dominate pure logic and

environment in which they have a special interest tend to open up the mind for information that is not strictly relevant. When doing that they try to find correlations between this peripheral information and the relevant one. This is a spontaneous act of widening the search from being strictly driven by problem definition to be more explorative. The result of this process is that the individual may find connections that are hard to identify and at best this may lead to a major discovery. However, it might as well end in superstition about the way the reality is organised.

Expertness develops a helicopter perspective in the problem solving, which gives an opportunity to notice the implicit principles in the problem and make them concrete. It also makes the expert less dependent on the language for the representation of the problem.

5. 2. 3. Focal Point

From the knowledge collected in this section from neurology and cognitive psychology I extract some points relevant to the cognitive influence on people's scanning behaviour:

- People do not have to be activated in their scanning. The human brain is an active machine for information searching in the process to restore the memory structure.
- People always scan with a future perspective influenced by anticipations of that future.
- People are influenced by their memories in the focus of their scanning and these memories are oriented towards the future.
- People are influenced by their expertness in their scanning.
- People have a limited capacity to process information in their scanning.

5. 3. Social Cognition

Cognition is by definition an individual matter. It is based on the cerebral activities of the individual. As people act in social situations it is obvious, however, that cognition is not a socially isolated activity. Max Weber (1967) has pointed out that people's actions are social in the sense that the meaning people assign to events is influenced by their taking into consideration the actions of others into their own action. Social research has generated results showing how people's cognition is influenced by the social context.

The social situation of the individual has a *priming effect* which activates certain categories of knowledge to be used in the interpretation of new information (Bruner, 1957). Much of the priming has a long-term effect (Higgins *et al*, 1977) and may affect problem solving (Higgins & Chaires, 1980).

5. 3. 1. Social Facilitation and Inhibition

There is evidence supporting the notion that cognition and behaviour can be influenced by the social situation. In fact, ever since the early days of social psychology (Triplett, 1898) it has been established that people tend to perform better in the presence of others. Zajonc (1965) argued that this effect of *social facilitation* is due to a cognitive arousal that increases the probability for dominant responses. In turn it facilitates familiar responses but impairs novel

5. 3. 3. Social Interaction and Shared Meaning

The nature of the social interaction has an effect on individuals' cognitive change. Mead (1934) and Vygotsky (1978) have proposed that the way individuals form their thinking is created in socially shared cognitive activities. Social conflicts may change the individuals' cognition if they have different views on a shared issue and they are motivated to reach a joint solution (Doise & Mugny, 1984; Perret-Clermont & Nicolet, 1988). The effect of such interaction in disagreement may stimulate the performance of the group. Bourgeois (1985) found that the favourable economic performance of companies was associated with disagreement among the managers as to the level of uncertainty in the business environment.

Interaction with a majority or minority in the group may have different effects on cognitive change. Moscovici (1980) argues that interaction with a majority may create a cognitive change by *compliance* with the dominant position, while interaction with a minority may create *conversion* of cognition. In the latter case the change is often indirect and delayed. Compliance with the majority may lead the individual to resist change by reinterpreting information and minimising the dissonance to the position of the group (Allen & Wilder, 1980). Under extreme circumstances, such as strong external threats, high group cohesiveness and directive leadership, the process of compliance may lead to "groupthink" (Janis, 1982), which may create an illusion of invulnerability and undermine the members' ability to process information (McCauley, 1989; Hutchins, 1991). Conversion to the position of a minority leads more often to cognitive change and stimulates novel responses (Nemeth, 1986). It may affect several cognitive processes, such as attention, thinking and memory (Nemeth & Kwan, 1987; Nemeth *et al*, 1990). The cognitive change to the group's position is rather based on informational grounds than normative pressure (Deutsch & Gerard, 1955). That seems to be the basic explanation why conversion seems to be a more powerful ground for cognitive change than compliance.

People in organisations tend to form a mutual understanding of how to interpret reality. Experiments by Sherif (1935) showed that people in social situations quite rapidly develop shared perceptions of ambiguous perceptual stimuli. Once shared cognitions have been established in an organisation they tend to survive, even though old members of the organisation leave and new ones arrive (Jacobs & Campbell, 1961; Weick & Gilfillan, 1971). Processes are also developed with the purpose to transmit such shared cognitions to newcomers (Levine & Moreland, 1991) and newcomers are typically receptive to these influential attempts (Van Maanen, 1977). One basic criterion for an organisation to develop shared cognitions is the presence of tasks that have correct solutions, which can be communicated internally (Laughlin & Ellis, 1986). One important requirement is that the members of the organisation have, not only the means, but also the motivation to communicate with each other (Hutchins, 1991). In the linguistic interaction, members of an organisation construct their communication to fit the assumed knowledge of the receivers (Krauss & Fussell, 1991) and sometimes use this insight to manipulate the receivers' perceptions (Fleming & Darley, 1991).

5. 3. 4. Organisational Features

Not only do the members of an organisation influence each others' cognition. The organisational structure and processes may also have such an influence. The influence could

Organizational Features Affecting Aspects of Problem Sensing

Cognitive processes	Organizational features
Noticing and encoding salient material	Financial and regulatory information Forecasts of best and worst outcomes Emergencies Publicity Actions of competitors
Ignoring overly discrepant information	Planning targets Routines
Segmenting information	Organizational breakpoints: calendar-driven breakpoints (quarterly reports, annual budgets); leadership succession; reorganization
Automatic scanning	Organizational stereotypes Uncertainty
Inferring causality	Vivid organization stories and anecdotes
Uncorporating schema-relevant information	Routines Corporate strategy and identity beliefs
Incorporating self-enhancing information	Past decisions Incentives structure

(Kiesler & Sproull, 1982: 565)

5. 3. 4. 2. Features in the Present

In the social settings many of the memorised expectations that individuals carry in their minds become espoused. When people agree on a memorised expectation it becomes a *rule*, with the social implication to be a guidance for collective action. Rules are path dependent, they allow improved performance in its frame of reference (March, 1991). As long as there is a match between the rule and the skills of the members of the organisation, the rule will be stabilised. Rules also distribute the agendas of the organisation. By doing that the rules allocate the attention and this tends to make the foci on the environment different in different parts of the organisation (March & Olsen, 1979). Research by Zhou (1993) has shown that rule founding and rule change follow two different processes. Rule founding is a collective response to environmental shocks, crises or surprises. Rule change is a process of development regulated by internal learning processes. As long as the external impact is not creating a situation for many members that brings them into a state of discomfort, the rule will still tend to guide the attention and mainly be developed within the frame of the organisational context. But as soon as a critical mass of the members experience enough discomfort there will be a shift in rules.

Björkegren (1989) argues that the individual's behaviour is affected by the *dominating values* of the organisation, but also affected by the feedback from the *result of action.*

intercourse face-to-face between people creates a very rich situation for communication, which enables people to use their full cognitive capacity in communicating and interpreting meaning. The computerised communication limits very much the span of stimuli that people can exchange and it limits the possibility for mutual sensemaking (Gärdenfors, 1996). Hedberg & Jönsson (1976) argue that this limiting effect of information systems must be compensated by designing "semi-confusing" systems giving the members of the organisation greater latitude for the interpretation of reality.

5. 3. 4. 3. Features of the Future

Someone has said, "The future is always delayed". I think it means that we carry expectations of the future with us in the present and act as if they were present already. As if what we expect never seems to happen the way we expect it to, we always seem to go waiting for what seems to happen, really to happen.

In an organisation there are of course no features of the future present; only features that people can use for the development of their scenarios of the future.

This moves us back to where we started in this chapter - people's actions based on their expectations. Below I will further investigate one central phenomenon of expectations - *The Schema*. I have already discussed that in the section of cognition (5. 2. 2. 5.) but I will now examine the social aspect of it.

The Schema

A schema is a generalised cognitive framework that an individual uses in order to facilitate the understanding of what is going on in the environment. It is a knowledge base founded on previous experiences and serves as a guide for the interpretation of information (Rumelhart & Ortony, 1977). A *script* is a schema that guides an individual in the interpretation of other kinds of behaviour in similar situations (Schank & Abelson, 1977). The use of scripts has a dual purpose for the individual; it helps in the interpretation of frequently encountered situations, but is also a guide to behaviour in those situations. In that sense scripts are the bridge between perception and action (Gioia & Poole, 1984). One kind of schema that is related to attribution is the person schema. It is based on the perspective that the individual holds of people in a situation. The person schema tends to have a *point-of-view* effect on attention (Lord & Foti, 1986). It enhances the recall of certain information in the memory. The interpretation of this effect is that the perspective held in the experienced situation influences the search process in the memory. Schemas are future oriented, as they are used to forecast events in the environment.

Fiske & Neuberg (1990) describe the formation of schemas as interactive processes starting with an initial categorisation, confirmed with consistent data, but also re-categorised by that information, which in turn forms a new categorisation of an individual object.

The Self-Schema

One basic schema people hold is the *self-schema*. It gives the experience of the self a social dimension. The self can socially be regarded as node in an associate memory network

5. 3. 5. 2. Inference

It is found that social perceivers often make mistakes in the social inference:

- People often over-generalise from small unrepresentative samples (Nisbett & Ross, 1980).
- People often over-react to extreme values of predictor information (Jennings, Amabile & Ross, 1982; see also Kylén, 1985), which can make them insensitive to changes in regression values in an environment with frequent variations of extreme values (Einhorn & Hogart, 1981).
- When diagnostic information is diluted with non-diagnostic information people tend to make less extreme inferences (Nisbett *et al*, 1981).
- People tend to underuse base-rate information in statistical samples (Hogart, 1980).
- People tend to make more extreme predictions for events jointly occurring than for single events (Tversky & Kahneman, 1983).

This list can be made longer, but the examples show that in many ways people seem to have difficulties in behaving completely in a rational manner in the inference processes. The basic reason is probably the limited capacity in the working memory. This causes people to make short cuts in the process of social reasoning. They use simplified models of reality, called *heuristics* (Tversky & Kahneman, 1974). They are of the following kind:

- Representativeness heuristics; inference based on relevance rather than probability.
- Availability heuristics; inference based on how quickly instances come to mind.
- Simulation heuristics; scenarios based on the effect of a single event ("if, only").
- Anchoring heuristics; an ambiguous situation anchored in a few facts and a quick inference is made from that point.

According to Holyoak & Nissbett (1988) heuristics are intelligent ways to overcome the cognitive limitations and reduce the probability to make mistakes in the inference process.

5. 3. 5. 3. Creativity

Creativity is perhaps the most difficult part to explain in cognition. As previously described expertness may open up the opportunity to be creative. There is a difference, however, between the possible and the performed creativity. Research regarding creative behaviour points to *motivation* as the key. Crutchfield (1962) pointed at the importance of intrinsic motivation for creative behaviour. Later also Deci & Ryan (1987) argue that when people function in an environment that promotes choices and behavioural flexibility they experience intrinsic motivation, which releases their creativity and activity in the situation. Building the foundation for my perspective I will limit my examination of motivational factors to intrinsic/extrinsic motivation. Consequently, I choose to leave out of the perspective those motivational aspects that come from the individual's fit to the situation.

5. 3. 6. Focal Point

The theories and findings I have related to in the passage on social cognition give the following elements to my theoretical construction:

Proposition 5. Managers operate on mental representations of the world, and those representations are likely to be of historical environments rather than of current ones.

Proposition 6. Since managers best incorporate information that is mildly discrepant, major environmental changes are unlikely to be incorporated.

Proposition 7. Only if managers develop schemas for extreme environmental change will they be likely to incorporate extreme environmental events.

Proposition 8. When managers encounter information about the environment that confirms their beliefs, they will believe that the information is diagnostic.

Proposition 9. When managers are heavily invested in any situation, they are relatively likely to discount information about environmental changes detrimental to that situation.

Proposition 10. Only if managers are committed to operating within a rapidly changing social environment will they mentally incorporate information about extreme environmental events.

(Kiesler & Sproull, 1982, 556-559)

Scanning behaviour is also affected by the expected turbulence in the environment. The more dynamic the environment is perceived, the more time executives are spending on environmental scanning (Kefalas & Schoderbeck, 1973).

Duncan (1972) tested decision-makers' perception of uncertainty in 22 different environments. As dynamics and complexity increased in the environment so did the perceived uncertainty. Dynamics was perceived more threatening than complexity. However, it is not the characteristics of the environment per se, its turbulence and uncertainty, that have impact on the decision-making, but rather the perceptions of these characteristics (Lenz & Engledow, 1986b).

Hambrick (1982) studied the scanning behaviour of executives in hospitals, colleges and insurance companies. The hypothesis was that the executive would scan the environments differently influenced by the differences in strategy. The results indicated, however, that the executives were not found to scan according to organisational strategy. Most of them were not aware of any particular organisational strategy. Availability of the information source affected the search and most executives scanned according to personal interest.

Culnan (1983) made a large survey among 362 professionals employed in the corporate headquarters of two organisations. The use of information sources was mainly a function of their accessibility and the scanning was mainly influenced by the professionals' focus on their tasks. It was also found, however, that the complexity of environments led managers to seek less accessible information sources.

A dominant method of gathering information among practitioners is through meetings. This tendency has created networking environments for both physical meetings and electronic meetings in business life (Stein, 1986).

corporations as being a function of the cost measurements they use. The Japanese companies use market based cost information and the Americans historical cost information to the effect that the Japanese get a more future oriented view of the environment.

A study by Boyd & Fulk (1996) examined how executives' perceptions of the environment affected their decisions to collect strategic information. Interviews were conducted with 72 executives in a cross-section of industries and produced the following results:

1. Strategic importance was the primary determinant of scanning.
2. Scanning declined as the environment was perceived to be more complex.
3. Perceived variability interacted with importance to affect scanning positively.

I draw the following conclusions from these results:

- Managers are influenced by their perspectives as they scan the environment, and the perspectives are based on the nature of their expectations. It is obviously the nature of the expectations that is more important than their content. Having a schematic expectation forms a schematic perception, having a belief forms perceptions coloured by emotions to fulfil that belief. My interpretation is that expectation works rather like guidelines than instructions in the scanning process.
- The more causality that is expected in the environment, the more the perspective will be coloured by previous experiences.
- The more undirected the scanning is, the more impact the features of the stimuli have on the interpretation.
- The frequency of the scanning is negatively influenced by increased difficulty or distance to reach the source of information.
- Flexibility in the scanning seems to be offset by an expectation of threat and/or turbulence. If the expectation is low threat and/or turbulence the scanning tends to be more routinised.
- People are more inclined to expect threat and/or turbulence in the part of the environment that is close to them and directly related to their performance.
- Scanning gives managers tactical advantages, at least. It is more uncertain if it also gives strategic advantages. The inclination to rely on close sources and focus on familiar domains may give the frequently scanning manager a disadvantage in loosing his/her strategic perspective. This tendency is reinforced by the managers' inclination to exaggerate the importance of minor changes in the familiar domain, but neglect the importance of major changes in unfamiliar domains.

5. 4. 2. Organisational Influence on Individual Scanning

The common denominator in the nature of the individual scanning behaviour is that, indeed, people are influenced by their "cognitive maps" and the information situation. It is also possible, however, that they are influenced by the organisational setting as well.

Kahneman (1973) found that unintentional scanning is not influenced by the individual's social context, while directed intentional scanning is. This leads one to suspect that people are mainly susceptible to organisational influence when they are aware of the objective for the scanning. The literature covers many aspects of organisational influence. I have tried here to group them

A refined view of the organisational influence is the importance of *issues.* Organisational actions are tied to sets of concerns that could be called issues, which are social constructions (Hilgartner & Brosk, 1988). Definitions of issues often emerge and evolve over time and they can be contested (Dutton, 1988; El-Sawy & Pauchant, 1988; Isabella, 1990; Feldman, 1989; Weiss, 1989). Which issues that will gain attention depend on how they are interpreted and how important concerns they represent. Adopted issues represent focal points that affect interest and direct attention in organisations. In some cases issues activate decisions, in others issues incite neglect or even intentional inaction (Bachrach & Baratz, 1972).

In a normative model of organisational learning, developed by Senge (1990), attention towards the environment takes a central part. Senge argues that there are five prerequisites that shape the organisational learning through their impact on attention:

- System thinking. People must be able to think "globally" even though they act locally.
- Personal mastery. Every individual must be in a situation where he/she can fully develop and use his/her potential.
- Thought models. The individuals must have access to recipes of problem solving.
- Shared vision. There must be a consensus about where the organisation is heading.
- Team learning. There must be a dialogue communication between colleagues.

Consensus through dialogue is a central theme in Senge's argumentation.

Organisational memory, defined as a system of interpretations of reality, stored in the organisational structure (Walsh & Ungson, 1991), is an evolutionary product from shared meaning among people in the organisation based upon a variation of interpretative forms related to the difference in perspectives among individuals (Daft & Weick, 1984). As this organisational memory is absorbed into the structure it is no longer located in the mind of individuals and therefore continues to develop and accumulate in the organisation even though the members of the organisation enter and leave (Weick & Gilfillan, 1971). The organisational memory can reach the individual in several ways in the social setting of the organisation and influence his/her perspective in the environmental scanning. In principal the sensemaking mechanism in the organisational memory can reach the individual through any process, but perhaps the most important ones are information storage and information systems (Simon, 1976).

