Structured knowledge transfer in a high technology industry

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Background: Due to the rapid change of conditions knowledge is becoming increasingly more importance today. Knowledge is now considered superior to technology and capital as a source of competitive advantage, however needs to be efficiently transferred and well managed to explore its full potential.

Purpose: The primary purpose of this study is to map the process of structured knowledge transfer. This is done in two phases from host organisation to expatriate and from expatriate to home organisation. Secondary the results will indicate some major influences on the knowledge transfer process.

Research method: A case study of SAAB and Denel Aviations has been selected for this thesis. Primary information was predominantly obtained through qualitative interviews with some quantitative survey support. The case study has been conducted with people involved in the structured knowledge transfer programme.

Results: The study shows that different types of knowledge is transferred and that knowledge moves through several stages as it gets transformed from raw data to action. It also captures the methods of knowledge transfer as it moves from velocity to viscosity. It has also been discovered that although the second phase within the case study is different than the first, that ideally it should be almost identical.

Structured, Knowledge transfer, High technology, South Africa, Jörgen Ljung
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ABBREVIATIONS

SAAB Swedish company
Denel South African company
Armscor South African Defence Corporation
BAe British Aerospace
NIP National Industrial Participation
DIP Defence Industrial Participation
STTP Skills and Technology Transfer Programme
SAAF South African Air Force
TTMP Technology Transfer Management Plan
TTAP Technology Transfer Activity Plan
PDP Personal Development Plan
SoW Statement of work
This chapter aims to introduce the reader to the scope within which the research falls and from which the research questions and purpose are derived. It also provides a structure of the thesis, in order to facilitate the continuous reading.

1.1 Background

“All men by nature desire knowledge.”

(Aristotle)

“Knowledge is power.”

(Sir Francis Bacon)

Knowledge and information has become indispensable. The science of its acquisition is a topic of debate between business scholars and managers alike. Bresman and Birkinshaw (1997) argue that knowledge is the true source to competitive advantage in today’s society. Prahalad and Hamel (1990) suggest that a company’s strategy should be learning-driven. The industrial era has given place to the knowledge era, which implies that knowledge has triumph above capital as the most valuable resource, making it simply impossible for a company to create a sustainable competitive advantage based on capital alone. (Bresman and Birkinshaw, 1997) Although technology has been the element to bring about this change, technology should not be seen as a means to create a competitive advantage but merely a requirement. Replicability of technology devalues it of any significant competitive advantage (Davenport and Prusak in Bender and Fish, 2000). According to Nelson (1991), a company’s way of organising processes is more crucial for success than is for example the technology it holds. Davenport (1997) goes as far as to suggest that a company’s biggest problem can be the belief that its technology is the answer to all its problems.

Management is confronted simultaneously with new patterns of old variables and fundamental shifts in the logic of business and its underlying assets on which business occur. Thus understanding the role of knowledge, its management, use and transfer for
organisational change and business success becomes one of the major challenges for modern management and scholars alike. (Pawlowsky in Dierkes et al, 2001)

1.2 Problem discussion

The ability to recognise and duplicate knowledge on demand is essential for an organisation's long-term sustainable intelligence and competitive advantage. Knowledge is highly individual-specific (Bender and Fish, 2000) and difficult even within the company itself to identify (Nelson, 1991); making it essential for companies to develop a knowledge management system. According to Wakefield (2004), the role of knowledge management systems is critical in developing successful knowledge transfer strategies. Bresman and Birkinshaw (1997) regard knowledge transfer as an important aspect of knowledge management and sees international knowledge transfer as a way of remaining competitive in an era of globalisation.

“Knowledge transfer is a complex KM activity that integrates communication technologies with challenging social, cultural, and organizational issues.”

(Wakefield, 2004: 935)

Since knowledge is very specific to individuals, transferring knowledge often implies transferring people (Bender and Fish, 2000), which requires cultural understanding and sensitivity. Stroh et al (1998) argue that the expatriates’ expectations must be taken into account. If these expectations are not met, the expatriates tend to lose commitment to the organisation (Ibid.) and the knowledge transfer process. Knowledge transfer is also about personal compatibility and trust between source and recipient (Finestone and Snyman, 2005; Reagans and McEvily, 2003), where the source has to understand the recipient’s values and beliefs (Minbaeva and Michailova, 2004). The source also needs the necessary willingness and ability (Ibid.). Another aspect is the organisation as a whole. Regardless of the individual knowledge transfer, there needs to be the right conditions to facilitate organisational learning (Friedman et al in Dierkes et al.2001). According to McNulty and Pettygrew (in Dierkes et al.2001) organisational learning is the highest when the board is actively involved.

1 The thesis refrain from using the turn “repatriates” and will use the term “returned-expatriates” for expatriates that have returned to their home country.
The obstacles above imply that knowledge transfer does not always occur in the most efficient way. Cooley (in Major and Cordey-Hayes, 2000) refers to “a knowledge translation gap” which implies that all information does not reach the recipient. Davenport and Prusak (1998) argue that the method of transfer is an important factor in efficient knowledge transfer. However there is no one best approach of transferring knowledge. In fact, due to the sometimes-tacit nature of knowledge, knowledge transfer often occurs without the involved individuals being aware of it.

A knowledge transfer process that is both intended and articulated is that of the collaboration between SAAB and Denel Aviation. In 1999, South Africa placed an order on twenty-eight Gripen combat aircrafts. The first aircraft is scheduled to be delivered into service with the South African Air Force in 2007. Interestingly enough it’s not the aircrafts per se that play the biggest role in this transaction, but the agreed knowledge transfer that is to be taken place. The agreement involves South Africa sending expatriates to SAAB/Sweden to learn processes and technology related to the Gripen aircraft. The contract specifies in what order they should come and what each person needs to learn. On average each expatriate stays one and a half years in Sweden after which they return and transfer their acquired knowledge into their home organisations. Knowledge transfer can thus be divided into two phases, from host organisation to expatriate (which we will refer to as the upload-phase) and from expatriate to home organisation (down-load phase), providing a basis to analyse knowledge transfer in a unique and comprehensive way (see figure 1.1). The above discussion leads us down to the questions that we further wish to explore in this thesis.

![Figure 1.1: Knowledge Transfer Phases (own construction)](image)

2 Because of this pre-defined structure, we have chosen to call it structured knowledge transfer.
1.3 Research Questions

- What type of knowledge is transferred?
- How should structured knowledge be transferred efficiently?
- What are the main influences on knowledge transfer?

1.4 Purpose

The purpose of this thesis is to map a comprehensive flow of structured knowledge between a parent and a student organisation.

1.5 Limitations

This thesis’ primary objective is to identify and map preferred knowledge movement and the secondary aim to support this, identify facilitators and barriers. This implies that even though we have gone through great lengths to identify these facilitators and barriers this is done only to provide richness to the overall findings. Also due to the fact that the implementation of the knowledge into the South African organisation is only in its beginning stages we have not been able to research this side in detail.

1.6 Structure of thesis

The thesis consists of six chapters, the first of which is the introduction. The remaining five chapters are structured as follows:

Chapter two elucidates the methodology followed. Specifically, it addresses the following issues: our scientific approach, the unit of analysis, research design, and methods for collecting data, development of interview and survey questionnaires and profile of the sample. Chapter three introduces the theoretical framework Chapter four presents the results generated from the empirical investigation that consisted of interviews, conversations, a questionnaire and a survey. Chapter five analyzes the results as it supports or refutes with the theoretical background. Finally, chapter six presents the conclusions from the research findings, and possible directions for further research are indicated.
2 METHODOLOGY

The purpose of this chapter is to discuss how our scientific approach affects our research. Furthermore, we wish to describe what methods we have chosen for conducting the study and why. Finally we are going to explain what possible shortcomings the chosen method has implied.

2.1 Scientific approach

There are several different approaches to science yet no clear consensus on their exact scope and applicability. Patel and Davidson (2003) mention for example positivism and hermeneutics.

The first theorists', led by Comte, approach to sociology, was to treat it in a similar manner as natural science (http://en.wikipedia.org). Positivism originates from natural science and aims to create a uniform branch of science. The emphasis falls on empirics and scientific method to provide a fact oriented foundation for any sociological claims (http://en.wikipedia.org), thus drawing general laws and conclusions with the use of a hypothetic-deductive model (Patel and Davidson, 2003). Hartman (2004) argues that the positivistic way of gaining knowledge about reality is to observe reality for instance through experiments. Another idea within positivism is that the researcher remains strictly objective and that his/her religious and political opinions should not influence the result (Patel and Davidson, 2003).

In the 19th century scientists like Wilhelm Dilthey and Heinrich Rickert started questioning positivist and naturalist approaches to studying social life. They argued that the natural world differs from the social world due to the meanings, symbols, rules, norms and values that humans attach to things. Max Weber further developed this view which eventually led to the introduction of antipositivism (humanistic sociology). Several different schools of though have since formed around antipositivism but most relevant to this study is the hermeneutics school that will be discussed next. (http://en.wikipedia.org)
“Hermeneutics is no longer conceived as a methodological or didactic aid for other disciplines, but turns to the conditions of possibility for symbolic communication as such. The question “How to read?” is replaced by the question, “How do we communicate at all?” … Now hermeneutics is not only about symbolic communication. Its area is even more fundamental: that of human life and existence as such. It is in this form, as an interrogation into the deepest conditions for symbolic interaction and culture in general…”

(www.plato.stanford.edu)

Hermeneutics aims to interpret and understand the world and human existence. The researcher is allowed to be subjective and involved. Pre-understanding, knowledge and thoughts within the researcher are seen as valuable assets helping him to interpret and understand conditions. (Patel and Davidson, 2003) We agree with this and believe that it is not possible to remain strictly neutral. We all have pre-conditioned perceptions of reality and we believe that this knowledge and pre-understanding cannot be ignored. Gilje and Grimn (2003) even suggest that pre-understanding is a necessary condition for an individual to understand something. They claim that individual pre-understanding gives the research direction. We believe our previous personal experiences and courses taken at university have influenced our perceptions and viewpoints. It is not unreasonable to think that this pre-understanding has directed us towards certain theories. This we do not regard as negative bias, but rather academic background to the problem at hand, as long as we remain open for other perspectives and approaches.

According to the hermeneutics one can form interpretation and understanding of situations simply by studying humans’ language and actions. A hermeneutist seeks to get a holistic view of a problem, as opposed to the positivist, who rather studies the object part by part. (Patel and Davidson, 2003) In our study we have tried to see the full picture of the knowledge transfer process by talking to individuals on different levels originating from both Sweden (source) and South Africa (receiver). To summarise, we find ourselves more hermeneutists than positivists. The implications of our hermeneutic approach will be discussed in the section below.
2.1.1 How we see reality

According to Hartman (2004), a hermeneutist does not want to know how reality is but how it is perceived. Analysing the rather abstract subject of knowledge transfer, we believe that it may be difficult to picture reality. The abstract notion of knowledge may have different meanings to each individual and therefore it is difficult to see how much knowledge is actually transferred and how. Thus, our direct intention is not to picture reality, but rather to interpret how different individuals regard the knowledge transfer process themselves. A hermeneutist does not believe in measuring individuals’ perceptions of reality (Hartman, 2004). In our study, however, we have tried to measure the perceived knowledge transfer. Hence, we are not completely in line with hermeneutics, although we still consider the study more towards hermeneutics than any other approach.

Arbnor and Bjerke (1994) present several views of reality. One of them is the German philosopher Immanuel Kant’s. He argued that we could not access the objective reality, since the individual experiencing it always processes it. Thus, reality, according to him, only appears in processed form. We agree with his view of reality, since we believe that an individual does not meet anything completely impartially. If different individuals perceive reality differently, there is no “true” reality independent of the person observing it. One view of reality described by Arbnor and Bjerke (1994) is “reality as a social construction”. This implies that reality is subjectively given, and that it has no concrete status. We find this view similar to that of Immanuel Kant, and thus agree with this as well. Furthermore they argue that reality, in this view, is a continuous process. We believe that the process of knowledge transfer may have been different when it started some years ago and that it will probably be different in the future. In our opinion, the combined visions and perspectives of individuals taking part in the knowledge transfer process ultimately shapes and influence how the process is seen now and will be seen in the future. To sum up, our view of reality implies that it is dependent on individual perception, and therefore we do not claim to picture a precise reality but more a combined perceived reality that is subjected to time.

2.1.2 Our view of language

According to Alvesson and Kärreman (in Allwood, 2004), language is usually regarded as a reflection of reality and represents something more than just itself. Language is dependent on its context, and the more complex the language the more complex is the dependency on the context. For instance, they mention knowledge, motive and participation as words with
context depending meanings. In our study, knowledge and knowledge transfer play a vital part. When discussing such abstract concepts with the interviewees, there might be risk of misinterpretation. Furthermore, comparing and aggregating the answers of different interviewees can be difficult. According to Alvesson and Kärreman (in Allwood, 2004) comparisons between meanings in different contexts are not easily done.

In order to avoid possible problems related to the use of language, we have approached each interview as follows: We were two interviewers present, the one asking the bulk of the questions while the other made notes based on not only the verbal language of the interviewee but also their facial and body language. According to anthropologist Ray Birdwhistell and psychologist Albert Mehrabian most of our communications are nonverbal.

"To study language by listening only to utterances, say McNeill and those who subscribe to his theories, is to miss as much as 75 percent of the meaning"

David McNeill
(in http://members.aol.com)

Ethologist Iraneus Eibl-Eibesfeldt claims that a lot of basic elements of body language are similar across cultures (http://en.wikipedia.org). Thus by doing face to face interviews the probability of interpreting things wrongly is greatly reduced. After each interview the audio recording together with notes taken from interview were transcribed into a word document and forwarded to the interviewee to validate. We believe that this approach to the complexity of the language leaves limited margin for error in the empirical findings.

2.1.3 Starting point of the thesis
There are different ways of relating theory and empirics to each other. A study can start from already existing theories, from which the hypotheses are constructed. The hypotheses are then tested against the empirics. Thus, the existing theory determines what empirical data to search for. This is called deduction. Another way of drawing conclusions is to start from the research object, without any theoretical anchorage. Empirical data are gathered, which are then used to form theories. This is called induction. (Patel and Davidson, 2003) News and media attention around the Gripen project encouraged us to look at the Gripen International
website. This gave us some idea of what were happening and a contact name. One of us had a telephone conversation with a key person at Gripen International and based on this we formed our research domain (structured knowledge transfer) and questions. Based on this knowledge we drew a preliminary model of knowledge movement, which we have attempted in the course of this paper to build upon. Thereafter we surveyed the fields of knowledge transfer and repatriation/expatriation in order to see what the predominant theories are. We also had an informal conversation with people knowledgeable on the project to see if we were on the right track in creating the theoretical framework and framing the research questions. Hence, our thesis took off in the empirics and was an incremental process of collecting empirics and explanatory theories in parallel. Therefore we consider our research to be neither strictly inductive nor deductive. Since it started from the empirics, however, and since the research questions originated from the empirics, our study is mainly of inductive character.

2.2 Classification of study

This study is mainly of qualitative character. Qualitative research is according to Patel and Davidson (2003) focused on soft data, such as interviews, whereas quantitative research implies measurements and statistical processing. We have done mostly in-depth interviews but included a Likert scale survey to support some of the findings. On these grounds our study could be considered both qualitative and quantitative. According to Patel and Davidson (2003), however, the notions of qualitative and quantitative research refer to the way data is generated, processed and analysed. Thus, it is not just about how data is actually collected, but also about how it is interpreted. Even though our surveys can be considered a quantitative way of collecting information, we believe that our analysis of it has a more qualitative approach. According to Strauss and Corbin (1999) quantitative researchers often see qualitative work as ungrounded and biased while qualitative researchers are of opinion that quantitative work yields shallow and misleading results. By integrating both qualitative and quantitative approaches we strive to overcome this and in the process enhance the overall quality of the findings. Our approach is mostly based on that of Lazerfeld and Wagner (in Strauss and Corbin, 1999) who are of opinion that only by having exploratory interviews first can reliable questionnaires be formulated. We however also use the different approaches as complementary to each other where each adds something valuable to the final findings.
Furthermore, we consider this to be a case study. Merriam (1994) defines a case study as an examination of a specific phenomenon; a well-defined system. It can be a person, an institution or, as we believe is the case for our study, a process (Merriam, 1994). We have chosen to study the process of knowledge transfer within a certain project, which we think is rather well defined. Collis and Hussey (2003), however, state that case studies often are conducted over a long period of time, which is not our case. Due to the time constraints, we have not been able to do so and do not claim this to be a pure case study. Yin (1994) suggests that a case study has a distinct advantage when “a ‘how’ or ‘why’ question is being asked about a contemporary set of events over which the investigator has little or no control.” (Yin, 1994:9) Considering our focus is “what” but also “how” knowledge moves across international borders, we decided to make use of a case study. We are of opinion that we are investigating a contemporary set of events over which we have no control.

2.3 Procedure

In this section we will account for how the data used in our thesis has been collected. The collected data can be divided into primary and secondary data, that is, data collected by us and data already collected by someone else (Lundahl and Skärvad, 1999).

2.3.1 Primary data

In order to get as deep understanding as possible of a rather complex knowledge transfer process, we have chosen to focus almost exclusively on primary data. As mentioned earlier we are treating some abstract concepts and we believe that primary data brings us closer to the perception of reality, since the information reaches us first. Furthermore, this project seems to be unique, which makes primary data even more essential.

Methods of collecting

We have collected the empirical data in an array of ways. The major part of the data has been acquired through personal qualitative interviews, but we have also had a telephone conversation and some informal interviews and conversations. Furthermore, we have performed a survey and an e-mail questionnaire. The reason for our multiple choice of gathering the data is mainly that the involved people were not equally available. According to Kvale (1997) a qualitative interview captures many aspects, such as ambiguity, meaning and creation of new insights, which we think is important for our thesis. Eriksson and Wiedersheim-Paul (1997) argue that personal interviews are good because they can create
trust between the interviewer and the interviewee and they allow complicated issues to be brought up. With that in mind, we have aimed to gather the major part of the empirics through that type of interviews. As Eriksson and Wiedersheim-Paul (1997) state however, personal interviews can be difficult to schedule, which we also think is the case. Due to geographical dispersal, we could not even consider personal interviews in some cases. Therefore we have chosen to complete the collection of data through an e-mail questionnaire.

The telephone conversation was the initiation to our research, why it cannot be considered an intentional way of collecting empirics, although it provided us with valuable information. The informal conversations mainly served to enrich already existing empirics and to guide the research in the right direction.

The reason for performing a survey in addition to all the above mentioned is that we wanted to have the actual opinion of the expatriates. According to Patel and Davidson (2003) surveys are used to examine a larger, defined group. The small population (16 people) enabled us to have a strong sample (10 people) that helped with the creation of generalizations within the knowledge transfer process of SAAB and Denel Aviations.

Selection of respondents

For the purely qualitative part of the study, we have used a non-probability selection of respondents that Lundahl and Skärvad (1999) refer to as “snowball selection”. This implies a successive selection of appropriate respondents, asking one respondent to recommend another respondent. Due to the complexity of the project, we wanted knowledgeable and experienced respondents on the first hand, not people representing a population. As mentioned earlier the research was initiated by a telephone conversation. After having studied the company homepage we telephoned a key person at Gripen International. This helped us narrow down the specific department at hand and gave us a holistic view of what is happening. The project studied included several organisations with the two main participants SAAB and Denel Aviations. The other organisations involved were predominantly South African and were channelled through Denel Aviations for this project. Two other important South African participants are the South African Air Force (SAAF) and Armscor. Our objective was to get at least one perspective from each organisation and a survey from the 16 people that partake in the program.
Our first interview was with Mr. Linde (Armscor) and Mr. Edwards (SAAF) and took place in one of SAAB’s conference rooms. The name and contact number of the STTP Manager Mr. Palm (SAAB), was forwarded to us by Mr. Linde. After the interview with Mr. Palm, he arranged an interview with one of the mentors in the STTP, Mrs. Dackemyr (SAAB). Mr. Palm also provided us with name and contact details of the Denel STTP Manager (located in South Africa), Mr. Vadivelu, and the Denel STTP Manager (located in Sweden) Mr. Khoza. An in-depth interview was held with Mr. Khoza and an email questionnaire was sent to Mr Vadivelu. In between the above-mentioned interviews, we had the informal conversations/interviews with people knowledgeable on the project. This will be kept confidential.

With the survey, we targeted the whole batch of South Africans currently at SAAB. Given that they have been stationed at SAAB nearly two years, we considered them as very suitable respondents. Ten out of the sixteen participants completed our survey. After having conducted the survey, we had an informal following-up conversation with Mr. Palm, where the survey results were discussed.

**Design of interviews and survey**

During the interviews, we did not follow a ready set of questions, although we had prepared some questions as guidance. Furthermore we did not ask all the questions since some of them felt less relevant after some time with the interviewee. Instead, we choose to pursue the areas the interviewees were most knowledgeable in. In other words, our interviews were un-standardised (Patel and Davidson, 2003). Moreover, we consider the interviews as unstructured (Ibid.), because we mainly asked open-ended questions allowing the interviewees to elaborate as much as they wanted. Easterby et al (in Collis and Hussey, 2003) suggest that unstructured interviews are appropriate when the subject is confidential, step by step logic of the situation is not clear and there is a need to understand the interviewee’s opinion and beliefs of the situation. This supports our choice of interview design. We find further support for this in Patel and Davidson’s (2003) argument that interviews that are both un-standardised and unstructured are suitable for qualitative analysis (Ibid.), which was our intention.

The survey, on the other hand, can be considered both highly standardised and structured. It included forty-four questions, four of which were open-ended. The rest of the questions were
to be answered either by rating on a Likert scale or by ranging alternatives in order. (See appendix) The survey was the exact same for all respondents. We took great care in creating the questions, in order to motivate the respondents to fill in the survey in the best possible way. We assumed that they would have as much interest as we in the process of knowledge transfer, seeing the falling off as a reflection of their interest (or lack of interest). The survey clearly stated the purpose and informed the participants that the results were to be kept confidential. Before handing it out to the potential participants, Mr. Palm read it to detect possible inappropriate questions. Mr. Palm identified two questions that we removed from our analyses. According to Patel and Davidson (2003) it is good to do such a quality check with an external person\(^3\), since the persons behind the survey may be way too involved to see possible shortcomings.

**Accomplishment of interviews**

We prepared the respondents by introducing them to our research domain and explaining the purpose of the interview. Furthermore, we asked for the respondents’ permission to record the interview, to which all of them approved. During the interviews we tried not to use theoretic/academic terms if not necessary. We also tried to remain open to new aspects introduced by the respondents. These are some of the qualification criterions put forward by Kvale (1997). Rosenthal (in Collis and Hussey, 2003) suggests that results obtained from male and female researchers can differ significantly due to different interviewee behaviour towards researcher. This we have attempted to minimize by being both a male and female researcher present at interviews. Furthermore, we believe that the fact that we are of different origins, South African and Swedish, have contributed to smoother communication between the respondents and us. Patel and Davidson (2003) mention “go native” which implies that the interviewer and the interviewee can refer to jokes, symbols and other phenomena in a way that both understand. Finally, we returned the transcriptions to the interviewees in order to detect possible misunderstandings.

The interviews varied in length; the first interview with Mr. Palm lasted for 150 minutes and the following-up interview with him 15 minutes. The interview with Mrs. Dackemyr was 30 minutes and the interview with Mr. Linde and Mr. Edwards was 60 minutes. The interview with Mr. Khoza was 120 minutes. The telephone conversation with the key person at Gripen

\(^3\) With external we refer to people outside the STTP group and outside the research team but not entirely outside the research domain.
International was about 30 minutes. The informal conversations amounted to 90 minutes in total.

2.3.2 Secondary data
Secondary data has been used to very little extent in this study. The main secondary sources were the Gripen International homepage and SAAB internal documents.

2.4 Reflection of the chosen method
In the research we aimed to create accurate new understandings and knowledge of the problem domain. The extent to which we have exceeded will be discussed below.

2.4.1 Internal validity
According to Merriam (1994), internal validity is whether the result of the study is in accordance with reality. He suggests that internal validity of a case study can be assured by triangulation, which implies the use of several sources of information and several methods. We have gathered information from both source and recipient side of the project and from individuals at different levels with different perspectives. Furthermore, as mentioned in section 2.3.1, the data has been gathered in multiple ways. The respondents were also given the opportunity to read the transcriptions of the interviews, which according to Merriam (1994) is another means of increasing internal validity of a study.

2.4.2 External validity
External validity refers to whether the results are generalizable beyond the immediate case study (Collis and Hussey, 2003). According to Merriam (1994) there are different views of the generalizability of a case study. Some argue that it is not possible while some think it is. Mason (in Allwood, 2004) argues that even with a qualitative approach, generalizability is possible, at least to some extent. This study attempts to generalize the knowledge transfer results to the broader theory identified in the framework. We are aware of the fact that it might not be fully generalizable, but we hope that the same theory can be used to study other knowledge transfer processes.

2.4.3 Reliability
Reliability refers to the process where if the same case is studied again the results will be the same (Collis and Hussey, 2003). Reliability does not mean replicating the results of one case study by doing another. Merriam (1994) argues that reliability might be a problem since
human behaviour is changeable rather than static. In this study, individuals’ own perceptions of the knowledge transfer process have been examined, which implies that the result would not necessarily be the exact same if the study was conducted in a couple of years time from now. Neither would the results necessarily be the exact same if the study was conducted by someone else. As mentioned in section 2.1, we believe that we all have some pre-understanding that guides us into certain directions. Merriam (1994) suggests that reliability, as internal validity, can be increased by triangulation. Hence, the reliability of this study could be considered improved by the multiple use of sources and methods of collecting the data. Furthermore Merriam (1994) and Yin (1994) suggest that reliability can be improved by keeping procedures as simple as possible while keeping notes on procedures. This we believe has been done in this chapter, where we have attempted to account for the research process in detail.
3 THEORETICAL FRAMEWORK

In this chapter we introduce the reader to the different theories and models that we have chosen to be our theoretical framework. We start with some definitions and descriptions of knowledge, then to continue with transfer of knowledge. Thereafter some relevant influences on knowledge transfer will be treated, and finally there will be a summary of the chapter to give the reader an overview.

3.1 Knowledge

“Knowledge is the mental state of ideas, facts, concepts, data and techniques, recorded in an individual’s memory”.

(Bender and Fish, 2000:126)

Creating an accurate definition for knowledge is a complex task challenging many researchers (Bhatt, 2000). Nunaka and Takeuchi (1995) argue that knowledge, as opposed to information, is about beliefs, commitment and action. Furthermore, they suggest that knowledge, and information is about meaning; it has a relational context. Sveiby (1997) defines knowledge for the purpose of one of his books as “a capacity to act” (Sveiby 1997:37).

“Knowledge is information with the most value and is consequently the hardest form to manage. It is valuable precisely because somebody has given the information context, meaning, a particular interpretation; somebody has reflected on the knowledge, added their own wisdom to it, and considered its larger implications.”

(Davenport, 1997: 9)

However, according to Propp (in Sun and Scott, 2005), the most generally held view is that knowledge is: “content + structure of the individual’s cognitive system”. Sun and Scott
(2005) argue that disorganised information becomes knowledge when meaning is provided by the cognitive systems of individuals. According to Sun and Scott (2005) cognitive system includes beliefs, values, attitudes, opinions, memories and presumptions that preside over the way meaning is provided. A similar, yet more detailed, view of how knowledge comes to pass is presented by Bender and Fish (2000). They, as do many other researchers, distinguish between data, information, knowledge and expertise. These four dimensions can be organised into a hierarchy (see figure 3.1). Data, according to Davenport and Prusak (in Bender and Fish, 2000), is objective and constitutes the raw material for creating information. Data becomes information by adding understanding and meaning to it. Knowledge then arises when an individual transforms information by adding personal experience and beliefs (Wiig, in Bender and Fish, 2000). Expertise, according to Bender and Fish (2000), is deeper knowledge in a certain area, built up from scratch over a long time.

The above reasoning implies that knowledge originates from the individual, which suggests that knowledge can be developed and perceived quite differently. In other words, it is not surprising to find so many different definitions of it.