In autopoiesis theory (Roos & von Krogh, 1995) the cognitive change in individuals and systems, in general, is regarded as accumulated reproductions of concepts generated within the system itself (Varela, 1979; Luhmann, 1986; van Twist & Schaap, 1991). Knowledge in organisations, as perspectivised representations of reality, is produced and held by individuals in the organisation, not in an organisational memory. Information is regarded as the process by which data is transformed into knowledge (von Foerster, 1984). In autopoiesis theory applied to organisational theory the crucial element of organisational knowledge development is its ability to convey knowledge between individuals. von Krogh *et al* (1994) argue that this ability is an effect of the knowledge connections available in the organisation. The knowledge connections constitute the knowledge structure and work through the languaging, which gives the individuals the basis for making distinctions in their observations. Not only already made observations, but also potential future observations are subject to distinctions (Luhmann, 1990). By creating a frame of reference, through the system of distinction, the organisation

early works of Herbert Simon (1947). An organisation distributes stimuli, through its structure, to the members which influence their attention by creating situational environments for each of them. In this way the organisation's structure tends to influence each member individually, even though there might be common denominators. The channels through which the influence is working can be anything from the technology to the social structure (Hutchins, 1995). The guidance of attention generated by the organisation is conceptualised in the *rules of the game* (Ocasio, ibid.):

"The rules of the game provide both a logic of action and embody a set of cultural and material values and incentives that structure and regulate the mixed motives of co-ordination, bargaining, and contestation that occur within diverse organizational situations." (Ocasio, 1997: 196).

The players in the organisational game can be others than decision-makers. Ocasio (ibid.) makes the following distinction between decision-makers and players:

"Decision-makers are the concrete social actors that participate in the firm's procedural and communication channels. Players are structurally autonomous social actors or groups of actors (Burt, 1982) which, through their social influence, power, and control, influence and regulate the decision and activities of other decision-makers. (Ocasio, 1997: 197).

At the end of his article Ocasio (ibid.) concludes that further research is needed in this field:

"Explaining organizational strategies and action requires an understanding of how the rules of the game, structural positions and arrangements, players, and resources interact to distribute and channel the attention of organizational decision-makers into specific procedural and communication channels, and to draw upon issues and answers in organizational memory. Further research and theoretical development are required to explain how these interactions affect firm adaptation. (Ocasio, 1997: 203).

I find Ocasio's perspective very intriguing and I am very much challenged by his call for research, as he addresses research questions very similar to my own.

5. 4. 2. 3. Strategy

Strategy is a more specified element of influence on scanning as it is an espoused act of will. The organisational relationship to the environment depends to a great extent on what relevance the management puts on certain environmental sectors (Sethi, 1979) as strategy may act as a fundament for the focus of attention (Morris, 1987; Camillus & Armstrong, 1989). This might be especially important when the objective is to master the processes of institutional change (Brown & Weiner, 1984).

If the management has a narrow perspective the organisation may tend only to pay attention to economic and legal criteria, only limited to the obligations that the organisation has in this sense; the strategy would be exploitative and defensive within this frame. If the scope is broader the organisation might mainly act more reactively to a large set of stimuli. Finally, if the management accepts a role for the organisation in society as it is defined by the entire social system, it may not only react to known stakeholders but also take potential stakeholders into consideration. This puts a great strain on the leadership in the organisation to communicate effectively the rationale and enhance organisational commitment (Sethi, 1982).

shared meaning there might arise cognitive structures in the organisation (Markus & Zajonc, 1985).

Porac *et al* (1989) studied executives' interpretations of market signals in the Scottish knitwear industry. The study could identify core identities and causal beliefs that allowed managers to define competitive boundaries and make sense of interactions within these boundaries. Such beliefs are reinforced by a mutual enactment process in which the technical choices made put constrain to the flow of information back to decision-makers, thereby limiting their vision of the marketplace to that which has already been determined by existing beliefs.

5. 4. 2. 5. Function and Structure

Normann (1975) proposes that the two factors in organisations that influence the scanning is the organisational structure, especially the arenas for information exchange, and the dominating ideas. The basic point in Normann's reasoning is that an organisation needs to develop two parallel systems of ideas, one based on the existing operational objective and the other based upon the organisation's growth objective.

Organisational structure can cause specialisation among the managers (Thorsrud, 1973). It happens when the organisational processes are stable and the structure is hierarchical. In that situation the managers get more and more specialised and their focus on the environment gets narrower. Svalander (1979) has generalised this perspective. According to him the organisational learning is a dialectic process between the structure and the individual. There are three factors in the organisation affecting the attention of the individual: the latitude of action, the expectations and the values.

Glueck & Jauch (1984) have compiled research data and found some general correlation regarding the use of information sources in the scanning:

- The higher up in the organisational hierarchy, the more use of verbal source of information.
- Strategists use verbal sources to a greater extent than managers.
- Managers in small organisations use a greater proportion of external personal information sources than managers in large organisations. Or put in another way, in large organisations a greater portion of a manager's personal environment is the organisational setting.
- The primary personal sources of information are professional/collegial sources, of secondary importance is contacts with customers and competitors and in third place come contacts with suppliers/distributors.

Walker (1985) examined managers in a software company and interviewed them about their conceptions of the organisation's critical success factors. The differences in perspective about that issue varied more depending on difference in network position than other differences, such as the individual's function in the organisation and the working situation. Research by Elden (1983), Qvale (1978) and Löwstedt *et al* (1993) indicate that the perspectives held by people at various levels of the organisational hierarchy differed depending on issue.

The information system of an organisation is the part of the structure that has a special relation to the environmental scanning. Hedberg & Jonsson (1978) suggest that an organisation must build flexible ways of communication in order to give the individuals means to cope with

important. Environmental dynamics is a function of environmental change. The perception of dynamics is based upon two aspects of change:

1. Perceived turbulence, defined as the frequency of change.
2. Perceived strength of signals, defined as the visibility of change.

The turbulence in the dynamic environment is characterised by the situation when events in the remote environment very quickly have effects in the task environment. Or as Ansoff (1984) has described it:

"... an unfamiliar world of strange technologies, strange competitors, new consumer attitudes, new dimensions of social control, and, above all, a questioning of the firm's role in society."
(Ansoff, 1984: 9)

The more turbulent an environment seems to be the more important it is for the organisation to expand its environmental scanning to cover the parts of the environment that seem remote.

According to Garratt (1994) the attention toward the environment must be working at two levels. At the strategic level the attention is directed towards dynamic changes in the remote environment. At the operating level the focus on the effectiveness in action is compared to plan. Where these two processes meet is the *Business Brain* of the organisation.

5. 5. 1. Differences Between Organisations

Research evidence suggests that many organisations are informal and unsystematic in their interpretation of the environment (Fahey & King, 1977). These organisations tend to accept the environment as given and respond actively only when a crisis occurs.

Organisational age and size might influence the environmental scanning (Kimberly & Miles, 1980). Young organisations are disposed to be receptive to information but have a limited task environment. As they grow and time passes, the environment may be perceived less threatening and the scanning of the environment will decline.

Multinational companies scan certain issues in their environment caused by the large geographical area they have to cover. These companies are apt to focus more on macroeconomic aspects (Channon & Jalland, 1979).

Fahey *et al* (1981) found that the ideal time horizon for the scanning varied in different industries. Corporations had the shortest time horizon (1-5 years), governments had a medium long horizon (5-10 years) and consultants had the longest (10-20 years). Notable is, however, that all of them considered the ideal time horizon to be about twice as long as the one they had.

Companies with a high degree of strategic momentum scan the environment much more broadly than their more reactive counterparts (Jennings & Lumpkins, 1989).

The cultural environment in which the organisation is embedded might have a general impact on the way the scanning is conducted. It is well documented that the Japanese society nourishes the environmental scanning efficiency of its organisations (Engel, 1987).

between strategy and environment is also the notion that the environment can be influenced by the actions of the organisation. Varadarajan *et al* (1992) point out, with reference to Chakravarthy (1984) that the managers' ability to influence their environment is necessary criteria for organisational self-renewal.

Jennings & Lumpkin (1989) found that companies that performed more strategically than others scanned the environment more broadly than others and were more focused on identifying investment and market opportunities. The companies doing less well strategically had a more defensive scanning mainly concentrated on identifying threats in the competitive and regulatory environments.

According to Ansoff (1984) the scanning time range must take into consideration the adaptive reaction time of the organisation. This delay is what Ansoff calls the procrastinating behaviour, which has two causes; firstly, the systems delay - the time it takes for the organisation to put the environmental event into perspective, secondly, the behavioural delay - the time it takes for the organisation to act on the perspective. A similar reasoning is made by Löwstedt (1997), but from a cognitive perspective. He introduces a concept of sensemaking lag describing the delay between individual and collective sensemaking due to the social process of communication in organisations.

Often the perspectives derived from the task environment tend to influence strategic decisions negatively. One example of that is found in Oxelheim & Wihlborg (1995). They examined the strategies for commercial decisions as well as financial decisions in Volvo Car AB in the beginning of the 1990s. The management held the belief that the financial risk in the sales on the US market was tied to the exchange rate between the local currency and the US dollar. This expectation made sense as it was derived from the company's accounting system. A multiple regression analysis taking several variables of macroeconomics into account showed, however, that the most important currency was the German mark. Changes in the German producer price index were found to be a strong indicator of competitive real exchange rate exposure. A possible explanation for this effect is that the American buyers of Volvo cars usually do not have American but rather German cars as alternatives in the purchase situation. Therefore the outcome of every single purchase decision is more affected by the relative price difference between Volvo cars and German car brands than between Volvo and American cars.

The spontaneous environmental scanning conducted by members of organisations is by Mendell (1978) referred to as *browsing*:

> "It is impossible to predict *a priori* what information will be needed to appreciate a situation... isolated information will acquire value as it becomes part of emerging, insightful patterns."
> (Mendell, 1978: 158)

Thus, Mendell supports the idea that scanning can be used as an input to the intelligence creation process of the organisation.

Brown (1979) found that the personal success of managers is enhanced as a result of their environmental scanning efforts.

In project organisations it has been noticed that the managers were more efficient in using adaptive strategies as a result of environmental scanning (Martin & Owens, 1988).

This sensemaking activity is constantly under influence of the perspectives given by the memory structure as well as those given by the nature of the perceived environment. During its existence the human brain builds up memories of what to expect in future situation. These perspectives on reality are continuously being shaped, used and reshaped. It is therefore very plausible that certain elements in an organisational context, which act perspective-giving in an individual's process of perspective-making regarding that organisational context, may affect the expectations of the organisational surroundings, the *environment.* Clusters of such perspective-giving components in the organisational context I will from now on refer to as the *invironment.* The invironment's perspective-giving properties are selected by the individual in his/her perspective-making process on the basis of their properties as well as the individual's memory structure relating to those properties.

Experiences from the environment may also affect the scanning of the invironment, but as I have previously stated that part of the process is outside the scope of this research. As the human brain has a very high capacity of parallel information processing it is very plausible that an individual very quickly can shift focus and let various perspectives influence each other. In the following figure I have tried to represent how the experience on an invironment may influence the scanning of an environment.

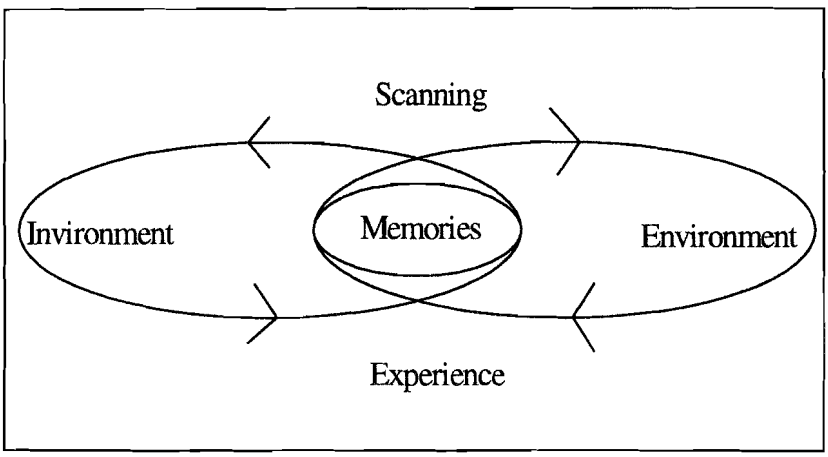


Figure 2: The influence of the experiences of the invironment on the scanning of the environment, and vice versa.

In this way the scanning behaviour is a mechanism that starts a process through which the individual *enacts* various parts of the environment in various ways. This enactment is, however, not entirely up to the will and intentions of the individual. Experiences in the invironment give inclination to scan the environment in a certain perspective to the extent the environments relate to the same memory structure. It is here the notion of expertness enters the picture. Previous experiences build up the expertness and, thus, the nature of those experiences in comparison to the nature of the present environment influence the formation of

The individual has a diminishing attention toward the remote environment. Even the contextual environment gets considerably less attention than the enacted environment.

I conclude that people tend to relate themselves to the environment by:

- Enacting environments, within their domain of expertness.
- Forming perspectives on the enacted environment that have more elements than can be justified by the reality they were based upon.

Thus, the more remote an environmental phenomenon is from the enacted environment, the less the individual will scan that phenomenon and the less it will act as a perspective-giving component in his perspective-making of reality.

5. 7. 4. Bringing in the Time Dimension

Scanning is limited in time and space. But within that limit the scanning is very dynamic, as the individual uses the time-arrow (Ingvar, 1991) in the scanning process. If we combine the previous analysis about the inclination to attend to the enacted environment with the ability to use the time-arrow we can construct a more refined model of the scanning behaviour. To describe the dynamic aspect of the scanning behaviour I would like to use another metaphor - *the game*. The enacted environment is by definition a situation in which the individual feels like taking part. He/she is a player in a social and physical game. The game has a perceived logic, perhaps defined as rules. The perceived logic gives the individual a sense of coherence - "the name of the game", which initiates a process of perspective-making described in the figure below.

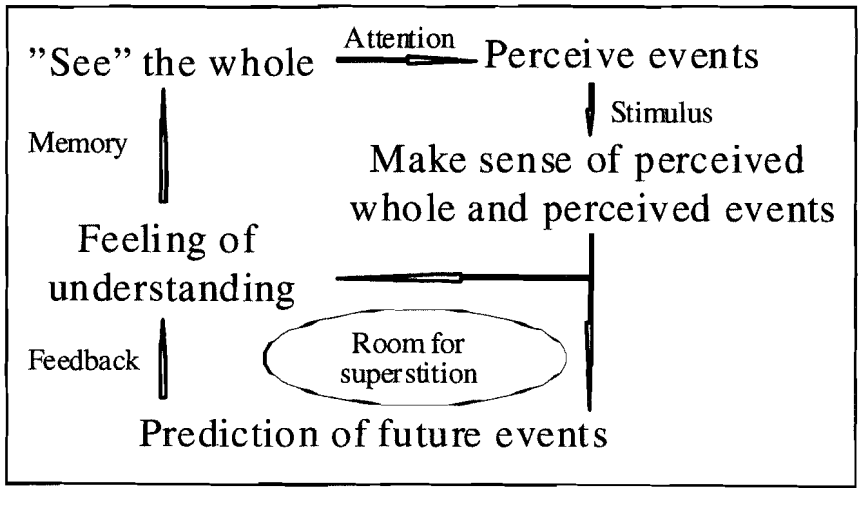


Figure 4: The process of the spontaneous environmental scanning

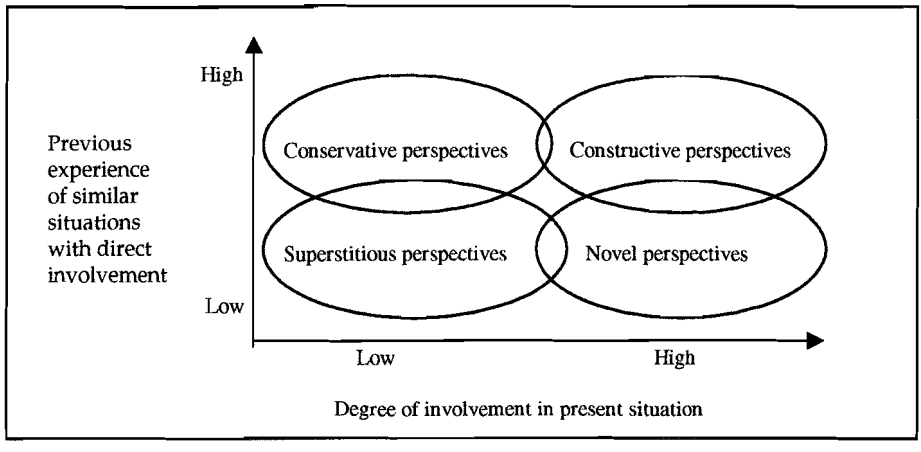


Figure 5: The formation of different perspectives based on present and previous experienced involvement.

I will below describe the various perspectives in more detail.

Superstitious perspectives

If the individual neither has experiences of situations in which he/she was involved, but has experiences of situations with a low degree of or no involvement nor has an involvement in the present situation, the perspectives will rather relate to imagination than reality. In those cases there will be a great risk of the perspective to be superstitious. This situation, however, also implies the possibility to form a very creative perspective with lots of utopic elements.

Conservative perspectives

In this situation the individual has lots of experience of situations where the feed-back from reality has been good, but the involvement in the present situation is low. I can imagine this to be the typical situation for the senior manager, who had hands-on experience in the past, but now watches the events at arm's length, or the investment analyst who used to work in a business and now is only watching it. These people tend to "know how things are" and they feel confident about it. But, as they lack the feed-back in the present situation that makes them proceed with judging reality as if it was yesterday. This tendency can be even more profound as they tend to select and focus on situations that relate to yesterday's experiences.

Novel perspectives

In H. C. Andersen's tale, "The emperor's new clothes", it was only the little child who could realise that the emperor did not actually have any clothes at all! The individual with little experience of how things used to be but with high involvement in the present situation could come up with a novel perspective. The involvement in the present situation will give the

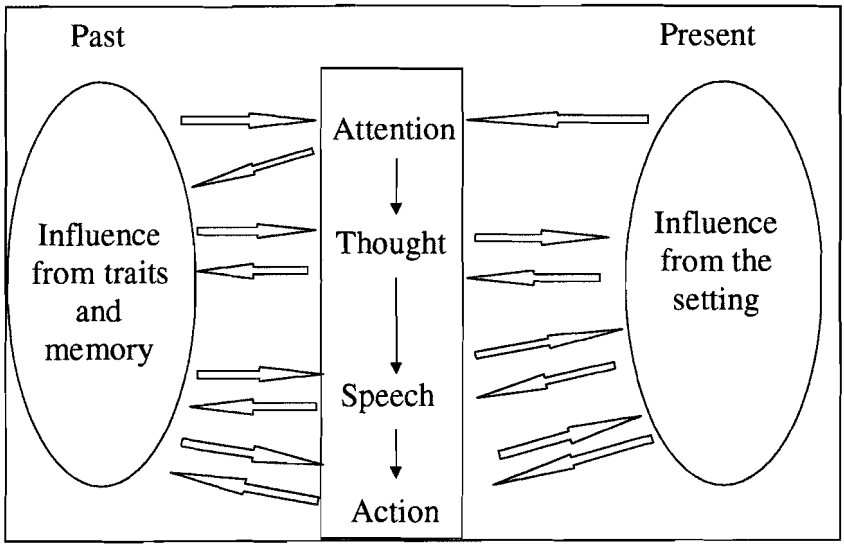


Figure 6: The development of environmental perspectives under the influence of the social environment.

The social cognitive process of perspective-making has its origin in internal factors in the mind of the individual. Research described earlier states that much of the attention is initiated by sub-conscious mechanisms. Thus, in the early moments of attention where there is only an arousal in the mind of the individual, there is no thought and there is probably very little intelligence. The attention is only a feeling of interest and the individual is not aware of why his/her interest has been aroused. Certain memories in the memory structure have made the individual sensitive to certain stimuli. The arousal is a combination of certain memories and certain features of the stimuli.

As soon as the arousal takes place it goes back into the individual's mind and there is a search for clues about what it is. The result is a thought, which is often in the beginning what the stimuli remind the individual of. The thought itself is processed several times by the special echo functions of the brain. In this way the thought is gradually crystallised from a notion to a thought. Already at this stage the social interaction starts. As soon as an individual is thinking he/she sends out signals to the others in the interactive environment, if there is someone present, of course. The facial expressions and other kinds of wordless communication arouse their interest and they start to give signals back to the individual thinking, often in a wordless manner. The signals become further stimuli for the individual and act as input to the thought-refining process, together with the echoing mechanisms of the thinker's own mind.

After the thought has been clear enough for the thinker he/she becomes an expressor, by giving some kind of statement. When an expression is made in a social context all the parallel computing mechanisms of the present individuals are alerted. A massive information exchange is taking place between the participants.

6. The Model

In this chapter I will use the knowledge generated by the theoretical perspectives to construct a model of how individual spontaneous environmental scanning is affected by invironment. The model will be applied to the empirical material in chapter 7 to show how different invironments have generated different scanning behaviour in various organisational contexts.

6. 1. Cognitive Preconditions

Based on the theoretical perspectives I described in the previous chapter I will start here by outlining the cognitive preconditions for spontaneous environmental scanning. The fundament of such a model is the cognitive inclination to search and select information.

6. 1. 1. Expertness

Even if the neurological functions of the brain supply a very good machine for information search to us, it would not know what to search for if we did not have some kind of expertness. Expertness can be defined as what we are good at or what we seem to be knowledgeable of. It is obviously related to the memories. It is hard to think of a person having expertness not related to memories. On the other hand having memories is no guarantee for expertness. The memories must have some relevance to a situation. Therefore we can conclude that expertness is a state of mind where there is a congruence between the structure of the memories and the structure of the situation at hand. This makes expertness tacit knowledge. It can only really be shown in situations. Being memory structures, the expertness is dependent on the way the individual has made sense out of reality. As this is an ever ongoing process, as I described earlier, it implies that the expertness is in constant transition.

Everyone has expertness, not only the so called "Experts". Those who are called experts have probably expertness as well, but the most important feature is that they have been recognised to have expertise. They have convinced their social environment that they are experts.

If we return to the previous metaphor of memories as "brick houses" we can conclude that expertness is the "houses" with similar shape and building material. The expertness can only be revealed in situations similar to the houses.

Together with the cerebral functions of the brain, expertness, as being the content of the memories, can be defined as the individual's over-all understanding of his/her surroundings. It is working as a mechanism for the individual to select reality. The selection is based on a construct of coherence. I think this is a very important implication. It means that people generally tend to direct their attention toward those parts of the environment they feel they understand quite well. They avoid the unknown.

In my model I have not treated expertness as a variable. I have assumed that people have a certain degree of expertness related to the environment they enact. The basic assumption is that they would otherwise avoid that environment.

Such an image is more likely to be understood by the members of the organisation, even though it might not be accepted. But as the members of the organisation usually have only a partial commitment to it (Czarniawska-Joerges, 1992), the image can be adopted in the perspective-making process even though it is only partially or conditionally accepted.

The invironment can also be regarded as a mediator of perspectives (Ocasio, 1997 with reference to Simon, 1947). There are several components of the organisation that can act as mediators. In fact, it is difficult to imagine any part of the organisation that could not.

6. 2. 3. Invironmental Preceptual Strength

Based on the notion that organisations tend to have perspective-giving properties and those properties work in relation to people's perspective-taking properties (Boland & Tenkasi, 1995) it is possible to conclude that when perspective-giving and perspective-taking is matched there are preconditions for perspective-making. The efficiency by which mediating components of the organisational invironment can transfer perspectives of reality, including values and beliefs, I refer to as the *Preceptual Strength* of the organisation. The word "preceptual" is not a misspelt "perceptual". According to the Oxford Dictionary (1971) preceptual refers to the ability to convey a *precept*, which in turn can be translated as a general norm or a guiding principle for action or behaviour. In the word precept is often also put a moral as well as an intentional dimension. Precepts express what people "should do". Therefore I think that precept is an appropriate term to use in this context as I have studied organisational factors with the power to direct the members' attention and therefore they are factors giving the members a sense of compliance. The term preceptual strength I do not, however, restrict to the ability to transfer commands or orders. Neither is it restricted to the ability to implement concrete perspectives. It is rather *the ability to mediate components of perspectives that can be conditionally used by the members of the organisation in their scanning and processes of perspective-making.* As the preceptual characteristics of the organisation have this effect they tend to influence the individuals to take certain aspects of reality for granted in the environmental scanning behaviour.

I have earlier argued that people are never passive receivers of information. Of course this must be true for the situation in which they are influenced by the preceptual strength of the organisation as well. A member of an organisation has of course several parallel search activities going on. Some of them are directed externally and some internally. In the search internally he/she will be exposed to the preceptual strength of the organisation. If the preceptual strength is high toward the individual it will increase the probability that he/she will be influenced by it. This influence will tend to affect the environmental scanning behaviour. But is the reversed process possible? Can the perspective generated by the environmental scanning influence the invironmental scanning? That is possible, of course. But there is a fundamental difference between the influence from the invironment and that from the environment. The invironment is a part of reality which is to a greater extent enacted than the environment. As enacted environments have a greater impact than more remote environments, the invironments will, by its preceptual strength, create a frame of reference that will guide the scanning of the environment. That is the basic reason why I have excluded the possible effect of preceptual strength from the environment in this research project.

If the scanning is focused on a purpose or a task but also influenced by factors that are not directly connected to the task, but still, at least in a broader perspective, relevant to the task, it will be *directed.* In this case the scanning will be focused enough to generate sufficient probability to catch the task relevant stimuli and it will be wide enough to catch some indirectly task related information, including what otherwise would be surprises.

As the environmental scanning behaviour is affected by invironmental factors it is reasonable to make a distinction between those factors very close to the individual in the working situation and those more distantly located in the organisation. The former are more the centre of the enacted environment and therefore primarily influential on the focus. They tend to act preceptually contractive, and narrow the scope of the focus. The latter may also work as a preceptual force, but generally not so strong. If, however, the more distant factors act preceptually they are likely to enrich the scope of the focus with issues that the individual would not take into consideration if only dealing with the requirements of his/her own working situation. This widening effect on the scope of the focus will only take place, however, if the perceived meaning of the distant factors is compatible to the perceived meaning of the closely located factors. This is important for the sensemaking of the over-all situation.

Based on this reasoning I form the following proposal about the preceptual influence of the invironment on spontaneous environmental scanning:

Proposal 1:

The invironmental factors that the individual experiences closely to the working situation tend to act as a contractive preceptual force that narrows the scope of the focus in the spontaneous environmental scanning.

The invironmental factors that the individual experiences distant to the working situation may act as an expanding preceptual force and widen the scope of the focus in the spontaneous environmental scanning, if they make sense to the individual in relation to the factors closely located to the working situation.

Intensity

The focus of the environmental scanning does not say a great deal about how much the individual is scanning, just that the scanning is concentrated to a certain domain. There is another dimension as well, the *intensity.* In the chapter of the theoretical perspectives I have examined some theories dealing with creativity. There is obviously a relationship between creativity and the intensity of the environmental scanning. People who are given the opportunity to be in command of their own work situation and given the freedom to elaborate with the means they have at hand, become more alert and perform better. There is a basic explanation for this effect.

Crutchfield (1962) describes that there is a difference between the demands that deal with task-related questions and those dealing with questions not related to the task. It is only the task-related invironmental demands that enhance creativity, because they tend to get the individual

The focus of the environmental scanning is influenced by a balance of narrowing and widening preceptual forces in the invironment. The narrowing forces are located in the working conditions close to the individual. In fact, the most powerful narrowing stimuli come from the content of the working situation; the tools used at work, the domain of the competence/performance and the task definition. All these factors also interact with the propensity of the brain for concentrating the focus on issues relevant to the memory structure. It is therefore reasonable to believe that the narrowing effect of the working situation gets more profound when there is a good fit between the tacit knowledge and the situational factors. This would be congruent with Schön's (1983) argument that the problem in an expert's performance is the narrow choice of problems to solve. If, however, a person's expertness does not at all correspond to the situational factors, they would not be perspective-giving and therefore they would not have any preceptual strength. This leads me to make another proposal regarding the preceptual strength of the working situation:

Proposal 3:

The working situation will preceptually affect the focus of the spontaneous environmental scanning as contractive to the task to the extent that the content of the working situation corresponds to the individual's competence and previous experiences.

As I previously indicated this is a proposal I make for further research as I do not problemize it in this research project.

The widening preceptual strength comes from the general situation, which is all the physical and social parts of the invironment that is not directly related to the individual's task. This part of the invironment could be considered to be enacted environment but could also be considered contextual environment. It is even possible to imagine parts of the invironment to be considered to be remote environment. Anyway, these parts of the environment may have some relationship to the close factors in the working situation. As an individual is mainly guided in the perception by factors close to him/her, more remote factors will influence the individual to the extent they are perceived conceptually congruous to the factors of the working situation. This has the implication that the individual will be inclined to make inferences from the working situation to any other aspect of the environment that he/she has knowledge about, if he/she experiences some kind of congruence. It may be other parts of the organisational invironment as well as other enacted environments that the individual has experience from. This is congruent with Gibson's (1966) argument that people make inferences to other situations that seemingly have no relationship to the present situation. The mechanism behind this effect would be that there are features of the stimuli in the present situation that remind the individual of other situations. When an individual makes such an inference it is an act of perspective-making, and an additional cognitive component is created. The important implication is that the individual looks at the situation with a focus wider than the working situation originates.

Based on the theoretical perspectives I have chosen as foundation for this model I identify three characteristics in the general situation of the invironment that build up its preceptual strength:

Proposal 5:

The higher the perceived transparency is in the social structure and the technical structure, the more it will act as a preceptual force in the individual's spontaneous environmental scanning.

The Communication

The third important factor in the general situation is the ability to communicate. This ability has both a scale and a scope aspect. The scale aspect is people's possibility to reach enough number of receivers when sending messages internally in the organisation and to be included in the group of receivers when others are sending messages. The scope aspect is the possibility to reach the right receiver, with the right message, in the right way and at the right time. These aspects can be seen as the quantitative and the qualitative aspect of the perspective-giving efficiency of the internal communication system.

The quantitative aspect is about the distribution mechanism, in today's organisational settings often a matter of computerised information systems. The sensegiving components are tied to the design of such systems. An important aspect of the design is that it should not lock the perspectives, but rather offer flexible means of communication (Hedberg & Jönsson,1976) and enough space for parallel processing of information (Gärdenfors, 1996).

The qualitative aspect is about the individual communication using all the potential that the human brain has in communicating perspectives. One important aspect is the arenas for the inter-individual transfer of perspectives (Westling *et al,* 1998), another is the importance of languaging in the communication (Roos & von Krogh, 1996).

From a preceptual point of view the aspects on communication can be condensed into the internal communication's ability to create a frame for perspective-giving messages in the perspective-making process, which can be defined as its ability to *transfer knowledge*. I can therefore make the following proposal regarding the communication in the general situation of the invironment:

Proposal 6:

The preceptual strength of the communication in the invironment will depend on to what extent the individual can use it to transfer knowledge in the form of perspectives.

If the factors influencing the focus of the scanning are combined with the motivating factors influencing the intensity of the scanning a model is created describing how invironmental factors have an effect on spontaneous environmental scanning. In order to create schemata for interpreting the interviews I formulate a hypothesis of how different invironments may create variations in scanning behaviour according to the model.

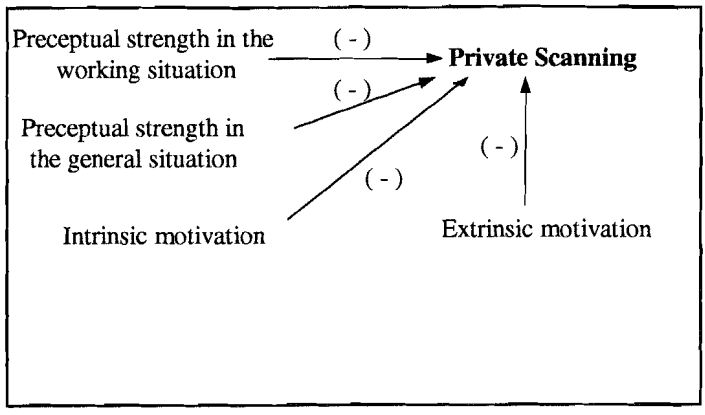


Figure 10: Absence of influence creating Private Scanning.

The fundamental factor deciding if the scanning will at all be related to the organisation/job is that there is some preceptual force in the working conditions. If there is an absence of such a force it may depend on a mismatch between the competence of the individual and the demands of the working conditions, but another possibility is that there are no demands in the working conditions. If there are no motivating factors present either, we find a situation where the individual would not scan at all. But even though these conditions inhibit an active scanning based on a job-perspective, they do not inhibit the scanning as such. As I mentioned in the chapter concerning theoretical perspectives people have built-in cerebral mechanisms for information search that will be used by the individual in order to avoid sensory deprivation. Thus, under these conditions the individual will scan the environment, preceptually guided by private matters. I have labelled this behaviour *Private Scanning*. In the extreme case of an individual being locked up in a situation deprived every normal possibility to find stimuli the scanning will be to try to invent things to focus on. If the situation is not so deprived of stimuli as the imprisonment but is still very boring he/she would maybe start daydreaming or call friends on the telephone. This is of course a tragic situation for both the individual and the organisation. The latter would have no use of the individual as he/she has mentally left the organisation, and the former experiences negative feelings of boredom and uses the scanning as mental therapy, but is probably aware that it does not feel right.