Figure 3.1: Knowledge hierarchy (Bender and Fish, 2000)
3.1.1 Different types of knowledge

Polanyi (1983) first developed the tacit dimension of knowledge. He starts from the fact that “we know more than we can tell” (Polanyi, 1983:4). This is illustrated by an example. We are able to recognise a person’s face among thousand others, yet we cannot tell how we recognise that face. Thus, tacit knowledge is hard to identify; it resides in perceptions and behaviours that are not easily codified. (Ibid.) Many researchers, Nonaka and Takeuchi (1995), Sveiby (1997) and Bonache and Brewster (2001) among others, draw on Polanyi’s distinction between tacit and explicit knowledge. Tacit knowledge, according to Nonaka and Takeuchi, is personal and context-specific. Therefore, it is difficult to share with other people. Sveiby argues that tacit knowledge is something that the individual does not know about, which supports the notion that it is not easily shared or communicated. Explicit knowledge, on the other hand, is described as possible to codify and transmit (Nonaka & Takeuchi, 1995). According to Sveiby (1997) explicit knowledge is usually gained from formal education, and independent of the person that created it. He argues that explicit knowledge is only the tip of the iceberg; it is nothing but the knowledge that we can actually say that we have. Hence, the rest of the iceberg would be implicit knowledge, which we cannot tell that we have. Nonaka and Takeuchi (1995), however, argue that explicit and tacit knowledge must not be regarded as completely different things.

“In our view, however, tacit knowledge and explicit knowledge are not totally separate – but mutually complementary entities. They interact with and interchange into each other in the creative activities of human beings.”

(Nonaka and Takeuchi, 1995:61)

Polanyi (in www.sveiby.com) puts it this way; all knowledge is either tacit or embedded in tacit knowledge. According to him, tacit information forms the base needed to translate explicit knowledge, making it essential for a firm’s individuals to have a common background of tacit knowledge.

3.2 Knowledge transfer

Before entering deeper into knowledge transfer, we would like to clarify what we consider to be knowledge transfer. In the literature we have come across some different concepts, such as learning and knowledge conversion, these we find similar and we refer to knowledge transfer
to all mention above. Hence, in the continuous reading we would like the reader to bear this in mind.

Reagans and McEvily (2003) suggest that an organisation’s ability to transfer knowledge effectively within or between organisations is crucial for organisational processes and outcomes. With increased globalisation, knowledge transfer certainly occurs across national boundaries too. According to Kidger (2002) knowledge has traditionally been transferred from the parent company to its subsidiaries. Today, however, he argues that companies are likely to try a more global approach, where knowledge transfer is more of a two-way process. It might even be a multi-way process where knowledge is shared between a company’s subsidiaries (Moore and Birkinshaw in Bender and Fish, 2000).

3.2.1 The knowledge transfer process

In this section we will account for the different processes and means of knowledge transfer found in the theory.

An integrated framework for knowledge transfer

There are several models for illustrating the process of knowledge transfer. Major and Cordey-Hayes (2000), look at some different models in parallel and distinguish between node models and process models. Node models describe discrete steps, such as data, information, knowledge and wisdom, through which knowledge is transferred. Process models describe separate processes, such as collection, recognition, interpretation and assimilation, which are undergone to transfer knowledge. From this, Major and Cordey-Hayes (2000) build an integrated model where the successive nodes are reached through the different processes (see figure 3.2).
Furthermore they illustrate the characteristics of knowledge in a two-dimensional framework, with an operational/strategic distinction along the horizontal axis and an abstract/concrete distinction along the vertical axis (see figure 3.3).

This model is then integrated with the combined node/process model (see figure 3.4).
Single- and double-loop learning
Many researchers distinguish between single-and double-loop learning processes as introduced by Argyris and Schon (1978) (in Downes and Thomas, 2000). Single-loop learning focuses on influencing behaviour, for example the steps necessary to complete a particular task. This knowledge is acquired from routines, such as applying from tax deductions. Double-loop learning focuses on creating new insight, heuristics, and a collective consciousness within the organization (Fiol and Lyles in Downes and Thomas, 2000) Argyris (2002) proposes “the detection and correction of error” (Argyris, 2002:206) as a possible definition of learning. From that definition he suggests that single loop learning implies correcting errors without changing the underlying beliefs. Double loop learning, on the contrary, is when errors are corrected, first by changing the underlying beliefs and then by changing the action. (Ibid.) He exemplifies this with a thermostat. A thermostat is supposed to turn on when it is too cold and to turn off when it is too hot, which Argyris (2002) argues is equal to single loop learning. If the thermostat would question why it measures temperature and then adjust temperature, it would be double loop learning. (Ibid.)
Another approach to knowledge transfer is taken by Nonaka and Takeuchi (1995). They do not refer to knowledge transfer but rather to knowledge conversion, which we understand as similar concepts. According to them, knowledge conversion occurs through interaction between explicit and tacit knowledge. They stress that the interaction takes place between individuals and not within the individual itself. Nonaka and Takeuchi (1995) present a four mode model of knowledge conversion.

![Four-Mode Model of Knowledge Conversion](Image)

Socialisation is according to Nonaka and Takeuchi (1995) a process where tacit knowledge is conversed to tacit knowledge. This is done by sharing experiences. Nonaka and Takeuchi (1995) argue that experience is the key to conversing tacit knowledge, since it is difficult for one person to get into another person’s thinking. They also suggest that language not necessarily has to be used. Instead, observations, imitation and on-the-job training can help conversing tacit knowledge to tacit. Other means of socialization are according to Nonaka and Takeuchi (1995) meetings and brainstorming.

Externalisation occurs when tacit knowledge becomes explicit. Nonaka and Takeuchi (1995) consider it to be the key process of the four in the above model, because
“it creates new explicit concepts from tacit knowledge.”
(Nonaka and Takeuchi, 1995:66)

Written language can be used to express the knowledge, but often it is insufficient and creates a gap between image and expression. Therefore, metaphors constitute a common means of externalisation. (Nonaka and Takeuchi, 1995)

Internalisation is the conversion from explicit knowledge to tacit. It is often related to learning by doing. The process is facilitated by for instance documents and manuals; partly it enriches a person’s tacit knowledge and partly it helps a person to re-experience other people’s experiences. Another approach to internalisation is to create mental models. Such models can be derived from oral stories and when shared by several members of an organisation, tacit knowledge becomes part of the culture. (Nonaka and Takeuchi, 1995)

Combination implies conversion from explicit knowledge to explicit knowledge. This mode of transfer often occurs in formal education. It takes place by combining different bodies of explicit knowledge such as documents, meetings and telephone conversations. Then sorting, adding and combining these can create new knowledge. The process can be facilitated by the use of databases and computerized communication. An example of combination is when managers operationalize corporate visions and business concepts. (Nonaka and Takeuchi, 1995)

A four style model
According to Choi and Lee (2003) the organizational management of tacit and explicit knowledge are divided into four styles: dynamic, system-oriented, human-oriented and passive (see figure 3.6). The passive style illustrates little interest in knowledge management. It is not managed in a systematic structure and knowledge transfer is not embedded into the organization culture and IT is most likely not used for managing knowledge. The system-oriented style implies codifying and reusing knowledge. Knowledge transfer occurs in a formal way, for instance by codes and manuals (Graham and Pizzo, in Choi and Lee, 2003). According to Choi and Lee (2003) the human-oriented style emphasises tacit knowledge, and therefore interpersonal relations play a vital role. Standard procedures are of less importance; instead place is given to find new and better ways (Ibid.). Knowledge is shared in an informal way and communication and trust are crucial for success (Ichijo et al; Krogh in Choi and Lee,
2003). In the dynamic style, focus lies on both explicit and tacit knowledge. The organisation tends to be communication-intensive (Blackler in Choi and Lee, 2003) and they often develop old knowledge and see new potentials (Maula; Ravasi and Verona in Choi and Lee, 2003).

![Four KM-style model (Choi and Lee, 2003)](image)

**Figure 3.6: Four KM-style model (Choi and Lee, 2003)**

### A six mode model in two dimensions

Miller (1996) identifies six modes of learning in two dimensions. There is the methodological dimension, which consists of objective facts gathered through a structured process and evaluated analytically with explicit purpose. The other dimension is the emergent one, which consists of learning through impulsive, implicit and spontaneous decision making which are based on instinct, fads, impressions and rituals (DiMaggio and Powell; Meyer and Rowan; Collins and Moore; Miller, in Miller, 1996). Miller (1996) categorises three different modes of learning into each of these two dimensions. Furthermore, he suggests some possible contexts in which these learning modes occur, and what implications they might have.
In the methodological dimension, there are analytic learning, experimental learning and structural learning. *Analytic learning* occurs via organised information gathering (Grandori in Miller, 1996), which is mainly quantitative and processed in formal systems (Miller, 1996). Focus lies on logic and numerical calculation (Ackoff, in Miller, 1996). Miller (1996) suggests that analytical learning will be most frequent where there is modest uncertainty about means and little conflict about goals.

*Experimental learning* is similar to analytical learning with regard to the systematic gathering and interpretation of information. The difference is that action sometimes occurs before analysis (Weick, in Miller, 1996) and that experimental learning is not as restrained by rules and plans, but more spontaneous. According to Miller (1996) experimental learning is likely to occur when there is high uncertainty about means.

The strongest form of methodological learning might be *structural learning*. It builds on organisational routines that reflect prior learning and specify how to accomplish things. These are regarded as guidance for learning, both tacitly and explicitly (Nelson and Winter, in Miller, 1996). Miller (1996) suggests that structural learning will be most common where uncertainty about means and conflict about goals are both little.

The emergent dimension includes synthetic learning, interactive learning and institutional learning. *Synthetic learning* is a less structured and more intuitive way of learning. Knowledge is combined in new ways in order to create new insight and a more holistic view. It normally originates from a single creative mind, and therefore the knowledge may stay with only a few persons. Synthetic learning is likely to occur when uncertainty about means is high and conflict about goals is modest.

*Interactive learning* implies learning-by-doing in a rather spontaneous and implicit way. It is good because it encourages sharing information with other people, which could lead to more realistic collaboration. (Miller, 1996)

Finally, *institutional learning* is incorporated by the organisation’s values and ideology (Scott, in Miller, 1996). It occurs on a broad level, where either the environment or some elite members teach. It can occur for instance through indoctrination or socialisation, which does not leave that much freedom to the learners. (Miller, 1996) According to Miller (1996)
institutional learning, at least in the form of indoctrination, will be most common where both uncertainty about means and conflict about goals are modest.

To summarise, Miller (1996) suggests that these learning modes could follow this order: synthetic and analytic, institutional, experimental, structural, and interactive, depending on where the organisation is in its life cycle.

3.2.2 Efficiency and measurement of knowledge transfer

Davenport and Prusak (1998) suggest two ways of expressing efficiency of knowledge transfer namely velocity and viscosity.

Velocity indicating the speed with which knowledge moves, that is, how fast a person in need of knowledge can access it. Viscosity, on the other hand, refers to the quality of the knowledge. It measures how much of the original knowledge that is actually absorbed by the end recipient. Velocity can be increased by for instance computers, while viscosity is a bit more complex and depend on the method of knowledge transfer. (Ibid.) Davenport and Prusak (1998) suggest that mentoring and apprenticeship can increase viscosity. Furthermore, they regard knowledge acquired by reading an article as low-viscosity knowledge. The two factors tend to cancel each other out however. Since knowledge transfer can be quite a long and complex process, higher velocity is likely to decrease viscosity. (Ibid.) According to Davenport and Prusak (1998) companies should attempt to move from velocity to viscosity, thus focusing more on human aspects of knowledge transfer.

Measuring knowledge transfer efficiently is an almost impossible task according to Bolino and Feldman (2000). They argue however that it is possible to measure skill utilization and from that draw conclusions of which knowledge is transferred and to what extent. In their study, they investigated eight skills which are critical to expatriation programs namely; supervisory skills, decision-making skills, technical/functional skills, knowledge of international business, communication skills, administrative skills, cross-cultural skills, and negotiation skills. These skills have been identified and used by various other researchers such as Black and Porter, 1991; Stroh et al., 1998; Teagarden and Gordon, 1995 (in Bolino and Feldman, 2000). Sarker et al (2005), on the other hand, present several different ways of measuring the success of knowledge transfer. In their study, they turn to the internalisation approach, which measures knowledge transfer in terms of the recipients learning. The
recipients were to grade their gained technical skills and their gained managerial skills on a scale from zero to seven.

3.2.3 Expatriation and Repatriation

According to Bonache and Brewster (2001), expatriation and repatriation is increasingly more recognised due to their central role in knowledge transfer, co-ordination and controlling within multinational and global firms. This is supported by Bender and Fish (2000), who suggest that repatriation constitutes an important part in transferring and retaining knowledge. Some researchers distinguish between different types of expatriates/repatriates. Evans et al (in Minbaeva and Michailova, 2004) differentiate between long and short term as well as demand and learning driven expatriation. Demand driven expatriation normally arrives from a problem to be resolved abroad or for reasons of control. The objective of learning driven assignments, on the other hand, is knowledge transfer. According to Black and Gregersen (1999) expatriation/repatriation programmes often result in capital loss. They argue that many organisations fail to manage repatriation properly, which in the worst case leads to returned expatriates leaving the organisation taking the acquired knowledge with them. Another problem is when the repatriate is not given the opportunity to utilize his/her new knowledge. According to Fish and Wood (in Bender and Fish, 2000) the returned expatriate’s knowledge and experience should be applied.

Black and Gregersen (1999) suggest three practices to follow, namely: send the right people, send people for the right reason and finish repatriation the right way. The right people, according to them, are people willing to experience a different culture. The reason for sending a person abroad should be for instance generation of knowledge or developing a global leader, rather than a reward to that person. Finally, repatriation should be finished by providing the repatriate with the opportunity to apply the acquired knowledge and international experience. (Ibid.) Failure can also originate from the expatriate, and not from the organisation. According to Tung (in Minbaeva and Michailova, 2004) it can result from personality, ability to adjust, family issues and a greater responsibility related to the overseas assignment. Swak (in Bender and Fish, 2000) suggests that expatriates should be viewed as an investment. Thus when the organization decides to partake in an expatriate program they should focus on both their and the potential expatriate’s needs and expectancies. In particular, they should focus on selection (skills, diplomacy, maturity, adaptability, attitude), pre-assignment training (language, cultural knowledge, technical skills), dual career opportunities,
flexible approaches to expatriation, career development programs, and create ways of implementing knowledge acquired. (Minbaeva and Michailova, 2004).