Anarchistic Monitoring

If there is a preceptual strength in the working situation it implies that the individual has guidance on what information is important to the task. This will influence the focus of the scanning to be monitored to things relevant to the content of the job. If the individual is not working under intrinsic motivation the scanning will be kept at a low level, but it will not fundamentally change the focus. If, however, the level of intrinsic motivation is high it will create, together with the preceptual strength based on the content in the working situation, a very high interest in matters related to the task. The individual will intently concentrate his/her attention and the scanning will be of the monitoring type. If many of the members of the organisation scan the environment in a similar manner it will create a problem. As everyone in the organisation tends to monitor the environment according to their individual perspectives there will be few common denominators in their scanning. The scanning intensity will be high

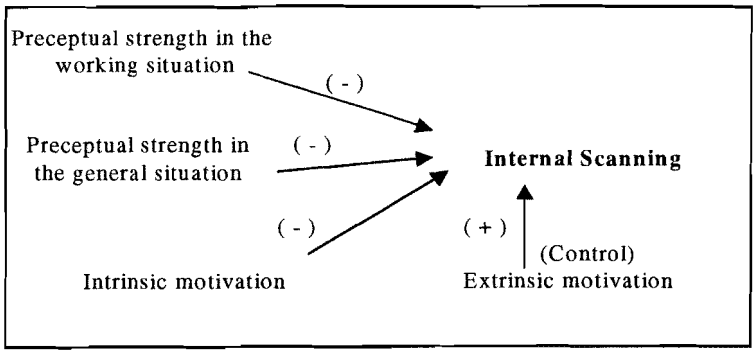


Figure 12: Influence creating Internal Scanning

Scanning-in-Principle

If extrinsic motivation is high and intrinsic motivation is low, and this is combined with a high degree of preceptual strength in the general situation it will create a very destructive scanning behaviour I have labelled *Scanning-in-Principle.*

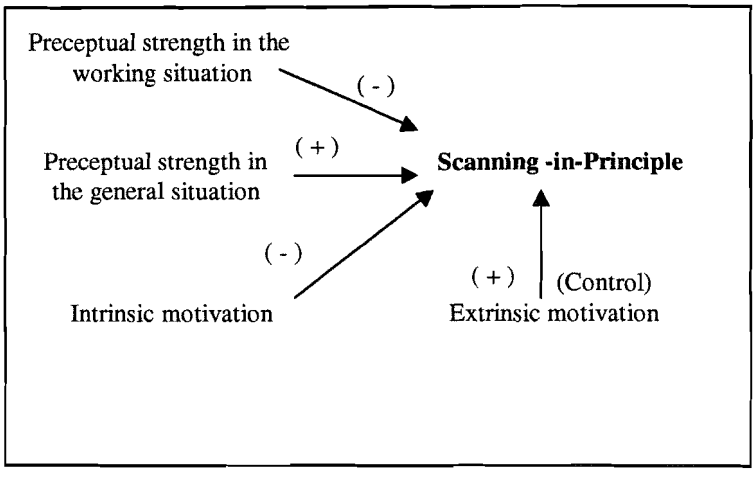


Figure 13: Influence creating Scanning-in-Principle.

In this situation the individual is locked into a situation where his/her performance is assessed according to measures of control. The perspectives of the individual are dominated by very deep-rooted shared values and beliefs in the organisation. As the situation probably feels quite nice it becomes very deceptive. Everyone feels secure and confident to be in a stable context and they all believe they perfectly know the nature of reality. The organisation represents the reality and no one has to bother. One can expect to find this situation in very old and mature organisations and the situation reminds of the Titanic. And just like the Titanic this kind of

Directed Scanning

Finally, if there is high preceptual strength in the working situation supported by a corresponding high preceptual strength in the general situation and the motivation is intrinsic or the intrinsic motivation is supported by a synergistic extrinsic motivation, the situation will create preconditions for *Directed Scanning,* as displayed in figure 15. This will create efficiency in the scanning in three respects:

1. The directed scanning will be focused on the enacted environment and this will create opportunities for the individual to use his/her expertness in the domain to attend and perceive task-relevant information.
2. Simultaneously the individual will be motivated and alerted to open the focus to cover also those aspects of the environment that are not directly related to the task, but relevant to the organisation from a general perspective. This will facilitate the detection of unexpected events, at least within arm's length distance from the enacted environment, and thus, if several individuals in the organisation do that, it will minimise the blind spots in the organisation's scanning structure.
3. As people in the organisation will focus on more than their immediate enacted environment, their foci will to some extent overlap each other. That will facilitate communication of the information and increase the probability that there will be a critical mass of people in the organisation sharing the new perspectives, increasing the likelihood for novel action. One important prerequisite for that is of course that the distances between the enacted areas are not too wide. There must be a certain concentration of enacted environments to a certain domain relevant to the organisation.

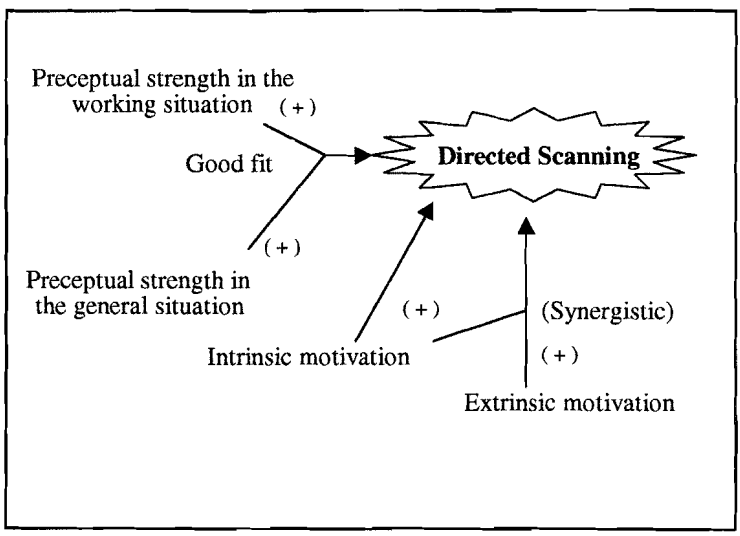


Figure 15: Combinations of factors creating Directed Scanning behaviour.

7. The Model Applied on the Empirical Material

I have previously outlined the organisational contexts where I made my interviews. In this chapter I will continue that description, but as invironments. In this description I have made the preceptual and motivational factors more salient. I have chosen to describe the three first organisations here in the text. The County Council, however, being a rather fragmented organisation, is described in an appendix. After the description of the invironments I apply the model to a number of individual examples.

7. 1. The Invironments

My focus of analysis is at the individual level. But as the scope of analysis is the interaction between the individual and the organisation, the organisational level becomes a point of departure in the analysis. Therefore I start it by examining the organisational contexts a bit further than was done in the chapter describing the empirical context.

The organisations in this study were not cases in the sense of being the objects for the study. It is, however, relevant to the analysis to examine the organisational contexts as their nature influences the scanning behaviour by offering different invironments. The way the invironments were perceived by the individuals affected their scanning behaviour. It is not the physical appearance of single items in the invironment that is of importance, but rather the sum of its perspective-giving properties.

The organisations will, each one, be examined by the use of the categorisation of preceptual and motivating factors of the model. In the organisations there was a variety of scanning behaviour. In order to give a quick over-view of the properties of the various invironments creating the prerequisites for various forms of scanning behaviour I try to make a summary in the following figure:

Organisation	Preceptual strength in working situations	Preceptual strength in general situation	Intrinsic motivation	Extrinsic motivation	Dominating scanning behaviour
Sales Company	High	Low	High	Low	Anarchistic
Energy Company	High / Low	High / Low	High/Low	High/Low	Directed & Internal
Chemical Company	High	High	High	Low	Directed
County Council: Institutional Health					
Care Clinics	High/Low	High/Low	High/Low	High	Directed & Internal
Care Centres	Low	Low	Low	High	Internal
Dental Surgery Clinics	High	High	High	High	Directed
Senior High Schools	High/Low	High/Low	High/Low	High/Low	Uncertain
Folk-High Schools	High	High	High	High	Directed
Real Estate Admin.	High	Low	High	Low	Anarchistic
Material Supply	Low	High	Low	High	Internal

Figure 16: Dominating scanning behaviour in the selected organisations.

as the invoicing system, experienced low transparency, as the system did not supply an overview of the relationship between a particular system and the other parts of the organisation.

Knowledge Transfer

In the organisation communication was a matter of mass communication. The scale advantages of communication were emphasised both in people's minds and in the system itself. This was natural as the company was in the business of electronic communication. To try to compensate for the lack of guidance in the organisation people attempted to reach some clarity in the situation by communicating with each other and by using the very well developed E-mail system. As a result of the extensive search for meaning the E-mail system was overloaded. It was generally impossible to enter the system if one tried to log in to the system later than 9 a.m. Everyone was communicating everything with everyone else. People showed very little selectivity of what could be considered relevant and did not know to whom the messages could be relevant. As a result everyone in the organisation had to spend lots of time to sort the incoming E-mail. The probability that a message would be attended to was low, even though the right person had got the right message, technically speaking.

There was , however, not a general system for knowledge transfer. The only communication link of that kind was the MD himself and he could only act as a communication link to very few.

To summarise: The preceptual strength in the general system invironment was very low because all the organisational factors, in structure as well as processes, did not contribute to an increased preceptual strength.

7. 1. 1. 2. Preceptual Strength in the Individual Working Invironment

As I indicated previously everyone in the organisation was supposed to manage on their own. It was a very profound "cowboy mentality" in the company.

The salesmen had also been very selectively recruited. Many of them had a long experience from selling electronic equipment and had a rich network of contacts both in the market and with the competitors. The working invironment was therefore quite developed for most of the salesmen. But each one had his/her own working invironment, very different from the others'.

The content of the working situation was therefore very preceptual. It gave very clear signals to the employees what to focus.

7. 1. 1. 3. Motivating Factors

Motivation seemed to be a very dominant phenomenon in the organisation. The MD's style of management was to emphasise motivational aspects very much. It was a style he had brought into the organisation from the consultant business he came from.

In the new structure there was no definition of relevant factors; it was a situation as if "everything" and "nothing" were relevant at the same time. For most people working in this invironment seemed very confusing.

Co-ordinating Logic

In the old structure there was an almost perfect co-ordinating logic. Everyone working in these invironments knew what to expect from them. Even the surprises were possible to forecast. The reason for this "perfect world" was that it was imbedded in a controlled meta-structure. It was a closed and controlled world all the way from production to consumption of energy.

In the new structure things were quite the opposite. Nothing could be forecasted. No rules of the game were defined. No results could be expected. No feedback could be obtained. In these invironments people could not find out what really mattered.

Transparency

The same difference as in co-ordinating logic existed for transparency. In the old structure the transparency was almost perfect. All the links in the chain fitted together very explicitly and everyone knew their own role in the chain relative to the others.

In the new structure the transparency was also quite good in the technical dimension as it was easy to see the different functions, but it was less obvious in the social dimension. The roles for decision-making were non-existent or contradictory. This made people working in these structures confused as they did not know how different functions were supposed to fit together.

Knowledge Transfer

The theory of autopoiesis fitted very well to the old structure. That part of the organisation had developed over decades mainly on internally generated and transmitted knowledge about reality. At the time of this investigation it could still develop that way because nothing had happened yet to break that perfect world. It was an invironment perfect for single loop learning and development of expertness.

In the new structure almost nothing of what people could use had been transferred from the previous organisation. Everything had to be created in the organisation. Thus, in the new structure no knowledge transfer was functioning.

7. 1. 2. 2. Preceptual Strength in the Individual Working Invironment

In the old structure the individual working invironment was very preceptual. The tasks were trained, tested and co-ordinated. Furthermore, the precepts of the working situations were perfectly compatible to the precepts of the general system. This created a very strong atmosphere for sensemaking. The image of the reality created by this atmosphere was not easily questioned.

In the new structure many people lacked the guidance from precepts in their working situation, as the tasks had not yet been defined. The roles were also new which made the "old truths" in the old structure not applicable. The result was a shortage of preceptual strength and consequently the dominating scanning behaviour was the Internal Scanning.

7. 1. 3. The Chemical Company

In the chemical company the situation was more homogeneous for most employees, but not for all. Also in this company there was a difference between being located in the core business or outside. As in the old structure of the energy company, this company was dominated by its general process. It was a phenomenon of vital impact on the organisation.

7. 1. 3. 1. Preceptual Strength in the General System Invironment

The company had a long history. Over the years it had been very inventive, and different projects had been developed and abandoned. During these events the central process had been left untouched. So, the organisation had in itself two general preceptual forces, one was the general process working as a frame for stability and the other was the urge for inventiveness, defined in a quotation from the founder:

" Help the customers by making their production more efficient!"

A poster with this quotation was to be found in almost every room in the company.

Co-ordinating Logic

The two preceptual forces worked in balance toward every employee. The logistics of the general process worked as a frame in which people could define their own space of operations. The space was very explicit for most of them. The innovative culture worked as a source of challenge. It gave the logic to make new things within the frame of the "old prescription". The co-ordinating logic of the general process was high. It worked smoothly and it was easy to predict. It was also a rather slow process that could not be changed dramatically with short notice, so everyone knew what to expect from it. The efficiency of the process was high and bottlenecks in the production hardly existed.

For a certain group of people, those who did not work in the core business, e.g. marketing, market analysis and information systems, the general process in combination with the urge for inventiveness was not serving as a natural frame for action. For them it rather worked as a limiting or distracting factor.

Transparency

Even though the company had a nationwide operation represented even in the smallest village there was a good transparency for people working in the general process. There was, however, one imperfection in the transparency. It worked well along the production chain, but rather badly across functions. This had the effect that development engineers could invent new

For people outside the core business the degree of controlling extrinsic motivation was quite high. Their action was much more regulated by the political coalitions in favour of or against a particular action.

7. 1. 3. 4. Scanning Behaviour

Precepts in both the working situation and the general situation supported each other for most people in the chemical company. Consequently the dominating scanning was Directed Scanning. Only a few people working in processes outside the core business scanned the environment in other ways and then they generally used Internal scanning, especially as they were subjected to controlling extrinsic motivation.

7. 2. Categorisation of Scanning Behaviour

After this examination of the organisational invironments in the light of the categories of preceptual and motivational factors the interviews can be analysed and categorised as to the characteristics of the scanning behaviour.

I will here try to categorise the organisations into the previous hypothetical types of scanning behaviour: Private Scanning, Anarchistic Monitoring, Internal Scanning, Scanning-in-Principle, Undirected Scanning and Directed Scanning. I will then try to relate examples of individual scanning behaviour to the influence of the invironment in order to make a qualitative test of the hypothetical model.

7. 2. 1. Organisational Scanning

The organisations in this study represented a great variety of scanning behaviour.
In the first, the *Sales Company*, the focus of attention was very different among the employees. Each one had their own focus, depending on their personal background and situation. The organisation had generally a very low influence on the employees' foci. The structure failed to act preceptually:

- Generally the co-ordinating logic was perceived to be very weak, mainly because so many processes did not work properly.
- The organisation failed in transparency. The MD was the only active mediator of the overall picture of the operation but his ability to communicate the picture was very limited, and he was not aware of it.
- The only system related factor that worked fairly well was the internal E-mail system. But as the organisation was so confusing this option rather worsened the situation. The main criterion for communication to enhance the preceptual strength is if it clearly adds to the possibilities for people to communicate sensemaking messages, which the E-mail system did not do.

The spontaneous environmental scanning was, however, very intensive in the Sales Company. Most of people's time was devoted to spontaneous environmental scanning, although they monitored the environment very differently. As the organisation culture emphasised the

The cases show that differences in organisational settings imply differences in preceptual strength. This state of affairs seems, however, not only to have a quantitative dimension but a qualitative one as well, depending on which system level that holds the preceptual strength. A preceptual strength that works at a high system level in the organisation tends to expand the scanning while preceptual strength in functions at lower levels will rather have a contracting effect on the focus of the scanning. In the most extreme situation where the preceptual strength is only derived from the working situation, the target will be defined very differently and the scanning will turn into an anarchistic mode. There were a few examples of Private Scanning in the material.

7. 2. 2. Individual Scanning

I will end this analysis by picking out examples of different types of scanning behaviour and try to relate them to invironmental circumstances in order to extract the organisational factors related to each form of scanning.

7. 2. 2. 1. Private Scanning

In the previous section I postulated that Private Scanning is probably a rare event in organisations. At least as a phenomenon with continuity. Everyone may sit and daydream from time to time, but if people do so continuously it is probably a warning that something is fundamentally wrong in the organisation.

From the rich material of interviews, however, I am able to pick two examples of scanning behaviour that seem very close to private scanning.