3.3 Influences on knowledge transfer

In this section we will present possible influences, both positive and negative, on knowledge transfer. There are three influences that we find rather extensive, why they will be described in more detail than the other influences.

3.3.1 Board involvement

It is management who is directing and controlling most organisations. Board involvement is normally limited and subjected to circumstances (Dierkes et al, 2001). Boards however are the organisations prime link to top perspective holistic vision of industry, markets and change dynamics. Thus by providing holistic information/direction the board ensures high performance (Child and Heaves in Dierkes et al, 2001). The traditional view of the board where the board is mostly passive and only takes actions in crises times lead to organisations which faces threatening downturns with general low innovation and single loop internal and external knowledge transfer (Dierkes et al, 2001). The same goes for a project, especially a long-term project and corporate involvement. When the corporate board take a passive stance on a project it is hard to sync the project with the organisation. The project likely over time goes through several stages declining in performance up until where the corporate board needs to act to avoid total project failure (see figure 3.7). (Weitzel et al in Dierkes et al, 2001)

According to Weitzel et al (in Dierkes et al, 2001) there are five stages through which an organisation can go. We apply this model to illustrate project life cycle where the corporate board takes a passive role. The project is started with good information, clear responsibility and direction. As the board is not involved with the project there starts to exist information gap which leads to a performance gap. The first stage a project encounters is that of “blinded” at this stage operational difficulties start to appear but with no visible influence on financial or overall performance. Management sees problems as small and temporary and does not inform board. The second stage is that of inaction. Here the problem becomes of such an extent that it is undeniable but instead of dealing with it management typically increases their commitment to present course of action. At stage three, “faulty action”, it becomes indisputable that the organisation in facing trouble. This stage normally includes power struggles and management asks for loyalty, as they act inconsistent and trying to defend
themselves. Power starts leaving the organisation at this stage. Boards become involved in this phase questioning and changing the dominant ideas and existing structure. This is a process of increasing double loop learning and normally some top managers get replaced to break ties with old habits. Stage four is the crises stage where the organisation’s mere existence is on the line. The board mainly acts as support to the new management whom is beset by aggravating internal problems and external pressures.

Figure 3.7: Widening performance gap as decline deepens (adapted from Sadler, P in Dierkes et al, 2001)
3.3.2 Cultural aspects

According to Darby (1995) an expatriate should not only hold functional skills, but also some cross-cultural awareness. He argues that an expatriate without any such qualities risk to be rather ineffective when working in another country. The functional skills themselves may even become inadequate without deeper understanding of the culture the expatriate is working in. Since communication can be considered the most important factor, Darby (1995) emphasises the importance of language skills. The expatriate does not have to be fluent, but he/she should have some language skills, which together with the cultural awareness could help the expatriate to survive. All this should be included in the pre-departure training. (Ibid.) Black and Mendenhall (in Caligiuri et al, 2001) suggest cultural awareness as a facilitator of cross-cultural adjustment, which in turn affects the success of the global assignment. The pre-departure training, however, has to be relevant for the expatriation assignment if the expatriate is to develop realistic expectations about his/her stay abroad (Caligiuri et al, 2001). In their study they found that relevant cross-cultural training before departure help to create accurate expectations. Caligiuri et al (2001) also stress the importance of language skills, but at the same time they argue that language alone does not help to understand another culture. It needs a cultural context. (Ibid.)

Cultural awareness provides a common framework for the persons involved. A lack of this is likely to cause conflicts within the community. Due to the tacit nature of know-how that lies within a culture, it might be difficult to transfer that knowledge to a person with another cultural background. (Spicer, 1997) In his study, Spicer (1997) found that the tacit skills of for instance interpretation of knowledge were not easily transferred between people of different cultures, in his case Americans and Russians. Spicer’s (1997) work shows that conflicts can be reduced by introducing an organisational culture, instead of having two different national cultures competing with each other. Iles and Hayers (1996) also suggest the development of a working culture, an “international micro culture”, as a means of overcoming the complexity that cultural diversity creates. Iles and Hayers (1996) suggest several qualities that a person of an international organisation or team should possess namely; a global mind, interpersonal skills and tolerance of ambiguity. Training in these skills, according to Iles and Hayers (1996), could help learning and innovation. Furthermore they argue that international teams or organisations tend to need more team building in order to overcome the cultural diversity. The ability to understand a person from a different culture is crucial for further work with that person.
3.3.3 Facilitators

In this section we have tried to put together other factors facilitating knowledge transfer. Since many of them recur quite frequently and some of them are very alike, we have chosen to integrate them to some main factors that we believe are important.

- Knowledge sharing environment. Two main factors influencing organisational learning are doubt and sense of security. The precondition for inquiry which lead to learning is doubt (Ibid.). Argyris and Schön (in Dierkes et al, 2001) define inquiry as “the intertwining of thought and action that precedes from doubt to the resolution of doubt”. (Friedman, in Dierkes et al, 2001:762) Doubt by itself can be dangerous and there should be an opposing force to balance doubt in order for people to feel willing and secure to experiment and resolve doubt. Sense of safety makes it easier for people to face potentially negative and faulty actions and decisions. (Ibid.)

- Social cohesion. According to Reagans and McEvily (2003), social cohesion should ease knowledge transfer, since it affects the source’s willingness to transfer knowledge. Normally, the recipient benefits the most from knowledge transfer, while the source has to invest time and effort to transfer his/her knowledge. Therefore motivation from the source’s side is very important. Reputation and cooperative norms are also likely to influence the behaviour of the source; he/she does not want to risk a bad reputation and thereby miss the opportunity of future interaction with people. Social cohesion could include strong sense of group identity and feeling of obligation (Cabrera in Minbaeva and Michailova, 2004)

- Trusting bond. Regans and McEvily (2003) suggest that communication and/or emotional attachment between individuals facilitate knowledge transfer. Furthermore they suggest that this is even more important regarding the transfer of tacit knowledge. Since tacit knowledge is difficult to articulate, it is often transferred through close observations and training together with other people. Therefore, a trusting bond, or tie strength as Reagans and McEvily (2003) call it; play a vital role in that kind of knowledge transfer. Codified or explicit knowledge, on the contrary, does not need to be transferred with the help of a strong tie. Given the investment that tie strength actually is, it can be considered inefficient to transfer explicit knowledge that way.
(Ibid.) Finestone and Snyman (2005) also put forward trust as a key factor, especially in transferring knowledge across cultural barriers.

• Credibility, Sarker et al (2005) argue that the source of knowledge has to appear trustworthy to the recipient or little knowledge transfer will occur.

• Network diversity. Reagans and McEvily (2003) suggest that knowledge transfer can be facilitated if the source and the recipient have multiple perspectives and a common language in which to convey the knowledge. According to them, a person in a homogeneous network is exposed to similar perspectives and might have difficulties to express things in another language. A person connected to multiple bodies of knowledge, on the other hand, may be more likely to see things in different perspectives and to realise the need for discussion. Therefore, Reagans and McEvily (2003) argue that network diversity will ease knowledge transfer.

• Common knowledge. According to Reagans and McEvily (2003) the chance of knowledge transfer to occur improves with the level of common knowledge. They argue that it is easier for a person to learn something that is related to what he/she already knows. This in turn implies that it is easier to transfer knowledge if the source and the recipient have some kind of common knowledge ground (Ibid.).

• Expected direct benefit. Both Bender and Fish (2000) and Cabrera (in Minbaeva and Michailova, 2004) argue that people are more likely to share knowledge if any benefits can be expected. According to Bender and Fish (2000), non-monetary rewards are often more valued than monetary such, because knowledge-intensive employers are more motivated by career considerations.

• Personality traits. Cabrera (2003) suggests for example extroversion, positive self-esteem, openness, agreeableness and conscientiousness as facilitators of knowledge transfer. Empson (in Bröchner et al, 2003) underlines the importance of enthusiastic people; people with a positive approach to integration and co-operation.

• Absorptive capacity of receivers. May et al (2005) emphasise that receivers must be capable of seeing the value of new information.
Communication, Sarker et al (2005) also suggest that the more communication between individuals, the more knowledge transfer there will be. They especially refer to individuals in remote teams, and stress the importance of them communicating extensively. Communication is the enabler of knowledge transfer that they found the most important in their study.

Minbaeva’s and Michailova’s (2004) studies reviewed that the decision to transfer knowledge is predominantly effected by the source ability and willingness to share knowledge. The source should try and understand the receiver’s values and beliefs.

“More is to be gained from increasing the motivation of those who are high in ability than from increasing the motivation of those who are low in ability. Similarly, more is gained from increasing the ability of those who are highly motivated than from increasing the ability of those who are relatively unmotivated”  
(Vroom, 1964:203)

3.3.4 Boundaries

As well as there are facilitating factors of knowledge transfer; there are also boundaries that must be overcome. In this section too, we have tried to integrate the boundaries to knowledge transfer that we have found, into some main factors.

- Knowledge is power. Greengard (in Bender and Fish, 2000) suggests that people do not want to share knowledge, since they do not want to loose their power. Husted and Michailova (2002) support this; they mean that hostility towards sharing knowledge can be due to the potential loss of value and protection of one’s own competitive advantage. Furthermore, they argue that such hostility may originate from the fear of loosing a superior position.

- Fear of showing weakness. According to Greengard (in Bender and Fish, 2002) there is a risk that people do not want to take part of other people’s ideas, because they are afraid to show what they do not know. Husted and Michailova (2002) put it the other way around. They suggest that people choose not to share their knowledge in order to avoid exposure of it. By not sharing knowledge, nobody can judge the quality of it.
Already an expert. Greengard (in Bender and Fish, 2002) suggests people considering themselves experts as a boundary to knowledge transfer. Some people simply regard themselves as competent and knowledgeable and therefore they avoid collaborating with others (Ibid.).

Language difficulties. As put forward by both Bröchner et al (2003) and Finestone and Snyman (2005), language difficulties constitute an obstacle in knowledge transfer. Roberts (in Bröchner et al, 2003) suggests that language difficulties can be overcome by using rich medias of communication, such as face-to-face meetings.

Hierarchical company structure. According to Finestone and Snyman (2005), company structure plays a vital role in knowledge sharing. Hierarchical structure tends to restrain knowledge sharing, because it gives rise to “they” and “us”-feelings. Top management has to be open to suggestions. (Ibid.)

Unmet expectations. According to Stroh et al (1998), expatriates may develop certain expectations on how things are going to be on return back to the home country. These could be for instance to make use of the acquired skills and to bring forth interest among colleagues about the abroad experience. If these expectations are not met, the person will lose commitment to the organisation, which in turn will interfere with knowledge transfer. Therefore, the home organisation should strive to keep the expatriate well informed about possible changes, show that past expatriates’ careers have benefited from the stay abroad and give them the opportunity to use their knowledge.

3.4 Summary

In this section, we will attempt to summarise our frame of references with a model and some concluding thoughts.

As we see it, knowledge originates from the individual mind and is therefore specific to each person. Although we often mention knowledge transfer, we believe that knowledge cannot be directly transferred; only the raw material can be transferred and then cognitive processes
within a single mind need to take place in order to convert it into knowledge. A common
distinction is that between tacit and explicit knowledge; tacit which we cannot tell that we
have and explicit, which is “hard” and possible to codify. We agree with Nonaka and
Takeuchi (1995) and Polanyi, who argue that explicit and tacit knowledge interact with and
complement each other.

The Dynamic Learning Model is formulated from a selection of the models found in the
frame work of this paper combined with endless discussions between the researchers paying
careful attention to the empirical findings, as these were done in parallel with the literature
research. The model indicates the critical stages in knowledge transfer from source to
receiver, emphasising what type of knowledge conversion should typically dominate each
stage. This is not to say that other knowledge conversions cannot take place at the same time
or that in some cases it might not happen completely different.

The model starts with Major and Cordey-Hayes’ (2000) model where data is the initial
material that is then gradually enriched through different processes all the way into action
(see figure 4.2). The processes undergone to reach each stage in the model are illustrated by
Miller’s (1996) six modes of learning. With background of the empirics, which have been
gathered in parallel with the theories, we have chosen a different order for these modes to
occur than is suggested by Miller (1996). This will be further discussed in the analysis.
Institutional learning, however, we do not find suitable to place in any particular stage of the
model; we rather see it as an on-going process that should affect all the other steps.

In our opinion, the four modes of knowledge transfer proposed by Nonaka and Takeuchi
(1995) occur throughout the process. We find strong evidence that combination and
externalisation are likely to occur during the first part of the process (square 1, figure 4.2),
where explicit material (data and information) can be gained swiftly (high velocity).
Figure 3.8: Dynamic Learning Model
Due to the speed information is obtained in these initially stages, it should be reasonable to believe it mostly facilitate single loop learning. Single-loop learning implies learning how to perform a certain task without changing underlying beliefs.

Then, by means of socialisation and internalisation in the latter part of the process (square 2, figure 4.2), tacit and explicit knowledge that is rooted in tacit processes and methodologies are transferred through intensive long term (high viscosity) on the job training (interaction and synthetic stages). Together with the previously gained information the intensive long term phase facilitates double loop learning. Double-loop learning requires underlying beliefs to change before the action can change (Argyris, 2002). Therefore, we believe that double-loop learning does normally not take place until a deeper understanding is reached (second part), which could then challenge the already existing knowledge and beliefs.

Hence, we are of opinion that the process as a whole is both tacit and explicit oriented, thus requiring both interpersonal activities and codified knowledge in the form of manuals and databases. Sooner or later, new potentials are likely to be seen, which will challenge existing knowledge. With this in mind, we believe that the model fits very well into Choi and Lee’s (2003) dynamic style of knowledge management, why we have chosen to name the model a “dynamic learning model”.

Concerning the influences on knowledge transfer mentioned in the frame of references, there are two main influences regarding knowledge transfer namely: board and top level management commitment and cultural differences including language. Other more general influences are those originating from the individual; personality traits, social cohesion, expected benefits for sharing knowledge, absorptive capacity of the receiver, credibility from the source’s side, bad attitudes such as fear of losing power, fear of showing weakness, pride, etc. There are also influences that could be more related to the interaction between source and recipient; trust, level of common knowledge, people’s network diversity and communication. Finally, we believe some influences could be categorised as those surrounding the knowledge transfer, such as norms, hierarchical structure, sense of security and doubt.
4 EMPIRICAL FINDINGS

In this chapter we will present our empirical findings that we have acquired through interviews, conversations, surveys and from the Gripen website.

4.1 The Agreement

“Gripen is the first of the new generation, multi-role combat aircraft to enter service. Using the latest available technology it is capable of performing an extensive range of air-to-air and air-to-surface operational missions and employing the latest weapons. Gripen is designed to meet the demands of current and future threats, while at the same time meeting strict requirements for flight safety, reliability, training efficiency and low operating costs.”

(www.gripen.com)

As part of a combined contract valued at US$ 2.2 billion, the South Africa government has ordered 24 BAe SYSTEMS Hawk Lead-In Fighter Trainers and 28 Gripen multi-role/swing-role fighter aircraft. The official Gripen order was placed December 1999. This first aircraft is on track to be delivered into service with the South African Air Force in 2007. This signifies a considerable technological transformation in the level of technology operated by the SAAF, South African Air Force. (www.gripen.com)

One of the interviewees discussed the Gripen deal with South Africa as a highly complex and ongoing agreement where SAAB and BAe take part in not only the development of the military capability of South Africa but also partake in national development of South Africa. In a reciprocal contract, SAAB and BAe SYSTEMS agreed to deliver new economic benefits to South Africa to the value of US$ 8.7 billion. This is called the National Industrial Participation (NIP) agreement and involves the Aerospace, Defence, Agri-Business, Pharmaceuticals, Automotive, Heavy Engineering, Lumber & Timber, Healthcare, Gold Beneficiation, Mining Equipment, Marine Engineering & Ship Repair, Tourism, IT and Energy sectors. (www.gripen.com)
Within the NIP lies the Defence Industrial Participation (DIP) agreement with the objective to create the capability in South Africa to maintain and upgrade the Gripen Weapons System. In order to reach this goal, necessary technology, expertise and know-how needs to be transferred and technical support needs to be provided in the initial stages of implementation. (SAAB internal documents) The Defence Industrial Participation (DIP) includes new orders placed by SAAB on the South African aerospace and defence industry. These orders include the manufacture and supply of Gripen Rear Fuselage Sections, Main Landing Gear fuselage Units and NATO-interoperable stores pylons for the entire Gripen program. Besides contributing to Gripens standard line, South Africa's Gripen fleet will feature enhancements such as air-to-air refuelling capabilities, Helmet Mounted Display capabilities and an onboard oxygen generating system featuring a powerful cockpit air conditioning unit controlling temperature.

The Skills and Technology Transfer Program (STTP) plays a dominant role in the knowledge transfer. This program allows South African engineers to learn state-of-the-art aeronautical technology, methods and processes, giving them the ability to reinforce the local aerospace industry. The goal of the STTP is not strictly technologic expertise but includes also new approaches to processes and working practices. Former STTP Program Manager Ratilal Rowji, says that “technology is embedded in processes and without these you just don’t get to understand how the Gripen works.” The configuration and methodology is so process-driven that it can be classified as a new technology area. (www.gripen.com) Other technologies forming part of the STTP include high-speed machining and lean manufacturing that are new fields for the South African aerospace sector. (www.gripen.com)

The first STTP group arrived in Sweden November 2000, living and working within Saab, Linköping, Sweden. The STTP consists at every one time of approximately 17 participants, which also represent the cultural diversity of South Africa. (Mr. Palm, Mr. Linde, Mr. Edwards) Each group stays in Sweden on an average for a year and a half. The STTP participants consist of SAAF personnel, defence staff and industry specialists. SAAF and Armscor (South Africa’s Defence materiel administration) are the procuring agencies for the STTP agreement, with Denel as the primary recipient. Through Denel, the rest of South Africa’s aerospace industry participates to ensure that client-specific (and national) needs are met (www.gripen.com, Mr. Palm, Mr. Khoza, Mr. Linde, and Mr. Edwards). The goal is to ultimately have a Design and Development Centre (D&DC) in South Africa that can work in
partnership with Saab on the Gripen, but also other South African aviation programs. The STTP is entering its second last year of eight-year term in Sweden. (www.gripen.com)

4.1.1 Project Structure

The Defence Industrial Participation (DIP) is a part of the contractual obligations that SAAB have towards South Africa, or the customer Armscor. DIP consist of all activities involved in the defence industry’s development consisting of five major interrelating branches of activity namely; Development Packages, Manufacturing, National Design and Integration Centre (NDIC), STTP and Teaming Partners. SAAB’s role in the DIP is not just to transfer the knowledge needed to maintain and update the Gripen, but also to make it possible for Denel Aviation to work and compete on a global market scale. Doing so, SAAB had to prepare the processes and transfer methodology, SAAB’s internal organisational activities, HR and other recruitment processes, IS/IT environment and necessary facilities, security issues and processes, how to co-operate with Denel Aviation and Armscor, and requirements capture. Requirement capture includes project requirements, budgets and time schedules, training SAAB personnel involved etc. There is a process on that, the contractual document that is called technology transfer management plan (TTMP). That is a contractual obligation. (Mr. Palm) Underlying is a structure map of agreed National Industrial Participation (NIP), what it constitutes of and the role the STTP have in the process. (See figure 4.1)
The TTMP is the agreement of work that should take place within the STTP program. It is this agreement and the role the STTP plays in the knowledge transfer that is the domain of interest in this study. Although the STTP is a subdivision of the DIP it is essential for many of the other DIP divisions’ implementation and future success. The STTP groups arrive in batches, both to make it cost efficient and pedagogically efficient. The groups come here with some overlapping between groups ready to leave and those arriving. It is defined in the contract in what order they are to come. (SAAB internal documents, Mr. Palm) The STTP contract TTMP is then broken down into 16 technology areas/chapters each consisting of a technology transfer activity plan (TTAP), forming the contractual agreement for each technology package (TDIP). (Mr. Palm)
STTP Technology Transfer Areas/ TTAP 1 - 16

1. Decision and Mission Support
2. Primary Flight Data & Navigation
3. Communications
4. Sensor integration
5. Human Machine Integration
6. Weapons Integration
7. S/W Configuration & Verification
8. Functional Monitoring, Built In Test & Recording
9. Avionics System & Software Integration
10. Airframe Technology
11. Airframe Manufacturing
12. Flight Test Methods
13. Logistics
14. Flight Training Simulator
15. General Systems
16. Electronic Warfare Libraries

Table 4.1: TDIP 1 – 16 (SAAB internal documents)

Depending on the amount of knowledge that needs to be transferred, each TDIP once again consists of a number of Personal Development Plans (PDP). Each Personal Development Plan belongs to one person and is an ongoing living document. (Mr. Palm, Mr. Linde, Mr. Khoza). On the SAAB side there is a corresponding Statement of Work containing the technical things, the schedules and the budgets. That is what SAAB use internally, because there are secret things in there that should remain invisible to the expatriates. This is used to track backwards to see if the knowledge agreed upon is transferred. Thus the technology transfer management plan (TTMP) is the umbrella for the STTP. (Mr. Palm)

4.2 Selection and home orientation

According to Mr. Palm, the people who come here are not necessarily from Denel Aviation. They could come from other organisations as well, for instance SAAB has had people from CSIR and Kentron and they will get people from Grintek and SAAF. However, they are all channelled through Denel, and while at SAAB, they are employees of Denel. According to Mr. Edwards, the people from Denel have not necessarily been in Denel for that long before they are chosen. Mr. Palm describes the recruitment as a long and careful process. They started from the TTAP:s, to define and support the requirements SAAB had for Denel. In
there were defined specific areas in which knowledge is needed, what background and what experience the expatriates should have, etc. According to Mr. Linde and Mr. Edwards the requirements are largely based on educational level (minimum 3 years in an engineering field) and on experience (2 years in the field). These requirements are very important for the selection of expatriate candidates as SAAB knows the technology that is to be transferred and the skills needed to make the transfer possible. SAAB sent in the requirements and Denel made a job advertisement. Thereafter, SAAB got the CV:s for everyone who applied. They discussed them and provided Denel with feedback concerning what experience they approved of and not, in what order they wanted them and so on. Then, according to Mr. Palm, SAAB went down to South Africa to support Denel in the interviews with the candidates and to make suggestions on who should be chosen and so on. Finally, all parties approved the people. He explains the effects of Apartheid on the recruitment.

“With Apartheid it has been almost impossible for black people, Indians, women, etc. to study in South Africa before 1994. They couldn’t have fifteen years of experience at that time. And according to South African legislations, black people, Asians, Indians, handicapped and women, should go first.”

Hence, SAAB had to deal with the fact that people would be brought here with less experience than they required. In some cases, according to Mr. Linde and Mr. Edwards, basic training was needed in Sweden before crucial knowledge transfer could occur. Yet Mr. Palm believes that this lower level of experience is in some case a positive thing:

“Within software programming for instance, it is the young people who have the most recent knowledge, and they are maybe easier to make an impact on. So that has been pretty good.”

And some areas, such as computerised aircraft, they have not had before in South Africa, why SAAB could not bring experienced people. Thus, SAAB had to pick new people and train them. As put forward by Mr. Palm, Mr. Linde and Mr. Edwards, the secondees undergo a two and a half day course on Swedish culture before leaving South Africa. That is

4 According to Mr. Palm, SAAB has chosen to call them secondees, rather than trainees, because they are skilled and experienced. In the thesis, we will use the word secondees, but also expatriates.
done to prepare them to culture shock and crisis. Mr. Linde and Mr. Edwards find this orientation course good and useful, although they emphasise that no course can possibly prepare a person to what is actually going to happen. This is especially true in South Africa that consists of a large number of different cultures within its borders, making it hard to have an approach of preparation suitable for all.

The SAAB people involved have a culture course as well, for half a day. They are introduced to the South African history to be able to understand the complexity of the nation. Mrs. Dackemyr is of opinion that the introduction course is good since it help to understand the differences and to avoid potential problems. However, the SAAB people are not given any courses on how to teach and train the secondees in a pedagogical manner. Mr. Linde and Mr. Edwards believe that the coaches and mentors are mainly chosen by virtue of their job skills.

Mr. Linde and Mr. Edwards explain that the secondees were chosen out of a reasonably small pool. They believe that it is the secondees’ responsibility to aggressively ask questions and pursue knowledge. Mr. Linde says that the first and very basic thing is to make sure that the person is enthusiastic and has the willingness to receive knowledge. Therefore, such qualities should be criteria. They are not sure however if that is the case, since the pool was not large enough to be that picky. They also suggest there should be a more psychological approach to this; you have to make sure that two people are compatible when you transfer technology. Recommendations from the survey included more cultural adaptation, both by expatriate and SAAB people. Respondents of the survey considered themselves a good choice for the programme mainly because they adapt easily and are eager to learn. Also mentioned were independency and flexibility together with background knowledge. Another important aspect is the secondees’ motivation for participating in this programme. Mr. Linde and Mr. Edwards feel that there are two main reasons. One is that it is an opportunity for training which is being offered and which could enhance your career. The other is that it is an opportunity to go abroad, be trained abroad, and live in another country. Other suggested motivational factors are being part of a new process, overseas experience, and patriotism towards company and country.
4.3 Host orientation

According to Mr. Linde and Mr. Edwards, everybody first undergoes a general building block including three levels; Swedish culture, SAAB environment and Gripen general. Thereafter they undergo more formal training.

4.3.1 Introduction to Sweden

When the secondees first arrive in Sweden, they are informally introduced to the Swedish culture. Mr. Linde and Mr. Edwards explain that there are voluntary employees at SAAB who agree to act as buddy families and take care of the secondees on arrival. Their job is to guide the South Africans into Swedish norms and procedures. It is more the secondees’ responsibility however, to build and maintain a relationship with the buddy family. As put forward both by Mr. Linde, Mr. Edwards and Mr. Palm, the buddy family system do not always work. Both Mr. Linde and Mr. Edwards are in contact with their buddy families and believe it has been very helpful, but there are people who are not in contact with them anymore. In general the buddy family system appears to be an effective approach, while some complaints exist about incompatibility between families and secondees. Both cultural and personal compatibility are regarded as important for the relation. It is argued that European oriented South Africans are more alike the Swedes, which in turn seems to improve the relation and the communication. Mr. Linde believes that due to big cultural differences within South Africa, it is difficult to find suitable buddy families for everyone. According to him, most secondees experience culture shock when coming to Sweden, at least during the first weeks.

“The expatriates normally arrive in Sweden in the month of February, which is not the best month to come here.”

As showed below in graph 4.1, respondents regard the ability to deal with culture shock as important (80%) for assisting in the learning while the actual experienced culture shock is rather moderate (55%).
Both home and host based orientation is regarded as important scoring 74% and 76% respectively (see graph 4.2). Source orientation that refers to host country employee orientation is regarded slightly less important (62%)
4.3.2 Introduction to SAAB

At the introduction stage, the expatriates are also introduced to the SAAB environment and processes. It especially includes the SAAB policy. SAAB has a handbook with leadership, assessment values and norms, which Mr. Palm gives the secondees in the form of a document on arrival. According to him, the SAAB policy is a lot about trust and credibility. Their way of working should be without prestige but with openness, trust and credibility.

“Trust cannot be a demand; it can only be built up. And it can be easily destroyed, by saying one thing and doing another for example. It takes time to rebuild. That is why I’m so happy that we have this in SAAB’s personnel policy; that we should build trust and credibility, internally and externally. If we say something, we intend to do it.”

He also talks a lot about competences. He believes that competences are more than just the ability to do something; it is also the knowledge. In order to deliver, that is also needed. He also mentions approaches and attitudes that a person might have. According to him, you cannot just change your attitude, because it is superficial. Instead, you have to change what is behind, your approach.

“It has to come from the brain and down to the heart. You have to be one with the message.”

Willpower is another thing that Mr. Palm talks about. He believes that willpower is a neutral word that can be positive or negative. Sometimes it is good to have a negative will and sometimes it is good to have a positive will.