The Disillusioned Saleswoman

She was working in the Sales Company and had been recruited from another company in the electronic business. She had been intrigued by the promise of an independent role, with access to the large resources of the mother company. At the time of the interview she had just recently entered the organisation. Responding to my questions she expressed no perspective on the organisation, neither had she any perspective on the environment. At the end of the interview I questioned her about her feelings toward the organisation and then she had much to say. She was deeply disappointed with her situation. The general system did not make sense to her as her previous employer was a highly structured organisation. She was not familiar with the products of the company and did not seem to get a chance to acquire any knowledge about them. On the whole she felt very much left alone in a conceptual and social vacuum and could not figure out how to act in that organisation. Her reaction to this problem was to sit and wait for things to become clearer. She talked a lot to former colleagues over the telephone and she thought very much about her family. At the time of the interview she was planning a weekend with the family.

The Disillusioned Headmaster

He was working as a headmaster for a senior high school in the County Council. He was very close to retirement and had a very long experience as teacher and headmaster. He was also

The Credit Handler

In the Energy Company there was a new function for handling credit issues. The woman responsible for this function was just like the woman at the marketing department subjected to confusing signals of how to run the operation. But she reacted a bit differently. She did not spend any time monitoring the internal political structure. Instead she had found a more exciting internal matter to focus on. She had some previous experience of credit handling so she spent much time trying to develop different simulation models for credit forecasting. The models were not based on empirical facts derived from the customers as such information did not exist at the time. They were rather general models based on assumptions of the credit rating. Beside the interest and experience she had of this kind of work her focus was facilitated by the tradition in the organisation; construction of simulation models of the reality was encouraged.

The System Operator

She worked directly in one of the support systems in the Sales Company. Most of the systems were underdeveloped, and acute problems of the technical performance of the systems were seeking her attention all the time. As the system environment was very much separated from the rest of the operations it made her live her own life separated from the rest of the organisation. She had very little chance to choose freely what to do. The system, or rather its imperfections, dictated her scope of activities.

As a result, she tended to narrow her attention only to see the system, if she bothered at all. One strategy often chosen was just to wait for the next emergency situation. The environment was the same as the system for the system operator. Most of the functions of the system were integrated with the system environment of the mother company. Consequently, if the system operator had some interest in the environment, it was generally focused on the systems of the mother company, rather than the other operations in her own organisation. To put it in other words: There were few areas in the environment that the system operator had found meaningful except the system itself and/or the system environment of the mother company.

The Non-Core Developer

In the Chemical Company there were people working under similar conditions as those active in the new functions in the Energy Company. They were those working with things not directly related to the core business. It could be computerised information systems, electronic equipment, market analysis or even marketing for that matter. As the focus of the core business was very narrow in the organisation, all activities not directly related to the general chemical process were considered a bit off side. The general focus of events affected consequently also these functions, with some very unfortunate results. The developer of computerised systems was unable to apply a broader perspective on the system development, with the effect that the computer system had become very internally oriented and fragmentised.

To an increasing extent the company had begun to market its product in combination with certain electronic equipment. People working with this equipment had, however, difficulties in forming their own perspective of their business but had to adjust their actions to the chemical applications developed by the development engineers. Most electronic installations therefore failed and the company experienced an increasing dissatisfaction from the customers regarding

environment. And furthermore only events that could be connected to the chemicals of the company.

People's foci were at the same time different in content and similar in nature. As everyone based the focus on the same perceived co-ordinating logic and the nature of the company's products (a certain kind of chemical) there was a good resemblance between the foci in this respect. But, as everyone also focused on very different applications for the product and also took very varied customer needs into consideration, the foci differed much in this respect. On an aggregated level it was obvious that the organisation scanned its enacted environment very efficiently in a great number of spots. But between the spots there were also a large number of blind spots that no one was aware of. There was also generally a high degree of concentration on the enacted environments, which made the scanning of the contextual environment rather weak.

The development engineers could be more or less influenced by the preceptual force in the working invironment or by the general system environment. This created some differences in focus. When I made a presentation for the company I divided the engineers into two groups and labelled them "Cowboys" and "Japanese". The Cowboys were the engineers very much influenced by the preceptual force in the working invironment. They were more influenced by the unique circumstances in the working environment of the customers' organisations. They tended to look at every problem as being unique and they advocated unique solutions. The Japanese were more influenced by the typical solutions tested before in their field of technology. They were likely to form more uniform perspectives. Most of the engineers were a bit of both and also tended to change roles under different circumstances. But at all times they were influenced in their scanning by factors in the general system invironment as well as factors in the working invironment.

The Technical Expert

The technical expert, a man in the Sales Company, worked in teams with other experts and he had much freedom to choose what to do during his working days. He had good networks with similar experts in the environment, often in companies he had worked for before. The technical expert was not responsible for a project, but worked rather on demand from the salesmen. He had a fairly good overview of his working situation. If he sensed that he would not be able to cope with the situation he could either turn it over to someone else or get help from others. Time was frequently a source of disturbance for the technical expert and he often found it difficult to perform within the time limits that the salesman had promised the customer. The perceived environment of the technical expert was generally very wide. He devoted much attention to events of a technical nature in the environment. Despite the high level of attention he constantly felt a need to know more. He did not only know much, he also sensed how much more there was to know. Consequently, he had a hesitant attitude towards the events, he rather waited and watched how things were developing in the projects, than pursuing action. He was aware that something unforeseen could happen in the project and he kept a wide focus at all the components he could think of having a potential relevance for the project.

The Information Researcher

She was working in the Sales Company specialised in information retrieval. She had managed to build up a service for environmental scanning in a very short time.

His scanning in this situation was far broader than that of many of his colleagues in other CCs, and it was far more directed to solve the basic problem experienced by all CCs. It was truly an amazing act of Directed Scanning under difficult circumstances.

The Head of a Surgery Clinic

Other parts of the County Council could more easily conduct a Directed Scanning as they represented truly strong processes in the system. An example of that is the head of a surgery clinic. When I made the interview with this man I found that he could quickly describe his perspective of the environment. In his mind the environment was mainly limited to professional factors relevant to surgery. But it was not only restricted to medical items but also to social ones. One example is when he described the problem behind fractures on the neck of the femur. Mainly women are affected by this sort of fracture and it is caused by the lack of calcium. He saw two main reasons for this problem; women have started to smoke too much and they are getting too skinny. He actually described a very deep interest in social factors and was engaged in several discussions and projects against fashion habits detrimental to the medical health. With the exception of other clinics relevant to his operation he did not spontaneously mention the rest of the County Council as being a relevant part of the environment.

After I explicitly asked him about his view of the County Council he quickly replied: "We try to protect ourselves from them!". This was a quite surprisingly frank answer and he then described that messages from the central level in the County Council were announced at the clinic at a special meeting every Monday. At that meeting they took the minutes which were sent back to the administration of the County Council. It was their method of keeping that part of the environment at an arm's length distance.

7. 3. Conclusions

In this chapter I have shown how the theoretical model can be applied to the various scanning behaviours in the organisations of the study. I have found that the model offers meaningful explanations to these behaviours. The various components of the model I have found sufficient to explain the differences in behaviour.

The model gives clear indications that different organisational situations affect scanning behaviour differently. The most preferable situation is, of course, when the invironment stimulates a scanning targeted enough to the relevant enacted environment but wide enough to cover aspects relevant to the contextual system of the task. It is also preferable that the result of the scanning is strengthening the scanner's constructive perspective of reality. Thus, the ideal situation is when Directed Scanning contributes to Constructive Perspectives. What circumstances may create this situation?

It is possible to extract two important prerequisites for the occurrence of this scanning situation:

8. Implications

In this chapter I will elaborate on the theoretical and practical implications the model would have, if it were to hold true.

8. 1. Practical Implications

As I stated earlier there are much evidence showing the problematic nature of environmental scanning and the organising of BI. It seems that one important factor had been left unattended; spontaneous environmental scanning has been the missing link in BI. The results from this research point out some measures by which an organisation can improve its organisational attention and BI.

8. 1. 1. Optimising Spontaneous Environmental Scanning

There are many organisational measures to be taken in order to create an invironment for optimal spontaneous environmental scanning. Such measures can be taken in several steps and within several management areas. I will here give my recommendations of such measures.

8. 1. 1. 1. Diagnosing the Spontaneous Environmental Scanning

The foundation of the organisation's environmental scanning is the spontaneous environmental scanning. It is therefore of utmost importance that the General Management diagnoses the efficiency of the spontaneous environmental scanning and analyses what organisational factors inhibit the development of an optimal spontaneous environmental scanning.

To "know yourself" (*gnothi seauton* in ancient Greek) as it is engraved in Apollo's temple in Delphi is the same thing, in our modern world, as to understand the perspectives of our employees. Far too often the general managers think that decision-makers below themselves share their own perspectives. In my experience, they seldom do. Nevertheless, the general management willingly delegates decision power down in the organisation and are surprised when a symptom of anarchy emerges. The really tragic situation occurs when the general management on top of that establishes a function for BI and feeds the BI people with their own perspective. As the BI then disseminates its findings into the organisation, no one understands the messages. As in ancient Rome, the messengers are consequently being "shot on spot". That is often the cruel reality for people working with BI. There are few survivors! And all this trouble because of the lack of sufficient analysis in the first place.

If the work of developing the environmental scanning starts with the diagnosis of the spontaneous environmental scanning, two major advantages can be obtained:

working invironment as well as from the system invironment besides intrinsic motivating factors.

Recruiting

The most basic measure to be taken is recruiting. It is important in the selection of new employees to be aware of the implication of *expertness* for the scanning behaviour.

Of course it is not so very uncommon to argue for selection of expertness, but the contribution I would like to give in this respect is the importance of the tacit knowledge. This knowledge has been mostly associated with the expertness in physical performance, but it is also fundamental to the scanning behaviour, as scanning is a proceduralised and highly automatic behaviour. And as such it is very active as a selection mechanism of stimuli. It makes the individual sensitive to stimuli with certain features corresponding to the features of the stimuli connected to sensemaking components in the memory structure and it is vital as memorised logic of reasoning in the experience of certain situations. As expertness in this sense is tacit knowledge it is probably not possible to detect by ordinary selection methods, which makes it more efficient to use methods of assessment instead.

Assignment

When people are assigned to certain functions in an organisation it may be difficult to get a really good picture of the optimum in that placement. The individual might not ever have experienced a situation with intrinsic motivation before. So the individual's own reaction to the working situation is not a very good symptom of the right placement. It is therefore important to use the technique of job rotation and try to minimise the use of titles. The less people have reasons to cling to a certain position, the greater the probability that the individual will gradually increase the scanning ability. Another advantage with job rotation is that the communication of general precepts is facilitated as people tend to increase their experience of transparency.

Empowerment

This is a very misused word in management, as Argyris (1998) has recently pointed out. I think my contribution gives an additional argument for empowerment. By distributing the decision power in the organisation in such a way that responsibility is matched with authority, people will be inclined to increase the perception of their enacted environments, if the general precepts are transferred efficiently as well. If the perceived enacted environments are expanded it implicates three important advantages:

1. If only each member in the organisation expands his/her enacted environment slightly, it will have a large aggregated effect on the total enacted environment scanned by the whole organisation.
2. As the members expand their enacted environments, these will become more overlapping. This will in turn increase the possibilities for people to communicate their perspectives to each other, as they will find they have shared interests in certain issues.
3. As enacted environments increase, the areas in-between enacted environments become smaller. Thus, the blind spots of the organisation will be fewer and smaller.

helplessness, but rather inspire people to use their active mental search mechanism. The system must be able to serve the users' interesting options to find information, not to disseminate already found information.

Another important aspect of the system is to offer help in the technicalities of finding information. It is a well-known fact that the biggest problem for people in searching computerised information systems is to find the sources. Therefore the development of "intelligent agents" has been one of the most important areas of evolution in systems such as the Internet. Other functions are important to improve as well. One is the development of possibilities for manipulation of data. People can release much creativity in using the information if the system can supply good opportunities for information manipulation/simulation.

Another problem with information systems is their built-in characteristic to standardise and narrow the communication (Hedberg & Jönsson, 1976; Gärdenfors, 1996). To some extent this imperfection can be reduced by offering flexibility, but basically a computerised system, as long as it is based on serial information processing, will always be too thin to suit the parallel processing capacity of the brain. It is therefore wise to demarcate the communication through computerised information systems to those situations where scale advantages can be obtained. This implies that it is important to combine computerised communication with possibilities for people to communicate person-to-person.

Finally, I think my model sheds a new light on the problem of information overload. As I have argued information overload is not a problem related to overload of irrelevant information. Whether a certain piece of information is irrelevant or not is a matter of the information's suitability to fit into a certain sensemaking process. As that process is taking place in the brain of the sensemaker the amount of information that can be processed is limited to the capacity of the working memory. What to pick up in this process is decided by the brain in the selection of stimuli in the transient sensory stores. Stimuli that have neither features nor represent a course of events that have correspondence to the memory structure will be regarded as irrelevant and will consequently not contribute to the experience of information overload. Only stimuli that represent familiar features or a familiar course of events/logic of reasoning will do that, as they will pass the transient sensory stores and force the brain to process the information. It is, however, a difference between those stimuli that have familiar features and those who represent a familiar course of events/logic of reasoning. Sensemaking is the process of interpreting the meaning of the stimuli. If the stimuli only contain familiar features they have a rather low intrinsic logic and will only act as indicators of a possible logic of reasoning. These stimuli therefore require quite substantial work by the brain to interpret them. The more logic the stimuli have intrinsically (and this logic is familiar to the interpreter) the less strain they put on the working memory in the use of them in the sensemaking process. This would also explain why person-to-person communication of perspectives is so powerful in the sensemaking process; it takes advantage of the developed ability of the brain to process information parallelly and it puts a minimal strain on the working memory, at the highest possible intellectual level of information refinement. As for the design of information systems this problem would have the important implication that much of the work done by "web-designers" and others who try to make stimuli in information systems as appetising as possible, combined with the neglect of building intelligent options for the users to make their own choices, probably increases the experience of information overload rather than limits it.

8. 1. 2. 1. Measures for Optimising the BI Function

Efficient BI must be conducted with professional methods; the intelligence cycle. My research does not give any particular contribution to the management of that process, and it has not been my intention. There are, however, other concerns of the intelligence process that my research addresses: the definition of the intelligence domain, the location of the BI function in the organisation, the autonomy of the BI function, the staffing of the BI function and the dissemination of intelligence.

Defining the intelligence domain

In an organisation where the spontaneous environmental scanning is diagnosed and optimised people contribute to the organisational attention with their Directed Scanning. The enacted environments have been expanded to an optimum and perspectives can efficiently be communicated. Nevertheless, everyone will be restricted by their cognition and limitations in their foci. Regardless of how efficiently they scan the environment there will be blind spots in between the enacted environments, and parts of the contextual and most of the remote environment will be insufficiently covered by the spontaneous scanning. In order to cover efficiently those parts as well, it is necessary to establish a function for organised environmental scanning; a BI function.

In this situation the enacted environments are known, both regarding their domain and their relative position to each other. The location of the blind spots can therefore be determined as the discrepancy between the aggregated domain of the organisational enacted environments and the sum of the enacted environments. Thus, the first domain for the BI function to cover is the blind spots that are of strategic importance. It is not probable that every blind spot is problematic from a strategic perspective. In fact most of them are likely to represent rather trivial information which is obvious for those who have enacted environments bordering to the spot. But the spots representing information of neglected but strategically important value are important for the BI function to attend to. And in most cases those spots are the ones to be most "blind", because they contain stimuli that are very unfamiliar to people with the neighbouring enacted environments. People cannot use their expertness to interpret the meaning of the stimuli.

The total map of the organisational enacted environment gives input to determine what contextual areas to cover by the BI function. One part of the contextual environment can be determined as important as it bears a logical relationship to the aggregated enacted environment. The reason why it is not covered by anyone is mainly because no one can make the inference from his/her particular enacted environment to that contextual environment; the relationship is on the aggregated level rather than the individual one. Another part of the contextual environment that might be of interest is the one that has no obvious relationship to the aggregated enacted environment, but it can be speculated that such a relationship could exist. Of course this is the more creative part of the BI function's responsibility, but an important part. There might even be parts of the remote environment that the BI function can define as relevant to cover. As the BI function scans and analyses these distant parts of the environment it can make good use of the knowledge of the nature of the enacted environments, as a foundation for the choice of information and choice of analytical approach. It is difficult to make distant information seem relevant to people who are fully occupied with events in their

minimised. This is done by giving the BI function full autonomy. It implies espoused authority to monitor and analyse any issue or any area in the environment and the invironment. Experiences from the political intelligence show very clearly the risk, though, that the intelligence function starts to act as a "State within a State" if it is given full autonomy. The only way to solve this problem is to stick to democratic principles. Only a BI function fully acting under democratic principles can be given autonomy. If it is not acting in a democratic context it will very soon be perceived as a threat and create distrust in the organisation.