“You need a will for cooperation, and that is what we do here.”

According to Mr. Palm, the old style implies learning as much as possible and not teaching other people, because if you tell other people you won’t have the same power. But in this project, everybody, at least to some extent, should be able to train other people. Therefore, he really stresses cooperation. The secondees are also given courses in presentation skills, and some of them also get to attend courses in negotiation.
“I think it is important to start with the will to understand somebody else, before you want to be understood yourself.”

He also regards communication and commitment as important. They even train communication. And commitment is needed for all parts to make a programme like this work.

Another important part of the SAAB policy/culture is the roles and responsibilities. They define different roles; if an employee works 10-20 % for Mr. Palm in this project, then that is one role. The rest of the time the person has other roles. The work package manager is one role, the line manager another and the coach yet another. Everyone can have at least three different roles. Within these roles lies the responsibility, specified in documents. As a project changes, the roles might be modified. If someone is weak in some area or does not have the time, then someone else can fill in. That assistance would also be a role. SAAB tries to teach the secondee about roles and responsibility. For instance, they train them to be responsible for their training instead of just waiting for someone to train them. In general, Mr. Palm believes that people are much more efficient doing what they are best at and want to do. Naturally, all of this is about how SAAB should be. Mr. Palm says that they will never get there. Even within SAAB, there are different styles at different departments. But they have worked with this for fifteen years and things have improved, according to him. They have it written down so they know where the target is; they can point at it. It is official and can be found on the SAAB website.

4.3.3 Introduction to Gripen

The last step in the introduction block is the Gripen. Mr. Palm says that the secondee attend top down courses on the aircraft. They also learn about the Gripen processes from top to bottom.

4.3.4 Formal Learning

Depending on the area of concern and the previous knowledge the expatriate has within the field, they are subjected to formal learning. This varies in time and quantity and is mainly achieved through the study of manuals and documents.
4.4 On-the-job training

After having finished the building block and the more formal training, the secondees continue with on-the-job training in their specific field of technology. We have chosen to distinguish between expatriates considering management and those considering technology as important to their career. We have done this because we believe this greatly influences the way they learn and transfer knowledge. Management orientated expatriates amounted to 3 out of 10 of the respondents and technology orientated to 4 out of ten (see graph 4.3). This is interesting since they are sent to Sweden to become technological expertise, that almost a third of the respondents have other personal motives.

![Graph 4.3: Sample group Orientation]

The on-the-job training seems to play a vital part in the programme. According to the survey, learning by doing is the most common means of acquiring knowledge. As mentioned before, the STTP consist of 16 technology areas named TDIP1 – TDIP16. Each of these TDIP:s has a mentor responsible for the TDIP’s smooth functioning and success. Within the SAAB organisation each TDIP is regarded similar as a line function. Each TDIP consist of one to many PDP files, these PDP files are individual documents stating what each expatriate needs to learn and accomplish. Every expatriate is then placed in various line functions within the SAAB system and work side by side with a SAAB team. Within this SAAB team the line manager or another capable person serves as a coach for the expatriate. Depending on what
the expatriate needs to learn he can work within one SAAB line function with one coach, or have multiple roles in different line functions with multiple coaches. The expatriate reports to his coach, mentor, line manager and program manager depending on what the issues are at hand. It needs to be emphasised that there are multiple roles on responsibilities placed upon each SAAB employee as well as each expatriate.

The on-the-job training could imply for instance: partaking in a project, developing a system, writing manuals, and preparing for reviews. Furthermore it also involves soft dimensions such as how to handle the tasks and how to interact. Both coaches and work package managers have regular meetings with Mr. Palm to report on the training to see that learning actually occurs. He is of opinion that the secondees sometimes wait for instructions instead of pursuing knowledge. He emphasises that the secondees have to deliver in the same way as “normal” employees, except for certain conditions that is created especially for the secondees such as regular seminars. Therefore they are confronted when not pursuing knowledge. The expatriates are also subjected to continuous seminars where they sit down and discuss the process in a holistic problem identification approach.

“They still need to deliver at the same time as Swedes when working together on a program. Some expatriates think they can work and work and never deliver. Delivering on time at right cost and right quality is essential to customer relations. If not, you don’t get any more orders.”

Mr. Palm says that many expatriates go through a stage where they realise they have too much to learn in too little time. Therefore, he encourages them to actively search for knowledge. Both Mr. Palm and Mr. Linde believe that it takes a long time, at least a year, to understand how SAAB works. In Mr. Linde’s opinion, working procedures in Sweden are quite different compared to that in South Africa.

Secondees sometimes stay in Sweden for a prolonged time. Mr. Linde and Mr. Edwards say that has happened to three secondees. Some of them became indispensable in their work areas during the training, and stayed on request from SAAB. However, it is only for a limited period, in order to finish a certain amount of work. This also gets approval from Denel and the SAAF. Some respondents stated that they would stay for longer, if asked. According to
Mr. Linde and Mr. Edwards, there seems to be both extremes; people who become almost indispensable and people who feel that they do not learn anything, people who are very happy with their training and others who are not happy at all. From the survey (graph 4.4) it appears that there is a considerable difference between job satisfactions experienced by management (50%) and technology orientated (75%) expatriates. As to expectations (graph 4.5), management orientated secondees feel they were mostly not fulfilled (30%) whereas technologies orientated were more fulfilled (55%).

Graph 4.4, Job satisfaction among management orientated and technology orientated expatriates
According to Mr. Linde and Mr. Edwards, it should also be mentioned that in some cases, the learning is mostly about processes and procedures and not the technology per se. Some secondees are already experts in the field and the only thing that SAAB can teach him/her is how the technology is used at SAAB. According to the survey (graph 4.6) the respondents have a large amount of overlapping prior knowledge (76%), with technology-orientated secondees having slightly more than the others. The importance the respondents attach to prior knowledge is moderate to important (68%)
Mr. Palm believes that the different cultures involved play a big role, this include both the cultural differences within South Africa and the differences between Sweden and South Africa. Typical issues that result from this includes clocking, summer holiday requests and praying times. He argues however that SAAB is aware of it and is working with it. It also appears that the South African culture have higher fears of failure. It is important to understand the cultures involved. On the whole Mr. Palm believes it is good for the future with multi-cultural teams, because it is breaking down the boarders of fear. Mrs. Dackemyr, on the other hand, does not experience any problems due to cultural differences in her department. She works with English South Africans and Afrikaans South Africans and she believes they have similar perspectives. Other work package managers have experienced some problems, however. When everything goes smooth, Mrs. Dackemyr does not meet with the secondee that often. It is the coaches who have the daily contact with them. According to the survey (graph 4.7), cultural background is regarded moderate (60%) in importance to the learning process. The respondents seem to be of opinion that Swedes are rather easy to work with (76%), and almost all respondents are of opinion that they have good English command (90%).
Mrs. Dackemyr is convinced that clear goals and knowing what to work with when returning to South Africa, really motivates the secondees.

“My secondees are keen to gain knowledge. They can see the goal and that also motivates them to actually learn and know exactly what they want and need and are going to get from the program.”

This she believes is why she does not experience any problems with motivation and learning in her department. Mr. Khoza, who claims that there is continuous communication between the secondees in the flight test department and their line manager in South Africa, supports this. Hence, the line manager knows what the secondees are learning, and they know what they need to learn and why. That is not the case in all departments. Some respondents of the survey expressed a wish for better communication channels between secondees and home organisation. Clear missions and goals seem to be considered important (88%). See the graph 4.9 on page 56.

An important aspect, according to Mr. Linde, is the compatibility between individuals. As mentioned in section 3.2.1, compatibility plays a vital role, not only concerning the buddy
families, but also when working together at SAAB. Mr. Linde and Mr. Edwards strongly believe that there has to be compatibility between the people involved in the training, or the outcome will not be very successful. They say that within the STTP there are cases where compatibility between personalities is not achieved, which negatively influence knowledge transfer.

“It’s dependent on this relationship between the SAAB-person and the person who needs to receive the knowledge; whether there is a good relationship or not. If there is not a good relationship, there is no guarantee that there will be any technology transfer.”

The survey results show that trust is considered very important for assisting in the knowledge acquisition. Management oriented secondees (series 1, graph 4.8) consider it extremely important (100%) in comparison to technical oriented secondees (series 2 graph 4.8) which scores it as important (80%). The teacher/instructor’s credibility is also regarded important with the technical oriented secondees considering it 17% more important than the management oriented.

Graph 4.8: Factors influencing knowledge transfer
According to Mr. Palm, there are some team activities arranged, such as football, to strengthen the relations between SAAB people and secondees. Mrs. Dackemyr believes however that the secondees mostly socialise with the SAAB people in a business context, and not so much in the private life. She thinks that a reason for this could be that most secondees have already worked together at Denel, so they know each other. At SAAB they try to see and treat the secondees as normal colleagues, by putting them into existing projects with roles and procedures as their Swedish counterpart. Mrs. Dackemyr believes this approach is mostly successful.

Security reasons however do influence the extent to which secondees can be treated as normal employees. Mr. Linde and Mr. Edwards explain that the secondees are not given access to the whole SAAB system. Mr. Palm says that there exists a security plan specifying what secondees are allowed to see and access. Specific procedures need to be followed when someone needs to access sensitive information. This does interfere with the knowledge transfer, but are vital keeping sensitive information safe. From the survey it appears that some respondents regard security issues as an obstacle in the process.
4.5 General remarks/Sweden

According to the survey, the secondees have acquired knowledge mostly through on-the-job training (96%) and informal dialogues (74%), meetings and brainstorming (74%) and coaching/mentoring (72%). They have acquired knowledge the least through databases (58%) as shown in the below graph.

![Knowledge transfer methods SAAB](image)

In Mr. Palm’s opinion, the family plays a big part in the learning process. If the family/home life of the expatriate worsens so does the knowledge transfer, therefore he has decided that expatriates should not work overtime.

"If the family is not happy, learning does not take place."

Instead, they should spend the spare time with their families, if they have family here that is. He also says that SAAB invites the spouses to see the aircraft and brief them on the programme. According to Mr. Palm, most secondees are between 27-40 years old, although some of them are 45-50 years old. He has experienced problems both because people are too young and because they are too old. He is of opinion that some of the young ones are a bit
immature and want things served instead of taking own responsibility. On the other hand, some of the older secondees can be stiff and do not want to change.

Mr. Palm explains that there is continuous communication in order to solve problems that arise in “soft” dimensions. He has meetings with the South African programme manager every week and he also has telephone conferences with South Africa to sort out any problems. Twice a year there is a process review where the responsible line managers and the customers come to Sweden. Here all of the secondees give a forty-minute presentation on their progress and answer questions from the different parties involved. Mr. Palm also has monthly meetings with the project managers to see how the training goes. This approach has yield outcomes such as improving the overall communications ability and willingness of the expatriates.

4.6 Return to South Africa

According to Mr. Linde and Mr. Edwards, the objective of the program is that the secondees would return and do design and development work in South Africa. Doing so would make the company and country more competitive in that area of technology, working not only for SAAF but also other customers. For example, a secondee receiving radar training in Sweden should be able to return to South Africa, adapt the technology and improve the capabilities of the company. The idea behind the knowledge transfer is that the secondees should train up people in South Africa and should theoretically just be the initial recipients of the technology.

4.6.1 Receiving the returned expatriates

According to Mr. Vadivelu, ideally, secondees should return and begin work as soon as possible on work packages or areas in which they have been trained. In situations where this is not the case their newly acquired skills will be used in other, non-Gripen related projects in the company. The secondees are reacquainted with their new organisational structure of the company, if any, and return to original line management or new line management depending on if the secondee was trained in a different technical area other than his original expertise. Ideally the transfer of knowledge should occur immediately and the secondee should have a junior person with them to train. However, as resources to shadow each of the returning secondees prove very costly for the company, this exercise is only performed when there is a major ‘paying’ project to execute. Mr. Vadivelu appreciates the part of the secondees not transferring or using their acquired knowledge within six months after homecoming to 30 %.
It varies with the different technology areas however. Mr. Linde and Mr. Edwards strongly emphasise the importance of maintaining the knowledge when returning to South Africa.

“All this technology transfer training will amount in nothing if it can’t be exercised afterwards. Once this technology is transferred, if you don’t exercise it, it’s like any training you receive, whether it is physical or knowledge or whatever, you won’t keep it for long. There has to be some follow-up work for that person.”

Mr. Khoza also describes the knowledge transfer process back in South Africa as varying and dependent on the area of technology. The norm though is that on expatriate return, the organisation welcomes them back and they work in old or new position.

“Come back and they say it’s nice and we’re glad to have you back, there is your desk, see what you can do.”

However, there are no procedures created for sitting down with repatriates and determining what they have learnt and how that can contribute to the team and organisation as a whole. Mr. Khoza believes it is well structured from SAAB’s side in Sweden, but once in South Africa, it stops. When the secondee comes back they have to know where they are going, to what department, what they are going to do, etc. It has even been the case that expatriates are not recognised on return. Their position has been filled and they do not belong there anymore. One person actually left the company because there was nothing for him to do. Mr. Khoza suggests there is little communication between the secondee and the people in South Africa. The secondees do not know what is happening back home, and the managers in South Africa do not know what the secondees are doing in Sweden.

“When you come back you are clueless. People are kind of forgotten.”

What they did recently though, is that the monthly reports that the secondee have to write were sent to the line managers in South Africa. Mr. Khoza believes that could force participation from the line managers’ side, if they read it. One big exception from this is the flight test department. According to him, there is continuous communication between the
secondee at the flight test department at SAAB and their managers in South Africa. Mrs. Dackemyr confirms this; she claims that the flight test secondee are well aware of what they are going to do when returning to South Africa.

4.6.2 The Design and Development Centre
In South Africa, SAAB has established a Design and Development Centre. According to Mr. Khoza, the centre is available to the whole industry.

“If you want to design and develop something, the Design and Development Centre is the place to go.”

Mr. Linde and Mr. Edwards say that the reason for establishing this centre in South Africa, which specializes in key technological areas, is that SAAB would be able to contract them to perform tasks. The idea is to train sufficient people to populate the centre so that they can do work via SAAB for SAAF and other companies. Mr. Khoza explains that it is an approach of keeping the secondee together. It is all in the same building. For each project the needed skills will be defined and pulled together. They will work together at the centre as a team. When finished with the project, they will go back to where they came from.

“If a work package is sent to the centre, say radar systems, then all people who have been trained in radar systems will be put in as a resource. It is a team; that is the idea of the Design and Development Centre.”

Mr. Vadivelu describes the structure of the centre as a matrix type, since trained people are contracted from the line organisation to work with projects placed on the centre. It houses all necessary tools, such as infrastructure, processes and expertise, making Denel internationally competitive. SAAB is not the only customer; organisations such as Augusta and Airbus are also customers. Mr. Khoza highlights that as one of the benefits; returning secondee do not have to work with Gripen projects only. Of course, if there is a Gripen project they will be pulled into that, but there are other projects as well. He explains that there is always a conflict between line organisation and matrix organisation; you need to find a balance. Another problem, according to Mr. Linde and Mr. Edwards, is that not everybody is applied to the Design and Development Centre. Sometimes there is just not enough work to do at the centre,
why some secondees do not get to use their acquired skills at the centre. Instead they move around and get applied to other areas.

“When returning to South Africa, they didn’t get the opportunity to pass the knowledge on to other people, and then they were reapplied in some other areas and things like that. (...) The knowledge remains with that one person who has received it.”

4.6.3 Differences in management
Both Mr. Khoza and Mr. Palm highlight another problem, namely the differences between Swedish and South African management and business culture. Mr. Khoza is hoping that the people returning to South Africa will bring the SAAB culture and approaches into Denel and the other organisations. Mr. Khoza believes that this kind of skills is taught in a well-structured way at SAAB, but once in South Africa the secondees go back to their old habits. There exists no structured approach to keep this learning and sharing spirit alive once expatriates return. According to him, the only organisational approach transferred and implemented successfully to date is lean manufacturing. In terms of matrix organisation and cultural skills they are far away. Mr. Palm pushes a lot for cooperation.

“Talk to each other, talk about what you can contribute with. Become a team. If you go back to South Africa and act as an individual, you are lost.”

He explains that they have given Denel Aviation proposals on managers’ courses, but that they couldn’t do that in the beginning since it was one of BAe’s responsibilities.

4.6.4 The knowledge transferred
In graph 4.11 below secondees’ and Mr. Vadivelu’s perceptions of what skills are transferred are compared to each other. Series 1 refers to the secondees’ perception of what skills they acquire while at SAAB while series 2 refers to what skills Mr. Vadivelu believe is transferred into Denel. They agree that both supervisory skills and negotiation skills are moderately transferred. Mr. Vadivelu considers cross-cultural, technical/functional, decision-making skills and international business knowledge as the most transferred skills. As for the secondees they are of opinion that cross-cultural and technical/functional skills are mostly transferred whereas the other skills are all moderately transferred.
According to Mr. Vadivelu, knowledge is mostly transferred into Denel by ‘doing’, manuals and documents, coaching and mentoring (100%), by lectures (80%) and by informal dialogues, meeting and brainstorming, metaphors and story telling, databases and computerised information (60%). Some interviewees are of opinion that the secondees only learn specific knowledge and do not get a holistic view. However, regarding the technical skills, Mr. Palm declares that they try to create an overlap; the technological skills are not necessarily specific to one individual.

“We are trying to create some overlap. But the crucial phase is when they transfer it over to the home organisation.”
4.6.5 The outcome

To date, Mr. Linde and Mr. Edwards find it difficult to comment on the outcome of the programme in South Africa. Although the Design and Development Centre already has produced some rather successful results, they believe that the test will be when one of the strategic objectives are reached, for instance if the centre will be able to integrate a weapon onto the Gripen. Even though SAAB will always be in the process, South Africa wants to do a fair amount of work. Mr. Linde suggests that there are external influences on the programme, for instance political, which has a negative effect on the knowledge transfer. He believes that one should always try to minimize outside influence.

“If you want something to be successful, I think you have to try not to be influenced by outside factors and stay within the parameters.”

Both Mr. Palm and Mr. Khoza are of opinion that the programme does not only aim to improve Denel or Gripen, but South Africa in general. Although participants might not stay within Denel, Mr. Palm is hoping that the secondees are going to stay in South Africa. Mr. Linde has a similar view; he motivates his sharing of knowledge when returning to South
Africa by patriotism to the employer and to the country. He sees it as only fair. However, he is not convinced that the SAAB procedures can be implemented in South Africa.

“You can’t implement it in South Africa, but in your own processes you can make use of it.”

4.7 Recommendations: Return to South Africa

Mr. Palm and Mr. Khoza agreed that the matrix-structured organisation is ideal for the industry and emphasized that this is a major challenge. According to Mr. Khoza the matrix structure in South Africa is problematic due to the high level of authorization and power distance within the South African hierarchical business structure. A problem that negatively effects the adoption of the matrix structure in South Africa is the value people place upon titles. In South Africa true success and high salaries are mostly attainable through becoming a manager and this decreases people’s motive for becoming a technical expert. Mr. Khoza says that people consistently strive to become a manager in South Africa and that some of the expatriates coming to Sweden also come here to receive knowledge in order to bargain their way to management. (Mr. Khoza)

“In South Africa knowledge is used as power and people prefer to keep their knowledge to manipulate the system... We use knowledge to benefit ourselves and not the company.”

Mr. Khoza also states that South African line managers often see returned expatriates as a threat and “some expatriates get side lined when they get home.” This power struggle can lead to expatriates being reluctant to share their knowledge in fear of decreasing their worth to the company and thus compromising their job security. “This really is a problem.”

Mr. Khoza compares the returning expatriates to expecting a baby “…you know it is coming, so you have to prepare.” Communication and planning would make the reintegration easier. It would be much smoother, even from a planning perspective. The line managers would be able to plan more efficiently, if they know that this person is acquiring these skills. Whether it would be too costly to fly an expert to South Africa to train the receiving managers, Mr. Khosa states absolutely not. He states that SAAB has tried to do that. For example, before
each batch arrives SAAB sends an expert to South Africa to prepare them on SAAB environment and general Gripen capabilities. However, there seems to be a lack in motivation for line managers to attend these courses and no structured routine forcing them to go. (Mr. Khoza)

The problems experienced in transferring the knowledge into Denel may not only be due to different cultural dimensions but also to a lack of responsibility. According to Mr. Khoza responsibility of the STTP was moved around for some time. This led to a project lacking a permanent home, where you know who the person/department responsible is. Moving responsibility causes problems to be shifted around and prevents the organisation to learn efficiently from its experience. Responsibility is a top down approach and should start with the board of an organisation. The Denel board is mainly passive in the STTP and the corporate office has not been involved in this project up and till a year ago, when things got a little shaky. Corporate office direct involvement only lasted for half a year. Mr. Khoza states that it should be remembered that this is a SAAB project, financed by SAAB. Denel is the recipient of the technology. Therefore they can participate, but they cannot really change things within the project. (Mr. Khoza)

According to Mr. Khoza responsibilities and roles should be clearly defined so that emphasise can be placed on organisational learning and improvement of already in placed methods. Mr. Khoza emphasises the importance of learning from experience, which, as mentioned in section 4.6, is done by SAAB before each batch arrives.

“SAAB is improving; they are improving every year, to the extent where they are timing each and every task.”

Thus, SAAB’s side is very well structured. This has been absent from the South African side.

“We do not sit down as a team to reflect enough, but at the same time I can also say that we have improved.”

According to Mr. Khoza, they now tend to know things more in advance and are improving, although not as fast as SAAB yet.
Mr. Khoza makes the following suggestion for increasing knowledge transfer efficiency. The first step would be to keep expatriates as a team, even when they go back to their respective home organisations. When the returned expatriates work on a SAAB project they should be pulled together. That would be the start of the matrix organisation concept. They don’t belong to any department exclusively. This however would most likely need to be a top down approach. There needs to be careful balance between line and project work. A problem that exists between organisations and the movement of people is that if the project is not of value to the specific organisation/department then there is no incentive to release people to the project. Thus it should really be stressed that these people do not belong to anyone and that the line managers partake in the move towards a matrix organisation. (Mr. Khoza).

At the moment, Denel tends to treat project as a line function. This can be due to misunderstandings of what line and what project tasks are. Management should decide with each order if it will be a repetitive task or not. If it is a repetitive task it is a line function if not it is a project. Based on this the management can then assign or pull resources as needed. This will at least get people to start thinking differently to their work approaches. Management should thus slowly move away from emphasises on titles. This will help create an environment where technical people feel like specialist and valuable resources. Eventually leading to the organisation where rank is of less importance and job security is not based on retaining knowledge but on sharing and the ability to share. (Mr. Khoza)

On a more individual level it is important to keep expatriates responsible and accountable for transferring their knowledge to the rest of the organisation. This has to be very structured. When working in South Africa “I always tried to get the PDP from the people and see what needs to be done. Identify the gaps within each PDP and fill it.” It is vital to keep the PDP:s alive. The expatriates are told in Sweden that when they return home it is their duty to transfer the knowledge. But again that has never been done in a structured way. A structured approach can take the form of giving the expatriate the opportunity to present what he has learnt to the rest of his home division. Thereafter it should be discussed between division members. This should be done even if this is only a one-day project. So the members can have a common foundation to work from. (Mr. Khoza)

The training department needs to be behind this and make sure that each line manager exercises this reintroduction of expatriate to their specific divisions. At the moment
expatriates are only obliged to hand in all their training notes and documents to the training department. This should then become accessible to all, so anyone who wants to know any specific information can pull the records. Yet this has not yet realised, people go everywhere in the world on training courses that the organisation pays for but they never share the notes and knowledge.

“We need to learn how to share and help build on each other’s knowledge, for it is very possible that my co-worker has knowledge that will assist me in my job.”

In Sweden expatriates make two presentations of what they learnt yearly. Here people can make suggestions and recommendations to each other’s learning process. Cross learning has been implemented in SAAB in that way.

“I have helped implemented it in Sweden and now it is my dream to take the same model and make it work in SA.”

4.8 Summary

The empirics were formulated in an expatriate event time sequence. This was done in order to identify the steps taken and the underlying processes and procedures that were involved. Having in-depth knowledge of what happens at every stage we could not only identify how knowledge was transferred but also what the main barriers and facilitators were. Although there are several steps within this process we will now briefly identify the main ones. The process initiated in forming the statement of work that should be transferred to expatriates. Based on this the selection criteria were formulated; those were mainly based on technical background. Two and a half day home based orientation takes place before expatriates enter Sweden. Once inside Sweden expatriates get introduced to their buddy families, mentors and coaches. Thereafter the expatriates are introduced to the SAAB environment and Gripen in general. Depending on the area and their previous knowledge they enter a formal learning phase consisting mostly of learning through documents, manuals and lectures. Then they enter the long term on-job-training that aims to teach them both technical knowledge but also the underlying processes and methodologies. Here the expatriate partakes in normal line duties and have roles and responsibilities as any other employee. The expatriate is very much responsible for his own learning. In the end of their experience in Sweden they should have
the necessary ability and expertise to transfer and implement the knowledge in South Africa. There is however no structured way of receiving expatriates back into their home organisation and there also seems to be a lack of responsibility and board involvement. The lack in responsibility and board involvement could be what has attributed to the problems currently experienced in the transfer of knowledge. These include communication between expatriate and line managers, the training department’s failure to obtain all learning notes and documents and making them available for organisational learning.

Other influences, which of cultural impact are most visible, are identified. These include among others trust, credibility, learning environment, fear of losing power and personality traits.
5 ANALYSIS

In this chapter we will bring together the theoretical framework and our empirical findings in order to answer our research questions. The analysis will be structured according to the three research questions.

5.1 What type of knowledge is transferred?

In our opinion, the knowledge transfer in Sweden is both of explicit and tacit nature. As stated by several interviewees, SAAB does not only teach and train purely technical skills, but also how to work the SAAB way, the SAAB culture, and presentation skills, which could be considered overly tacit. We believe however that the structural, intended training mostly aims to transfer explicit skills but that much of this explicit/technical knowledge are rooted in tacit processes and methods. Also there exist some more emergent knowledge transfers that might not occur in a structured way, but rather just happens. For instance, when Swedes and secondees work together in the on-the-job training, tacit skills such as SAAB culture, communication and new attitudes are probably transferred, without direct intent.

From the recipients’ perspective it seems as if the secondees have mostly acquired cross-cultural skills, which is definitely of more tacit nature. Second most acquired skills were technical/functional, which on the other hand are more explicit. It should also be remembered that expatriates in the survey strongly agree that most learning was through on-job-training which itself consist of a large tacit dimension within the technical acquired skills. All interview participants also agree that the technology is not detachable from the underlying processes and methodologies. Thus, both explicit and implicit knowledge are transferred in Sweden; some more intended than others.

As to South Africa, Mr. Vadivelu is of opinion that technical/functional skills, cross-cultural skills, decision-making skills and knowledge of international business are the skills most transferred. Thus, knowledge transferred to South Africa also seems to be of both tacit and explicit nature. It is questionable though, if the tacit knowledge is actually being transferred to South Africa, due to the cultural differences between the two countries. The tacit knowledge may not fit very well into the South African context; as the management style is more
hierarchical in South Africa and people put more emphasis on titles. This leads us to believe that it can be difficult to implement for instance decision-making skills. Therefore, we are of opinion that the knowledge being transferred into South Africa is more explicit in nature. What is to some extent worrisome is the depth that explicit (technical) skills are rooted in tacit (processes and methodologies) dimensions. We thus agree with Nonaka and Takeuchi (1995) who states that tacit and explicit knowledge are not entirely separated but rather intertwined, complementing each other. Thus, even though the knowledge transferred to South Africa is mainly explicit, the extent to which it is embedded in tacit knowledge might make it difficult to incorporate into the South African organisations.

When looking at the knowledge pyramid presented in the framework, we are of opinion that expertise is the intent of this programme, at least regarding the technical skills. Since the secondees are trained in different technological areas during a rather long period of time, it is reasonable to expect them to become experts in their field. However, with the more tacit skills, the expertise level might not always be reached and transferred. Hence, we believe that the secondees in general become experts in their technological field while in Sweden. On return to South Africa though, this expertise will have to be practised, as put forward by Mr. Linde, or it will fade.