Staffing

A very common mistake is to staff the BI function with young ambitious men and women, just recently graduated from prestigious universities. They have neither the necessary experience nor the necessary anchorage in the organisation. As the fundamental characteristic of a good BI function is to understand the essence of the enacted environments, it is necessary to have practical experience. But the person to be appointed BI manager must also be ready to leave his/her former enacted environment. So, the appointment to BI manager should be regarded as a promotion of specially skilled individuals, given good introduction into their new roles.

But as people tend to be caught in an enacted environment anyway it is important carefully to design the assignments as BI managers. There are basically two types of BI managers to develop: the *task-related* and the *context-related.*

The task-related BI manager is the one who will operate on a specific area in the environment. As I previously indicated it is only the one acting in a situation who can really fully attend to it. This is done at the expense of locking the perspective to that particular enacted environment. If the organisation shall efficiently scan and analyse certain important parts of the environment, it could be a certain blind spot or a certain domain in the contextual environment for instance, some individuals must be located as actors in that environment. An example of that is the company Manducher (Docherty, 1995). It is a French producer of plastic components to the car industry. The customers of Manducher are all the major European car brands. One basic criterion for Manducher's competitive strength is the ability to be prepared for the new demands from the customers - the car manufacturers. In order to get the right signals from the customers, Manducher has their own people at the development departments of the strategically important car producers. They are actually working in the processes, and report the state of the art and the trends in progress. The general management of Manducher translates these signals into specifications of what competence the company must develop in order to meet the demand from the customers in a foreseeable future. Thus, this arrangement gives Manducher a good, and for its purpose, efficient scanning of a part of the contextual environment that would otherwise be difficult to cover. By actually taking an active part in the product development of the customers, Manducher gets a "hands-on-feeling" of what is going on.

The context related BI manager is the one who is responsible for the speculative thinking. This individual should be as disconnected as possible from particular enacted environments. It is a very difficult role to play, and it requires much devotion to it both from the individual and the organisation. But just as the almighty King needs his jester, the strong preceptual organisation needs its context related BI manager.

less easy to make sense of, but they do not make sense to anybody until somebody has made sense of them. The fundamental resource for sensemaking is the parallel processing ability of the human brain and as long as the computer technology has not yet been able to make computers with that ability, the human brain will still be the place where the learning takes place. So, my conclusion regarding this first question is that the organisational precepts are consequences of historical events and they are active as perspective-giving entities in the perspective-taking processes to the extent they make sense, which in turn has an impact on the scanning behaviour that generates stimuli for the learning process.

Regarding the second question, if it is possible to learn how to change perspectives, what Argyris & Schön refer to as "double loop learning", I think the crucial question is whether this is an individual or collective phenomenon. People can obviously become more or less inclined to re-frame. In every human brain there are forces working both pro and con re-framing. As the expertness increases by the accumulation of domain specific memories the individual tends to become increasingly conservative. On the other hand as the knowledge about the coherence in reality increases as well, the individual will face increased options to make new inferences as the expertness develops. It might be that only a tiny stimulus may have a dramatic effect, as claimed by Gibson, but it is more likely that the influence of other people will contribute most to the change in perspectives. This indicates that double loop learning is a social phenomenon to a great extent. There is, however, one possibility for an individual to increase the inclination for re-framing regardless of the social context, and that is through practising the technique of reflection, as argued by Schön. I claim, though, that reflection can only be of assistance in the re-framing process, but without a social interaction in which the individual can be stimulated and confronted with other perspectives it will be very hard to make use of the infinite variations in coherence of the reality and fundamentally re-frame the mind.

Entrepreneurship

Entrepreneurial behaviour is often related to several personality factors (Wärneryd, 1988). The two most dominant factors are *novelty seeking* and *purposefulness in action*. One basic characteristic of successful entrepreneurs is that they search more information than others and they do it with a specific purpose. In my terminology they obviously conduct Directed Scanning. Entrepreneurship is, however, also influenced by the context. As it is possible to create prerequisites for Directed Scanning it is likely that this effect could be extended to facilitate entrepreneurial behaviour. Creating the major advantage that people would not have to leave their jobs to become entrepreneurs.

Organisational Renewal

In BI literature is often emphasised the importance of BI for organisational renewal. I do not find itself-evident, however, that the prophecies created by a BI function necessarily give that result.

Organisational renewal is a matter of change. As Zhou (1993) has found, changes in organisational rules occur when the organisation is subjected to environmental surprises. A crucial question is therefore if an organisation can change its way of functioning before it is subjected to such environmental influence. Thus, can there be an organisational renewal based on the anticipations created by the scanning/BI activities?

To summarise: My contribution to the subject of organisational renewal is that it requires a balanced development of three managerial domains:

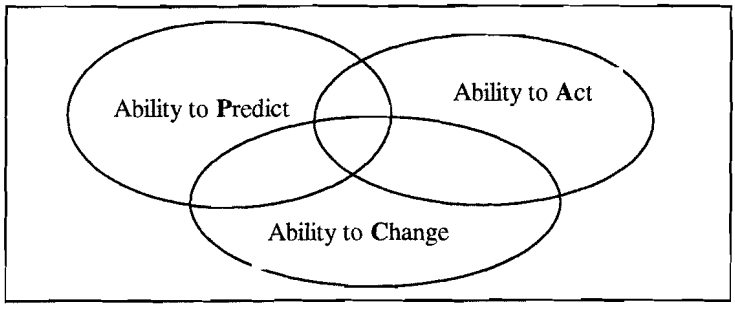


Figure 17: Interaction of three managerial domains for organisational renewal.

8. 3. Further Research

As I indicated in the beginning of this report it covers only a temporal cut from a larger research process I am involved in. There is much research to be done in the future.

8. 3. 1. Impact of Personality

One group of possible research questions addresses the concern to find more detailed relationships between various individual factors and scanning behaviour.

In my model I have not taken into account different personalities or social characters. Deliberately I have not considered those aspects as I had an intention to form a basic perspective on the scanning behaviour. The processes I have tried to describe are dependent on very basic cognitive processes and would probably be the same for all personalities. But personality plays of course a role here and I will try to give a brief description of the theoretical areas that would probably be worth while looking into in further research regarding *Spontaneous Environmental Scanning.*

Very interesting recent research in psychiatry has revealed insights in the genetic disposition for a number of personal traits (Cloninger *et al*, 1993). The model proposed by these researchers defines the personality of an individual as an interaction between temperament and character. The temperamental factors influence the behaviour automatically. They work directly from the unconscious. There are four temperamental factors, which all are genetically based:

1. *Novelty seeking*. This temperament finds its expression in traits as excitability, impulsiveness, extravagance and disorganisation.
2. *Harm avoidance*. It finds its expression in traits as pessimistic anxiety, fear for insecurity, shyness and weariness.

One personality character that is probably of major importance for the scanning behaviour is the *sense of coherence* (Antonovsky, 1991). Antonovsky studied people who had experienced imprisonment in concentration camps. Some of them got permanent damages in their personalities from their horrible experiences, while others were hardly affected at all in their personality. Antonovsky found that those who were not hurt by the experience had a good sense of coherence. This is defined as a good ability to understand causal relationships in the environment. Antonovsky gave no explanation to where the ability comes from, but it seems obvious that it must be composed of many different traits, which are only possible for me to speculate on. One aspect must be pure intelligence, i.e. the ability of the brain to combine stimuli. A more important aspect is probably the self-image that the individual has. It is known that the first two years of existence are the most important for the development of the personality. It is the time before the child has learned to conceptualise the reality by using the language. During that time the child has difficulties to separate the self from the environment. Everything is "self". If the child is lovingly treated by its parents and others during that time it learns to have a trustful and harmonic relationship with the environment. This sense of trust fosters a feeling of trusting the impressions. Therefore it becomes easier for the individual to separate the meaning of the impressions from the meaning of the self. By separating the perception of the self from the external impressions the individual can more easily make the analysis of the coherence without letting the perceived meaning of the self be influenced by that analysis. As the memories that establish this sense of coherence relate back to experiences when the individual did not have any linguistic concepts they are established purely as emotional memories and therefore located at the very bottom of the memory storage. It makes it a very fundamental character of the personality.

The notion that the first two years are important for the development of intellectual abilities is supported by recent research. Sroufe (1999) found that resilience in youngsters was explained by a history of early positive care, i.e. attachment security across the 12-18 month period. Sameroff (1999) found that children growing up under early secure conditions could use their mental ability much better than those deprived of that privilege.

Sense of coherence as being our basic trust in reality is, together with our sense of time, probably the cognitive foundation for perception. They tell us that there is a world out there that is made up from interrelated events and that it changes as time goes by. Environmental scanning is the behaviour of finding out what is going on in that reality.

One possible continuation of this research is therefore to study the impact of personality traits and social acquired characters on the behaviour of Spontaneous Environmental Scanning.

8. 3. 2. Impact of Situated Fit

My model presumes that there is a certain degree of fit between the expertness of the individual and the requirements of the situation. In reality people find themselves more or less well placed in the situation they experience. From my reasoning everyone tries to find a situation that fits well to his/her competence, but there might be restrictions in doing that successfully. The fit between competence and situation does have an impact on the individual's possibility to deal creatively with reality.

This theory is supported by evidence from neurology. Both very low levels of consciousness, such as boredom, and very high, such as anxiety, will diminish the individual's ability to perform a willed act, including the direction of attention (Posner & Raichle, 1994).

In further research it would be very interesting to examine how individuals' competence both as their actual competence and their self-imaged competence acts in relation to situational factors to influence the scanning behaviour. It can be hypothesised that situated competence might be a link between the precepts of the working situation and the intrinsic motivating factors.

8. 3. 3. Impact of Emotional Factors

Montgomery (1994) has proposed in a perspective model of decision-making that the observation of an object is made from an evaluative perspective, from a focus on the negative side to a positive. These two evaluation dimensions are assumed to be parallel to each other. The individual establishes an evaluation of the facts in accordance to his/her own previous experiences. In a recent paper (Montgomery, 1999) he suggests that the individual's previous experiences may affect his/her way of thinking to either reflective thinking, which aims the individual to become aware of external facts, or to non-reflective thinking, which gives the individual motives for not being aware of external facts.

As the non-reflective thinker is not aware of this motivating factor it works only as an emotion against the wish to understand how the external reality is organised. This leads me to the conclusion that there are certain emotional states that might inhibit environmental scanning as I have described it in the proposed model. A non-reflective thinker (=emotionally blocked individual) is probably not influenced by the organisational precept in the same way as the reflective thinker.

In the case of Internal Scanning there seems to be a link between motivating factors and scanning intensity. In those situations people are perhaps subjected to very special emotional pressure which creates this effect. So, future research on the impact of emotional factors may be able to find a perspective on that phenomenon.

Thus, the influence of certain states of emotion on scanning behaviour is another interesting field for further research.

8. 3. 4. Impact of Specific Organisational Factors

Another group of research questions addresses the concern to establish more detailed relationships between various invironmental factors and scanning behaviour, such as:

- The influence of various *general precepts* acting through the co-ordinating logic, the transparency and the knowledge transfer.
- The influence of *precepts in the working invironment*, such as arenas, teams, information systems etc.
- The influence of various organisational circumstances creating intrinsic motivation and synergistic extrinsic motivation.

References

Abrahamson, L. Y., Seligman, M., Teasdale, J. D. 1978. Learned helplessness in humans; critique and reformulation. *Journal of Abnormal Psychology,* 87, 49-74.

Aguilar, F. 1967. *Scanning the Business Environment.* New York: Macmillan.

Ajzen, I. 1977. Intuitive theories of events and the effect of base-rate information on prediction. *Journal of Personality and Social Psychology, 35,* 303-314.

Albert, S. & Whetten, D. 1985. Organizational Identity. In Cummings, L. L. & Staw, B. M. (eds.), *Research in Organizational Behavior,* 263-295. Greenwich, Ct: JAI Press.

Aldrich, H. 1979. *Organizations and Environments.* Englewood Cliffs, NJ: Prentice-Hall.

Allen, V. L. & Wilder, D. A. 1980. Impact of group consensus and social support on stimulus meaning: meditation of conformity by cognitive restructuring. *Journal of Personality and Social Psychology, 39,* 1116-1124.

Allio, R. J. 1986. Forecasting: The Myth of Control. *Planning Review, May,* 6-11.

Allison, G. T. 1971. *Essence of Decision: Explaining the Cuban Missile Crisis.* Boston: Little Brown.

Amabile, T. M. 1996. *Creativity in Context.* Boulder: Westview Press.

Anderson, J. R. 1976. *Language, memory, and thought.* Hillsdale, NJ: Erlbaum.

Anderson, J. R. 1982. Acquisition of cognitive skill. *Psychological Review, 89,* 369-406.

Anderson, J. R. 1993. *Rules of the mind.* Hillsdale, NJ: Erlbaum.

Anderson, J. R. 1995. *Cognitive Psychology and Its Implications.* New York: W. H. Freeman and Company.

Anderson, J. R. & Schooler, L. J. 1991. Reflections of the environment in memory. *Psychological Science, 2,* 396-408.

Anderson, R. C. & Pichert, J. W. 1978. Recall of previously unrecallable information following a shift in perspective. *Journal of Verbal Learning and Verbal Behavior, 17,* 1-12.

Ansoff, H. I. 1984. *Implanting Strategic Management.* Englewood Cliffs, New Jersey: Prentice-Hall.

Antonovsky, A. 1991. *Hälsans mysterium.* Stockholm: Natur och Kultur.

Argyris, C. 1998. Empowerment: The emperor's new clothes. *Harvard Business Review, 11,* 98.

Bower, G. H., Monteiro, K. P., & Gilligan, S. G. 1978. Emotional mood as a context for learning and recall. *Journal of Verbal Learning and Verbal Behavior, 1,* 573-587.

Bowman, C. & Daniels, K. 1995. The influence of functional experience on perceptions of strategy priorities. *British Journal of Management, 6,* 157-167.

Boyd, B. K. & Fulk, J. 1996. Executive scanning and perceived uncertainty: a multidimensional model. *Journal of Management, 22, 1,*1-21.

Brown, A. & Weiner, E. 1984. *Supermanaging: how to harness change for personal and organizational success.* New York: McGraw-Hill.

Brown, J. K. 1979. This business of issues: coping with the company's environments. *The Conference Board Report,* No. 758.

Bruner, J. S. 1957. On perceptual readiness. *Psychological Review, 64,* 123-152.

Brunsson, N. 1989. *The organization of hypocrisy. Talk, decisions and actions in organizations.* New York: Wiley.

Brunsson, N., & Olsen, J. P. 1993. *The reforming organization.* London: Routhledge.

Burt, R. 1982. *Toward a structural theory of action: network models of social structure, perception and action.* New York: Academic Press.

Calori, R. 1989. Designing a business scanning system. *Long Range Planning* (UK), *Feb,* 69-82.

Camillus, J. & Armstrong, W. J. Jr. 1989. Strategic Vision and the Real World. *Conference proceedings.* Oxford, Ohio: The Planning Forum.

Campbell, D. T. 1958. Systematic error on the part of human links in communication systems. *Information and Control, Dec,* 334-369.

Chakravarthy, B. S. 1984. Strategic self-renewal: A planning framework for today. *Academy of Management Review, July,* 536-547.

Chakravarthy, B. S. & Doz, Y. 1992. Strategy process research: Focusing on corporate self-renewal. *Strategic Management Journal. Summer special issue, 13,* 5-14.

Chamberlin, E. H. 1933. *The Theory of Monopolistic Competition.* Cambridge: Harvard University Press.

Channon, D. F. & Jalland, M. 1979. *Multinational Strategic Planning.* New York: AMACOM.

Cheng, P. W. & Holyoak, K. J. 1985. Pragmatic reasoning schemas. *Cognitive Psychology, 17,* 391-416.

Daft, R. L. & Weick, K. E. 1984. Toward a model of organizations as interpretation systems. *Academy of Management Review, 9, 2,* 284-295.

Davidson, J. M. & Davidson, R. J. 1980. *The psychobiology of consciousness.* New York: Plenum.

Davenport, E. & Cronin, B. 1994. Competitive intelligence and social advantage. *Library Trends, 43, 2,* 239-252.

Deci, E. L. & Ryan, R. M. 1987. The support of autonomy and the control of behavior. *Journal of Personality and Psychology, 53,* 1024-1037.

Dedijer, S. 1986. British Intelligence: the rainbow enigma. *The International Journal of Intelligence and Counterintelligence, 1, 2,* 73-90.

Deutsch, M. & Gerard, H. B. 1955. A study of normative and informational social influences upon individual judgement. *Journal of Abnormal Social Psychology, 51,* 629-636.

Devine, P. G., Sedikides, C. & Fuhrman, R. W. 1989. Goals in social information processing: the case of anticipated interaction. *Journal of Personality and Social Psychology, 56,* 680- 690.

Dickstein, L. S. 1978. The effect of figure on syllogistic reasoning. *Memory and Cognition, 6,* 76-83.

Diffenbach, J. 1983. Corporate environmental analysis in large US corporations. *Long Range Planning, June,* 107-116.

Dill, W. R. 1958. Environment as an influence on managerial autonomy. *Administrative Science Quarterly, 2,* 409-43.

Docherty, P. 1995. *Manducher: a capacity-based strategy in the plastics industry.* Stockholm: IMIT.

Doise, W. & Mugny, G. 1984. *The social development of the intellect.* Oxford: Pergamon Press.

Dutton, J. E. 1988. Perspectives on strategic issue processing: insights from a case study. In Shrivastava, P. & Lamb, R. (eds.), *Advances in Strategic Management, 5,* 223-244. Greenwich, Ct: JAI Press.

Dutton, J. E. 1992. The making of organizational opportunities - an interpretative pathway to organizational behavior. *Research in Organizational Behavior, 15,* 195-226.

Dutton, J. E. 1993. Interpretations of automatic: a different view of strategic issue diagnosis. *Journal of Management Studies, 30,* 340-357.

Ericsson, K. A. & Lehmann, A. C. 1996. Expert and exceptional performance: evidence of maximal adaptation to task constraints. *Annual Review of Psychology, 47,* 273-305.

Ericsson, K. A. & Simon, H. A. 1993. *Protocol analysis: verbal reports as data.* Cambridge, MA: MIT Press.

Ericsson, K. A. & Smith, J. 1991. Prospects and limits in the empirical study of expertise. In Ericsson, K. A. & Smith, J. (eds.), *Toward a general theory of expertise: prospects and limits.* Cambridge: Cambridge University Press.

Fahey, L. & King, W. 1977. Environmental scanning in corporate planning. *Business Horizon,* 61-71.

Fahey, L., King, W. & Narayanan, V. 1981. Environmental scanning and forecasting in strategic planning - the state of the art. *Long Range Planning, 14, 1,* 32-39.

Fazio, R. H., Effrein, E. A. & Falender, V. J. 1981. Self perception following social interaction. *Journal of Personality and Social Psychology, 41,* 232-242.

Feldman, M. 1989. *Order without design.* Stanford, CA: Stanford University Press.

Fiske, S. T. & Neuberg, S. L. 1990. A continuum of impression formation, from category-based to individuating processes: Influences of impression and motivation on attention and interpretation. In Zanna (ed.), *Advances in experimental social psychology, 23,* 1-74. New York: Academic Press.

Fiske, S. T. & Taylor, S. E. 1991. *Social cognition.* 2nd ed. New York: McGraw-Hill.

Fiske, S. T. & von Hendy, H. M. 1992. Personality feedback and situational norms can control stereotyping processes. *Advances in Experimental Social Psychology, 62,* 577-596.

Fleming, J. H. & Darley, J. M. 1991. Mixed messages: the multiple audience problem and strategic communication. *Social Cognition, 9,* 25-46.

Forrester, J. W. 1965. A new corporate design. *Industrial Management Review, 7, 1,* 5-16.

Frable, D. E. S., Blackstone, T. & Scherbaum, C. 1990. Marginal and mindful: deviants in social interactions. *Journal of Personality and Social Psychology, 59,* 140-149.

Frankelius, P., & Rosén, C.-G. 1993. *Företaget & omvärlden. Handbok i strategisk information.* Stockholm: Liber-Hermods.

Franklin, S. G., Rue, L. W., Boulton, W. R. & Lindsay, W. M. 1981. A grass roots look at corporate long range planning practices. *Managerial Planning, May /June,* 13-18.

Fredericks, P. & Venkatraman, N. 1988. The rise of strategy support systems. *Sloan Management Review, Spring,* 47-54.

Glueck, W. F. & Jauch, L. R. 1984. *Business policy and strategic management.* 4th ed. New York: McGraw-Hill.

Godden, D. R. & Baddeley, A. D. 1975. Context-dependent memory in two natural environments: on land and under water. *British Journal of Psychology, 66,* 325-331.

Goldman-Rakic, P. S. 1992. Working memory and mind. *Scientific American, 267,* 111- 117.

Greeno, J. G. 1974. Hobbits and orcs: Acquisition of a sequential concept. *Cognitive Psychology, 6,* 270-292.

Greeno, J. G., Smith, D. R. & Moore, J. L. 1993. In Detterman, D. K. & Sternberg, R. J. (eds.), *Intelligence, cognition and instruction,* 99-167. Norwood, NJ: Ablex.

Guba, E. G. & Lincoln, Y. S. 1989. *Fourth Generation Evaluation.* Newbury Park, Cal: Sage Publications.

Gärdenfors, P. 1996. Fängslande information. Stockholm: Natur och Kultur.

Hall, R. 1976. A system pathology of an organization. The rise and fall of the old Saturday Evening Post. *Administrative Science Quarterly, 21,* 185-211.

Hambrick, D. C. 1981. Specialization of environmental scanning activities among upper level executives. *Journal of Management Studies, 18, 3,* 299-320.

Hambrick, D. C. 1982. Environmental scanning and organizational strategy. *Strategic Management Journal, 3, 2,* 159-174.

Hammen, C., Marks, T., deMayo, R. & Mayol, A. 1985. Self-schemas and risk for depression: A prospective study. *Journal of Personality and Social Psychology, 49,* 1147-1159.

Hamrefors, S. 1984. Informationsförsörjningen i företaget. In Jöever, M. (ed.), *Informationens möjligheter.* Stockholm: Liber.

Hamrefors, S. 1992. Practical implementation of business intelligence services in business organizations. In Sigurdson, J., Tågerud, Y. (eds.), *The intelligent corporation.* London: Taylor Graham Publishing.

Hamrefors, S. 1995. Organisationsutveckling för omvärldsbevakning. In Löwstedt, J. (ed.), *Människan och strukturerna. Organisationsteori för förändring.* Stockholm: Nerenius & Santérus Förlag

Hamrefors, S. & Stymne, B. 1998. Utveckling av omvärldsbevakning för organisatoriskt lärande. In Borg, L., Hamrefors, S., Nicander, L., Nilsson, L.-L. & Wormuth, D. W. (eds.), *Omvärldsbevakning för en ny tid. 17 perspektiv för Sverige.* Stockholm: SAF.

Hogarth, R. M. 1980. *Judgement and choice: the psychology of decision.* Chichester: Wiley

Holyoak, K. J. & Nisbett, R. E. 1988. Induction. In Sternberg, R. J. & Smith, E. E. (eds.), *The psychology of human thinking,* 50-91. Cambridge, MA: Cambridge University Press.

Huff, A. S.1982. Industry Influence on Strategy Formulation. *Strategic Management Journal, 3,* 119-131.

Hutchins, E. 1991. The social organization of distributed cognition. In Resnick, I. B., Levine, J. M. & Teasley, S. D. (eds.), *Perspectives on socially shared cognition,* 283-307. Washington: American Psychology Association.

Hutchins, E. 1995. *Cognition in the wild.* Cambridge, MA: MIT Press

Ingvar, D. H. 1985. "Memories of the future": an essay on the temporal organization of conscious awareness. *Human Neurobiology, 4,* 127-136.

Ingvar, D. H. 1991. *Tidspilen- Cerebrala essäer.* Stockholm: Alba.

Ingvar, D. H. 1997. A 'Kantian' model of consciousness. *Proceedings Italian Association of Philosophy.* Naples: In print.

Ingvar, D. H. & Sandberg, C.-G. 1991. *Det medvetna företaget. Om ledarskap och biologi.* Stockholm: Timbro.

Isabella, L. 1990. Evolving interpretations as a change unfolds: how managers construe key organizational events. *Academy of Management Journal, 33, 1,* 17-41.

Jacobs, R. C. & Campbell, D. T. 1961. The perpetuation of an arbitrary tradition through several generations of a laboratory microculture. *Journal of Abnormal Social Psychology, 62,* 649-658.

Jacoby, L. L. 1983. Remembering the data: Analyzing interactive processes in reading. *Journal of Verbal Learning and Verbal Behavior, 22,* 485-508.

Jain, S. C. 1984. Environmental scanning in US corporations. *Long Range Planning (UK), April,* 117-128.

Janis, I. L. 1982. *Groupthink.* 2nd ed. Boston: Houghton Mifflin.

Jarenko, L. M. & Wahlgren Wall, M. 1986. *Information som konkurrensmedel.* Göteborg: IHM Läromedel.

Jennings, D. F., Amabile, T. M. & Ross, L. 1982. Informational covariation assessment: data-based vs. theory-based judgements. In Tversky, A., Kahneman, D. & Slovic, P. (eds.), *Judgement under uncertainty: heuristics and biases,* 211-230. Cambridge, MA: Cambridge University Press.

Koberg, C. 1987. Resource scarcity, environmental uncertainty, and adaptive organizational behavior. *Academy of Management Journal, Dec,* 798-807.

Kotovsky, K., Hayes, J. R. & Simon, H. A. 1985. Why are some problems hard? Evidence from the tower of Hanoi. *Cognitive Psychology, 17,* 248-294.

Krauss, H. H. & Fussell, S. R. 1991. Constructing shared communication environments. In Resnick, I. B., Levine, J. M. & Teasley, S. D. (eds.), *Perspectives on socially shared cognition,* 172-200. Washington: American Psychology Association.

Kuiper, N. A. & Rogers, T. B. 1979. Encoding of personal information: Self - other differences. *Journal of Personality and Social Psychology, 37,* 499-514.

Kylén, B. 1985. What business leaders do - before they are surprised. In Lamb, R., Shrivastava, P. (eds.), *Advances in strategic management, 3,* 181-222, Greenwich, Ct: JAI Press.

Larkin, J. H. 1981. Enriching formal knowledge: A model for solving textbook physics problems. In Anderson, J. R. (ed.), *Cognitive skills and their acquisition.* Hillsdale, NJ: Erlbaum.

Latane, B., Williams, K. D. & Harkins, S. G. 1979. Many hands make light the work: the causes and consequences of social loafing. *Journal of Personality and Social Psychology, 37,* 822-832.

Laughlin, P. R. & Ellis, A. L. 1986. Demonstrability and social combination processes on mathematical intellective tasks. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 22,* 177- 189.

Lawrence, P. R. & Dyer, D. 1983. *Renewing American industry.* New York: Free Press.

Lawrence, P. R. & Lorsch. J. W. 1967. *Organization and environment.* Cambridge, MA: Harvard Graduate School of Business Administration.

Leidecker, J. K. & Bruno, A. V. 1984. Identifying and using critical success factors. *Long Range Planning (UK), Feb,* 23-32.

Leifer, R. & Delbecq, A. 1978. Organizational-environmental interchange: a model of boundary spanning activity. *Academy of Management Review, Jan,* 40-50.

Leifer, R. & Huber, R. L. 1977. Relations among perceived environmental uncertainty, organizational structure, and boundary spanning behavior. *Administrative Science Quarterly, March,* 235-248.

Lenz, R. & Engledow, J. 1986. Environmental analysis units and strategic decision making analysis: a field study of selected 'leading-edge' corporations. *Strategic Management Journal, Jan/Feb,* 68-89.

Magnusson, D. & Stattin, H. 1998. Person – Context interaction theories. In Damon, W. & Lerner, R. M. (eds.), *Handbook of Child Psychology. Volume 1: Theoretical models of human development*, 685-759. New York, NY: Wiley.

Maier, N. R. F. 1931. Reasoning in humans: II. The solution of a problem and its appearance in consciousness. *Journal of Comparative Psychology, 12,* 118-157.

March, J. G. 1991. Exploration and exploitation in organizational learning. *Organizational Science, 2,* 71-87.

March, J. G. & Olsen, J. P. 1979. *Ambiguity and choice in organizations.* 2nd ed. Bergen: Universitetsforlaget.

Markus, H. 1977. Self-schemata and processing information about the self. *Journal of Personality and Social Psychology, 35,* 63-78.

Markus, H. & Nurius, P. 1986. Possible selves. *American Psychologist, 41,* 954-969.

Markus, H. & Zajonc, R. 1985. The cognitive perspective in social psychology. In Lindzey, G. & Aronson, E. (eds.), *The handbook of social psychology.* 3rd ed., vol. 1, 137-230. New York: Random House.

Marr, D. 1982. *Vision.* San Francisco: W. H. Freeman.

Martin, M. D. & Owens, S. D. 1988. Management change in the project environment. *AACE Transactions,* 6.1-6.7.

McArthur, L. Z. 1980. Illusory causation and illusory correlation: Two epistemological accounts. *Personality and Social Psychology Bulletin, 6,* 507-519.

McCauley, C. 1989. The nature of social influence in groupthink: compliance and internalization. *Journal of Personality and Social Psychology, 57,* 250-260.

McCloskey, M. E. & Glucksberg, S. 1978. Natural categories. Well-defined or fuzzy sets? *Memory & Cognition, 6,* 462-472.

Mead, G. H. 1934. *Mind, self and society.* Chicago: The University of Chicago Press.

Meehl, P. E. 1954. *Clinical versus statistical prediction: A theoretical analysis of a review of evidence.* Minnesota: University of Minnesota Press.

Mendell, J. S. 1978. The practice of intuition. In Fowles J. (ed.), *Handbook of futures research.* Westport, Ct: Greenwood Press

Merton, R. K. 1957. *Social theory and social structure.* Glencoe: Free Press.

Meyer, D. E. & Schvaneveldt, R. W. 1971. Facilitation in recognition pairs of words: evidence of dependence between retrieval operations. *Journal of Experimental Psychology, 90,* 227-234.

Nemeth, C. & Kwan, J. L. 1987. Minority influence, divergent thinking and detection of correct solutions. *Journal of Applied Social Psychology Review, 17,* 786-797.

Nemeth, C., Mayseless. O., Sherman, J. & Brown, Y. 1990. Exposure to dissident and recall of information. *Journal of Personality and Social Psychology, 58,* 429-437.

Nisbett, R. E. & Ross, L. 1980. *Human inference: Strategies and shortcomings of social judgement.* Englewood Cliffs, NJ: Prentice-Hall.

Nisbett, R. E., Zukier, H. & Lemley, R. E. 1981. The dilution effect: non-diagnostic information weakens the implications of diagnostic information. *Cognitive Psychology, 13,* 248-277.

Norman, G. R., Brooks, L. R. & Allen, S. W. 1989. Recall by expert medical practitioners and novices as a record of processing attention. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 15,* 1166-1174.

Normann, R. 1975. *Skapande företagsledning.* Stockholm: Alba.

Ocasio, W. 1997. Towards an attention-based view of the firm. *Strategic Management Journal, 18,* 187-206.

Odom, R. Y. & Boxx, W. R. 1988. Environment, planning process, and organizational performance of churches. *Strategic Management Journal, 9, 2,* 197-205.

Osborne, R. E. & Gilbert, D. T. 1992. The preoccupational hazards of social life. *Journal of Personality and Social Psychology, 62,* 219-228.

Oxelheim, L. & Wihlborg, C. 1995. Measuring macroeconomic exposure: The case of Volvo cars. *European Financial Management, 1, 3,* 241-263.

Oxford English Dictionary. 1971. Complete text reproduced micrographically. Vol. II. London: Oxford University Press.

Pagels-Fick, G. 1999. *Att söka sin framtid. "Business intelligence" för affärsutveckling och strategisk precision.* Malmö: Industrilitteratur. In print.

Paulus, P. B. & Nagar, D. 1989. Environmental influences on groups. In Paulus, P. B. (ed.), *Psychology of group influence.* 2nd ed. Hillsdale, NJ: Erlbaum.

Pearce, J. A. II., Chapman, B. L. & David, F. R. 1982. Environmental scanning for small and growing firms. *Journal of Small Business Management, July,* 27-34.

Pearce, J. A. II., Robinson, R. B. Jr. 1985. *Strategic management.* 2nd edition. Homewood, Illinois: Richard D. Irwin.

Pelz, D. C. 1964. Freedom in research. *Science and technology, Feb,* 54-66.

Reinhardt, C., Lukaszewski, J. E. & Katz, A. R. 1987. Workshop: how to handle a crisis. *Public Relations Journal, Nov,* 43-47.

Roos, J. & von Krogh, G. 1995. *Organizational epistemology.* London: Macmillan.

Roos, J. & von Krogh, G. 1996. *Managing knowledge: Perspectives on cooperation and competition.* Beverly Hills, CA: Sage Publications.

Rosch, E. 1973. On the internal structure of perceptual and semantic categories. In Moore, T. E. (ed.), *Cognitive development and the acquisition of language.* New York: Academic Press.

Rossander, O. & Borg, L. (eds.), 1996. *Omvärldsbevakning och konkurrenskraft.* Stockholm: SAF.

Roush, G. B. 1991. A program for sharing corporate intelligence. *The Journal of Business Strategy, 12, 1,* 4-7.

Roy, S. P. & Chung, J. K. 1985. Early warning systems: a management tool for your company. *Managerial Planning, March/April,* 16-21.

Rumelhart, D. E. & Ortony, A. 1977. The representation of knowledge in memory. In Anderson, R. C., Spiro, R. J. & Montague, W. E. (eds.), *Schooling and the acquisition of knowledge,* 99-135. Hillsdale, NJ: Erlbaum.

Ryding, E., Brådvik, B. & Ingvar, D. H. 1996. Silent speech activates prefontal cortical regions asymmetrically. *Brain Language, 52,* 435-451.

Sameroff, A.1999. Can personal resourcefulness overcome environmental adversity? Paper presented at the *AAAS Annual Meeting* , Anaheim, Cal.

Sandström, B. 1988. *Business intelligence. Företagets underrättelsetjänst.* Stockholm: Liber.

Sarbin, T. R. & Allen, V. L. 1968. Role theory. In Lindsey, G. & Aronson, E. (eds.), *Handbook of social psychology.* 2nd ed, 488-567. Reading: Addison-Wesley.

Sawyerr, O. 1993. Environmental uncertainty and environmental scanning activities of Nigerian manufacturing executives: a comparative analysis. *Strategic Management Journal, 14, 4,* 287-299.

Schank, R. C. & Abelson, R. P. 1977. *Scripts, plans, goals and understanding.* Hillsdale, NJ: Erlbaum.

Schein, E. H. 1983. The role of the founder in creating an organizational culture. *Organizational Dynamics, 12, 1,* 13-28.

Schendel, D., Patton, G. R. & Riggs, J. 1976. Corporate turnaround strategies - a study of profit decline and recovery. *Journal of General Management, Spring,* 3-11.

Smith, S. M., Glenberg, A. & Bjork, R. A. 1978. Environmental context and human memory. *Memory & Cognition, 6,* 342-353.

Snyder, M. & Swann, W. B. Jr. 1978. Hypothesis-testing processes in social interaction. *Journal of Personality and Social Psychology, 36,* 1202-1212.

Snyder, N. H. 1985. Environmental volatility, Scanning 220. *Journal of Business Forecasting, Fall,* 19-23.

Solomon, P (ed.). 1961. *Sensory deprivation.* Cambridge, MA: Harvard University Press.

Sroufe, L. A. 1999. Changing the odds: The development of resilience. Paper presented at *The AAAS Annual Meeting,* Anaheim, Cal, 21-26 January.

Starbuck, W., Greve, A. & Hellberg, B. 1978. Responding to crises. *Journal of Business Administration, 9,* 111-137.

Stein, J. Managing the Future. 1986. *Business & Health, Aug,* 45-47.

Steiner, G. A., Kuhn, H. & Kunin, E. 1981. The new class of chief executive officer. *Long Range Planning, Aug,* 10-20.

Stoffels, J. D. 1994. *A comprehensive guide to environmental scanning.* Frome, UK: Pergamon

Stokols, D. 1972. On the distinction between density and crowding: some implications for future research. *Psychological Review, 79,* 275-277.

Stryker, S. & Statham, A. 1985. Symbolic interaction and role theory. In Lindzey, G. & Aronson, E. (eds.), *Handbook of social psychology.* 2nd ed. 311-378. Reading: Addison-Wesley.

Stymne, B. 1970. *Values and processes.* Lund: Studentlitteratur.

Stymne, B. 1993. *A note on distinctive competence.* Working Paper No. 1993: 56. Stockholm: IMIT

Suchman, L. 1987. *Plans and situated action: The problem of human-machine communication in experimental phonetics.* Springfield, IL: Charles C. Thomas.

Sutton, H, 1988, *Competitive intelligence.* New York: The Conference Board.

Svalander, P. A. 1979. *Att förnya sjukvårdens organisation.* Lund: Liber läromedel.

Swamidass, P. M. & Newell, W. T. 1987. Manufacturing strategy, environmental uncertainty and performance: a path analytic model. *Management Science, 33, 4,* 509-524.

Taylor, J. C. & Felten, D. F. 1993. *Performance by design: sociotechnical systems in North America.* Englewood Cliffs, NJ: Prentice Hall.

von Hertzen, G.1993. *The spirit of the game. Navigational aids for the next century.* Stockholm: Fritzes.

von Krogh, G., Roos, J., Slocum, K. 1994. An essay on corporate epistemology. *Strategic Management Journal, 15,* 53-71.

Voss, J. F., Green, T. R., Post, T. A. & Penner, B. C. 1983. Problem-solving skill in the social sciences. In Bower, G. (ed.), *The psychology of learning and motivation: advances in research and theory, 17,* 165-213. New York: Academic.

Vygotsky, L. 1978. *Mind in society.* Cambridge: Harvard Univ. Press.

Walker, G. 1985. Network position and cognition in a computer software firm. *Administrative Science Quarterly, 30,* 103-130.

Walsh, J. P. & Ungson, G. R. 1991. Organizational memory. *Academy of Management Review, 16, 1,* 57-91.

Watzlawick, P., Weakland, J. H. & Fisch, R. 1974. *Change. Principles of problem formation and problem resolution.* New York: W. W. Norton & Company

Weber, M. 1967. Subjective Meaning in the Social Situation. In Levitas, G. B., *Culture and consciousness: perspectives in the social sciences,* 156-169. New York: Braziller.

Weick, K. E. 1979. *The social psychology of organizing.* New York: McGraw-Hill.

Weick, K. E. 1989. Theory construction as disciplined imagination. *Academy of Management Review, 14,* 516-531.

Weick, K. E. 1995. *Sensemaking in organizations.* Thousand Oaks, CA: Sage.

Weick, K. E. & Gilfillan, D. P. 1971. Fate in arbitrary traditions in a laboratory microculture. *Journal of Personality and Social Psychology, 17,* 179-191.

Weick, K. E. & Roberts, K. H. 1993. Collective mind in organizations: heedful interrelating on flight decks. *Administrative Science Quarterly, 38,* 357-381.

Weiss, J. A. 1989. The powers of problem definition: the case of government paperwork. *Policy Sciences, 22,* 97-121.

Werr, A., Stiernberg, T. & Docherty, P. 1997. The functions of methods of change in management consulting. *Journal of Organizational Change Management, 10, 4,* 288-307.

Wertheimer, M. (1912/1932). Experimentelle Studien über das Sehen von Beugung. *Artschrift für Psychologie, 61,* 161-265.

Zukier, H. & Pepitone, A. 1984. Social roles and strategies in prediction: some determinants of the use of base rate information. *Journal of Personality and Social Psychology, 47,* 349-360.

Distinctiveness. By this factor is meant the way a clinic could clearly describe to the environment what it actually did. The clearer it could be shown, the more respect it could arouse in the environment. The ability of distinctiveness was based upon the degree of technology intensity in the activity. The more technical equipment the activity was using, the clearer it could present the distinctiveness. One example of an activity of this kind was the X-ray departments.

Stability. Some clinics had greater possibilities to foresee and to plan their activities. It gave them greater chances to develop standard procedures in the work process. Such a stability gives strength to the activity as it becomes less vulnerable to distraction. The chemical analysis department had such a stability in its process.

The combination of the three factors built up the relative importance of a clinic in the general health care process. If a clinic had a weakness in one of the dimensions it might be that the two others were weakened as well. This was the case with the department for anaesthetics. The activity was easily measurable and distinctive, but it was very unstable. Thus it had no possibility to standardise the work and consequently it was quite vulnerable to external distraction.

Relative position is a phenomenon in two dimensions: dominance and centrality.

Dominance. Some of the clinics represented scientific areas which were under speedy development and/or were considered to be important by society. These areas got a more dominating position in the health care process. Their areas of knowledge dominated over the others and made it easier for them to get support from the others. An example of an activity with this kind of dominating position was oncology.

Centrality. Some clinics were positioned in such a way that the others had to communicate with them, which gave them a central position. X- ray was also an example of this kind of strength.

The factors that created the notion of strength influenced the notion of how well the clinic was established in the core business of the health care process.

Co-ordinating Logic

Strong institutions had a substantial influence on the general process. From their perspective the general process offered co-ordinating logic, because it was based on "their" logic. The weaker institution had difficulties in finding that logic as they had to adjust their activities to the stronger institutions. It made the situation difficult to forecast and understand.

Transparency

Strong institutions could use the system for their own purposes. They could select certain partners in the system and consequently they could realise what the partners were useful for. This created a good transparency in the system from their perspective.

The weaker ones could not make that choice, but were the ones to be chosen. They had often great difficulties in experiencing transparency.

For the weaker processes in the system it was much more difficult to find a scanning focus. They had to scan the stronger processes in order to find their own focus. At the same time the organisation had mechanisms acting for extrinsic motivation as the clinics were rewarded to the extent they were found to be "useful" to the general healthcare system. This created an atmosphere giving birth to Internal Scanning.

1. 2. The CCs Within the Non-Institutional Care in the County Council

A Care Clinic (CC) worked under crossfire of non-consistent demands from the political "buying -committees" and from the daily patients. Due to the system of family doctors that had been introduced the CC experienced an increasing amount of patients with symptoms hard to diagnose. Another source of conflict was the role that a CC was supposed to play. In some situations, such as issues of transmission of infection, the CC played the role of authority. In other situations it played the role of service module. That was the case in the co-operation with the care programme for elderly people, run by the municipal authorities. A great variety of different local actors had an influence on the activities of the CC: social services, recreation centres, patient associations etc. Towards the clinics at the hospitals and the other CCs, the CC lived a rather isolated life.

1. 2. 1. Preceptual Strength in the General System Invironment

The CCs were subjected to a rather conditional general system invironment. One part was the political demands coming from the buying-committees and the other was from different local actors. It was very much up to each CC manager to decide whether to regard these different factors as invironmental or environmental.

Co-ordinating Logic

Generally speaking the co-ordinating logic in the process of the CCs was low. In fact the basic problem in running such an operation was to manage its internal instability.
For the CC manager who made a narrow definition of the working invironment the instability could be quickly reduced at least in the short perspective. It was harder, though, to accomplish a more sustained stability.

Transparency

A CC is generally a quite small operation. People who worked in it had a long experience. Transparency was therefore generally high, both at the technical level and the social.

Knowledge Transfer

Each CC lived a rather separate life from the rest of the health care organisation. It meant that it developed its own systems for accumulation and retrieval of knowledge, very much based on observations of local circumstances.

this co-operation a symbolic importance but it had also created a basis for concrete activities, both in helping each other in the running business and the development of the working procedures. The dental surgery had not been so regulated as the other parts of the health care system. Even though the buy-sell system also concerned the dental care it had another meaning, as those kinds of procedures had been applicable to the dental care long before it had become a regulation. The family doctor system had not been implemented in the dental care. It had been a tradition for a long time that people went to a dentist they felt they could trust.

Real economy. Each DC marketed its services to the patients. As most of the population had a rather good dental standard, most of the dental surgery was of a preventive or even aesthetic nature. The patient was more in a position of being a customer in a traditional commercial relationship and paid a major part of the cost for the surgery. In the DC there were price-lists and the dentist had regular price negotiations with the patient. The revenues from the surgery were to great extent kept within the DC or in "The Firm". Only a small proportion went to the County Council. In this way the dental administration could expand and develop its business on its own money. It was working in a real economic context.

Manifest process. Dental surgery is very concrete. The patients did not have the kind of fuzzy symptoms that the CCs had to deal with. The dentist could explain to the patient what was to be done and the result was immediate. And last but not least dental surgery is only about the mouth, not the entire body. This made it easy for the DC manager to standardise major parts of the activity and to a great extent also delegate responsibility. Patients mainly called on the dentist on a regular basis, which made it easy to plan the activities.

1. 3. 1. Preceptual Strength in the General System Invironment

Within the organisation of the DCs there was a very well functioning system for preceptual guidance at both the general and the individual level.

Co-ordinating Logic

The co-ordinating logic of the DC was based on the concept of "The Firm". It embedded an ideology of co-operation, economic stability and development. By co-ordinating all DCs' processes and planning the development activities carefully it had become a system trusted by the DC managers.

Transparency

Also transparency was facilitated by the concept of "The Firm". It was easy for each DC manager to locate his/her own operation in the general context, and the areas of responsibility were well developed.

Knowledge Transfer

The concept of "The Firm" also facilitated knowledge transfer as it offered a structure for generation and retrieval of knowledge to be shared among the DCs.

Manifest, but dissonant specifications. In the environment there were two groups of institutions that expressed the standards for the schools. One was the central school authorities, which on a national basis regulated many of the activities of the schools, not so much taking into consideration the specific purpose of the schools. The other group was all the organisations that had a professional interest in what the students learnt at the schools. In this case this latter group was constituted by the hospital organisations, the forestry companies and the farming associations. The demands expressed by these two parties were seldom possible to match. The dissonance between them was a never-ending headache for the headmaster.

Local anchorage. As the schools had been active in the local community they had become deeply rooted. It made the focus of the headmasters more local than the activity itself would inspire to.

Stable process. The events of a school were very tied to the timetable. It was a planned process. It was perhaps only one factor that reduced the predictability; all students could freely choose the school they wanted to attend to. This made it uncertain how many students there would be for a school year.

1. 4. 1. Preceptual Strength in the General System Invironment

To summarise all the factors into a picture of the general precepts is not easy; the outcome could be very varied, which I will point out later.

Co-ordinating Logic

The co-ordinating logic was very much attached to the timetable. The other parts of the general situation did not offer a co-ordinated logic as the demands were so different. So, the headmaster had to choose which logic to attend to, if any.

Transparency

Within the general system the transparency was practically zero, as so many stakeholders were involved and their motives were uncertain. Within the school itself the transparency was also quite foggy, mainly because of the difficulties to allocate responsibilities. There were often conflicts between teachers holding different values and the headmaster had difficulties in getting an overview of the social system in the organisation.

Knowledge Transfer

The knowledge transfer was mainly based on the traditions among the staff. This tradition stood, however, in contrast to the demands of the environment. It gave the organisation a tendency to conserve obsolete knowledge and an inability to incorporate new knowledge.

1. 4. 2. Preceptual Strength in the Individual Working Invironment

For the headmaster it was important that the school was running according to the timetable. The precepts in the working situation were therefore tied to the pace of the operation, not the

FHSs by the public system. They had a "licence" to act on their own, not tied to regulations as much as other operations.

Transparency

The transparency within a FHS was facilitated by the shared values and the well developed system for allocation of responsibility. A FHS rests very much on its social structure.

Knowledge Transfer

The well developed social structure combined with the well developed field of specialisation made it possible for a FHS to develop a well functioning system for knowledge transfer. The risk of being trapped into a fallacy of tradition was lessened by the constant influence of new values as the system was open to political signals.

1. 5. 2. Preceptual Strength in the Individual Working Invironment

In a FHS there is a very close co-operation between the actors. Teamwork is the traditional way to work and there are well developed arenas for working on perspectives. This makes the content of the work very concrete for everyone active in the process.

1. 5. 3. Motivating Factors

The task is central. In fact a FHS lives for its task. In between tasks the school is more or less sleeping.

Intrinsic Motivation

The autonomy given to the school and the empowerment in the organisation create a very good atmosphere for intrinsic motivation.

Extrinsic Motivation

I can hardly identify any factor at all that could create extrinsic motivation in a FHS. It rather seems that all motivation is related to the tasks.

1. 5. 4. Scanning Behaviour

Directed Scanning dominated in the FHSs. The situation was quite similar to the DCs. The internal process was very clear and so was the relationship to the political environment. It all added up to a very sensemaking picture. They were very directed motivated by their projects and got feedback as they were rewarded economically for their performance.

Extrinsic Motivation

The extrinsic motivational factors were tied to the demands from the County Council, both at the central level and the level of the clinics. The demands, even if the manager did not want to accept them, tended to reduce his ambition and it reinforced the tendency to make a minimum effort.

1. 6. 4. Scanning Behaviour

It was obviously very easy for the actors within REA to adopt a perspective related very narrowly to the task in technical terms. This excluded the other influence. So, the task dominated. Intrinsic motivation dominated as well and consequently the dominating scanning behaviour was of the Monitoring type.

1. 7. The Material Supply (MS) within the County Council

Nothing else can be added to the general picture of the MS, besides the description earlier.

1. 7. 1. Preceptual Strength in the General System Invironment

Also this activity was subjected to conflicting preceptual factors in the general system.

Co-ordinating Logic

The general co-ordinating logic of the system was the internal logistics of material. This system was in itself predictable, but obstructed by the unpredictable behaviour of the buyers. So, the managers had to make a choice what part of the system to concentrate on and it was of course the internal system. Flexibility was obtained by creating flexible relations to the suppliers.

Transparency

Transparency was high in the internal system, but low at both ends of the process, the suppliers and the customers.

Knowledge Transfer

As the flow in the system was measured and recorded it set up a good base for knowledge transfer.

1. 7. 2. Preceptual Strength in the Individual Working Invironment

The working situation for the managers in this field was similar to the real estate administration. Conflicts arose daily due to the inconsistent demands from the users. These factors had to be managed in relief against the possible performance of the system. That was why they incorporated a function of just-in-time-just-in-case into the system.

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