![Knowledge hierarchy (Bender and Fish, 2000)](image-url)
5.2 How should structured knowledge be transferred?

In this section we aim to map the flow of knowledge, first as it is then to continue with how it should be. We have chosen to analyse this according to the combined framework model.

On a more over-all level, we believe that the knowledge predominantly flows in one direction, rather than in multiple directions as discussed by Kidger (2002). Since the intended knowledge transfer is from Sweden to South Africa, it is not unreasonable to believe that it is more of a one-way approach. However, Mr. Palm says that they always learn from collaborations, why there should be some knowledge transfer in the opposite direction. As has been stated in the empirics, some secondees were very knowledgeable in the technological area already when they came to Sweden. Hence, SAAB is likely to learn something from these secondees, although we believe that the two-way transfer mostly involves tacit skills such as cross-cultural and communication skills. Since the secondees have limited access to the SAAB knowledge and less of a holistic view, it might be difficult to actually transfer harder, technical skills to SAAB.
Figure 5.2 Dynamic Learning Model
5.2.1 Knowledge transfer from organisation to individual

On a more detailed level, in relation to the Dynamic Learning Model, we believe that the knowledge transfer occurs the following way.

**Analytical**

We believe that *analytical learning* comes first; in this stage data becomes information. Data is gathered and processed in formal systems, the TTAP:s and PDP:s for instance. At this stage it is planned in detail and accounted for in documents, thus there should be low uncertainty about goals and means. Related data to the specific areas of concern is withdrawn from the collective and entered into the Statement of Work, where this data gets meaning and purpose and thereby become information. This information is invisible to the expatriates, due to its sensitive nature. Information needed by the expatriates is summarised and integrated with the PDP:s. Looking at the knowledge pyramid, we believe the clearer goals are defined, the more meaning and purpose the information will have to the expatriate.

**Structural**

The second stage is *structural learning*, which is the transformation of information into knowledge. The secondees are introduced to the SAAB way of working, organisational routines through courses, seminars and active translation. According to Miller (1996), these will then act as guidance in the continuous tacit and explicit learning, which we agree is the case at SAAB. We believe that well-defined goals help to create beliefs and values that in turn facilitate the transformation to knowledge. We believe it will give the learning direction. Furthermore, as some secondees are experts in their technical field, it is important to teach and emphasise the processes and methods at the beginning, or they will probably feel that they are taught nothing and thereby lose commitment.

**Experimental**

Thereafter *experimental learning* occurs, that is the step where the individual comes to full understanding. The secondees are at the stage of having acquired a lot of information through formal training such as lectures, and are starting to challenge it by asking questions. This could be used as a sign for management that the individual is ready to begin the on-the-job-training. This, we consider to be experimenting; they are about to create their own ideas about the knowledge, to some extent double-loop learning starts to take place. We believe
that the South African culture of “fear of failing” might prevent the individuals from asking questions that challenge the knowledge acquired and thereby making it difficult to determine if they are at this stage. As suggested by Miller (1996), uncertainty about means is likely to be high at this stage. Now that they challenge the acquired knowledge we believe that they need to question the means and goals of the knowledge transfer. Only after they have started to utilize the acquired knowledge, they will know how the knowledge will serve as a means towards their goal. This involves experimental thinking, the translation and interpretation within the individuals’ minds regarding the knowledge he/she acquired. This occurs mostly in the last part of the formal training just before the on-the-job training occurs.

Up to this stage (see square 1 in figure 5.2) we believe that knowledge transformation predominantly occurs through combination (explicit to explicit) and externalisation (tacit to explicit). Externalisation is the attempted translation of SAAB values and norms (tacit) onto documents (explicit). Even though the expatriates will receive these documents, we do not believe they can actually own this knowledge until they have had interaction with the Swedes. This will happen in the later stages of on-the-job training through socialisation (tacit to tacit). As Nonaka and Takeuchi (1995) argue, written language is often insufficient to convert tacit knowledge to explicit. Combination, as proposed by the literature, is normally done by formal education, documents and databases. We also believe that combination will occur in the on-the-job training but that the emphasis will be on socialisation and internalisation (explicit to tacit). We emphasise combination in the initial stages as this stresses high velocity through fast and direct access to vast amounts of information. This type of knowledge transfer mostly facilitates single loop learning, therefore even though the information reaches the recipient directly, it will take a long time to understand it and integrate with own values and beliefs.

**Interactive**

The next step is interactive learning, which is the transformation from understanding to wisdom. This typically involves on-the-job training. Here learning will occur in a more spontaneous and implicit way. Even though they are trained in a certain area of technology, which could be considered explicit knowledge transfer, this will also include some tacit dimensions. Probably the SAAB processes taught in the beginning through formal lectures, will appear clearer when put into practise, although they will not be fully understood at this stage. The extent to which the secondee can relate this to his/her previous knowledge will
decide how much wisdom he/she will gain. Considering the high score of previous related knowledge from the technical orientated secondee’s side, there should be a good chance for them to acquire wisdom.

Concerning the SAAB processes and way of working, we believe that the duration between understanding and wisdom is rather long. As put forward by both Mr. Palm and Mr. Linde, it takes about a year to comprehend how the SAAB processes work. Thus, the process seems to slow down. Since the SAAB way of working probably is related to the actual technology, thus if you do not fully understand the processes it is hard to understand anything else, it might be the case that the actual technology transfer also slows down during some time.

**Synthetic**

Then we believe they will reach the stage of *synthetical learning*, where learning is even more spontaneous and less structured. The secondee are still doing the on-the-job training, but they are probably at the stage of creating insights and a more holistic view. Here, we believe that double-loop learning really starts taking place. At this stage, some of the secondee will prove almost indispensable to SAAB, why some of them have been asked to stay for a prolonged time. Therefore knowledge has now truly reached the stage of action and is adding to the competitive advantage of the organisation. As suggested in the literature, knowledge here normally originates from the single mind and may therefore stay with just a few persons. This, we believe is very true in our case; the secondee are about to become experts in their field and they have had a lot of time reflecting and adding personal beliefs and values to the knowledge. Hence, it will have been processed in the individual mind for quite a long time, thus the knowledge will overlap to a rather small extent. At this stage, the secondee’s level of commitment becomes crucial for actions taken and success of knowledge transfer.

In order to transform understanding into action (see square 2, figure 5.2), learning will occur mainly through internalisation (explicit to tacit) and socialisation (tacit to tacit). Given the emphasis on on-the-job training, we believe that knowledge transfer in Sweden to a large extent occurs in the modes of internalisation and socialisation. Internalisation is where knowledge acquired through formal training becomes second nature. We believe that the on-the-job training at SAAB, together with observations, assists in transferring tacit to tacit knowledge (socialisation). It does not only include the processes, but for example how to
manage a project and how to interact with other people. In the on-the-job training it appears that the secondees get to practice technical knowledge, which also includes conversion from explicit to explicit. That in turn, is known from Nonaka and Takeuchi (1995) as combination. Although it is not surprising to find that amount of on-the-job training in this project, it is an interesting contrast to the literature. However, the technology seems to be embedded in processes, of which some might be tacit, why the choice of on-the-job training appears rather natural. Considering the rich mediums of learning and long-term approach of this part of the process, it is reasonable to believe that through high viscosity, double loop learning is achieved. As put forward by Mr. Palm and Mr. Khoza, it is more of a long-term approach; every individual is being trained according to a detailed plan, and not until the last secondees return to South Africa, the result can be seen. As mentioned by Mr. Linde and Mr. Palm, it takes a long time to comprehend the SAAB processes, and that could not possibly be urged on.

We believe however, that commitment, which was also mentioned by Mr. Palm as an important factor in this programme, is needed earlier in the process. Commitment might vary with the secondees; probably the secondees in the flight test department can be considered more committed since they know what they have to learn and why. Thus, it is not unreasonable to believe that those secondees advance faster between the steps in the Dynamic Learning Model than the other secondees. Of course, this is only with regard to the on-the-job training, where they are trained in their specific area of technology. For more general training, such as SAAB processes/culture, presentation skills, etc., there does not have to be a big difference between them. Most secondees are probably motivated to take part of a new culture and a new company; otherwise they would not have applied for the programme.

Finally, we believe that *institutional learning* occurs during the whole process, rather than at a certain stage. It is incorporated by the organisation’s values and beliefs and takes place on a broader level. Even though the secondees are introduced to the SAAB culture of openness, trust and understanding in the beginning, we believe that it is more of an ongoing process to absorb the SAAB culture, since it can be regarded quite different from the South African style.

As to the specific technology, the full process from data to action could be considered to occur in Sweden, since they all undergo on-the-job training, which could be regarded as
action. The empirics show however that not everyone has been happy with the training. Thus, some might stay on an earlier stage, not really succeeding to put it into action, while some even manage to put it into action to an extent where SAAB asks them to stay for a prolonged time. Also when expatriates do not have the necessary prior knowledge, there might be regression from knowledge back to information. By this we mean that the individual does not have the necessary background to interpret the knowledge. Of course, not being happy with the training can be due to other factors; maybe the person already knows the technology and feels that he/she does not learn anything new. Then, knowledge is also put into action, although maybe with less commitment and motivation. As stated in the first section of this chapter, it is not the technology that is transferred the most. According to the survey, the skills mostly acquired are cross-cultural. Thus, it is reasonable to believe that the full process is undergone with those skills as well.

5.2.2 Individual to organisation knowledge transfer

In South Africa, the process is rather different. Considering that the secondees have to apply to the Design and Development Centre in order to practise and spread the SAAB-related skills, interactive learning appears to be the mode mainly occurring in South Africa. Thus, to date the process in South Africa, if ever, seems to be initiated by *interactive learning*. The returned secondee puts his/her knowledge into action by partaking in a project at the Design and Development Centre. In the ideal scenario a junior person will shadow him/her, learning-by-doing. Since there is no structured way of receiving the secondees on return, we do not believe that *analytical learning* really takes place. The PDP:s “die”, the line managers are generally not aware of what knowledge has been acquired and thus the knowledge acquired is not gathered or processed by the home organisation. It is difficult to say whether *structural learning* takes place; although there is no organised way of receiving the secondees, we believe that limited structural learning could take place in conjunction with the interactive learning. We strongly believe that *experimental learning* takes place at an early stage in South Africa, because the SAAB knowledge needs to be elaborated on and adapted to the South African context. Institutional learning does not seem to occur at all to date, since the SAAB values are not easily transferred into South Africa. Due to the early stages of implementing the acquired processes and methodologies, it is hard to speculate whether synthetic learning has occurred.
When returning to South Africa however, if not given the opportunity to utilize the knowledge, tacit or explicit, the full process will not take place again. According to a discussion with our supervisor, the operational level will not be reached if the knowledge is not implemented and practised. In this case, knowledge might stay on a strategic level. If the secondee is not applied to the Design and Development Centre, he/she will probably not have the possibility to spread the SAAB-related skills. Then the technical skills might be nothing more than data or information in the PDP, plus knowledge or understanding within the individual’s mind. And the tacit knowledge will not even be seen in the PDP, since we cannot tell that we have it. That, of course, is not applicable to all secondees; it depends on the area they work in, as mentioned earlier. In the ideal case, colleagues in South Africa begin the process, hopefully to complete it. As mentioned in the empirics, the Design and Development Centre has already produced some rather successful results (for instance lean manufacturing) that show that the level of action has been reached. However this knowledge transfer and action is probably mostly explicit in nature.

Regarding the knowledge transfer in South Africa, it seems to occur mostly through learning-by doing and coaching, but also by manuals and documents. This would mainly imply socialisation (tacit to tacit) and combination (explicit to explicit). According to Mr. Vadivelu, manuals and documents seem to be more commonly used in South Africa than in Sweden. This might imply a greater focus on velocity, that is, the speed of the knowledge transfer.

Drawing up an ideal scenario in South Africa, we believe that the Dynamic Learning Model could be duplicated as in Sweden, at least if the intention is to fully implement the SAAB processes, technology and culture. This we have done by extending the Dynamic Learning Model to include both an upload and download phase that is illustrated in figure 5.3 below.
Figure 5.3: Structured Knowledge Transfer Model (SKT model)
Thus after the expatriate returns to his home organisation (South Africa in our study) the process should restart in the analytical learning by gathering the data and identifying what is relevant in order to create manuals and documentation (information). It is important that the expatriate hands over all his notes, as a lot of his new tacit knowledge resides in preconditioned learning and can only be passed on in the same format as he received it. Implementing this information will be different in the download phase, as experimental learning would probably occur earlier in the process, because they will need to try how the processes work in the home organisation. Thus experimental learning would start parallel with structural learning in order to transform information to knowledge and ultimately understanding. Thereafter on-the-job training (interactive learning) can occur together with mentoring leading to wisdom. True competitive advantage would be reached when the organisation would move beyond wisdom to a stage where spontaneous learning creates new insights and double loop learning. We believe that they would need to focus on velocity in the beginning of the download phase, thus making documents and notes quickly available to the home organisation. In general, however, the process would need to focus on viscosity.

We suggest however those care needs to be taken implementing some of the softer, human orientated skills from one culture to another as not to create cultural conflict. An example of this is the implementation of the matrix organisation in South Africa. Although it appears that this is the ideal organisational structure for the industry, it needs to be a carefully planned and timely implemented process.

5.3 What are the main influences on knowledge transfer?

We have identified the corporate board as the source of most conditions existing within the organisation, having the most visible impact on knowledge sharing. We will now discuss each of these respectively and thereafter some of the other important influences.

When the board is actively involved it is difficult to identify their influence on the project. It appears that the Denel board is not actively involved. Mr. Khoza states that for some time the project had no permanent home and responsibility was moved around making it hard to track faulty actions and learn from past mistakes. Active involvement by the Denel board could resolve some problems at hand and prevent the project from decreasing in performance. Within the project the Denel board got involved a year ago when the project got shaky, but then withdrew their involvement six months later. We believe that the board should become
fully engaged with the knowledge transfer process as it appears to be in stage three which begs for corrective action (see figure 5.4). This we base on some examples of problematic areas as given by Mr. Khoza. These include lack of responsibility and lack of communication between the expatriates and their South African line managers. Further problems are the Denel training department failing to capture all the learning material from expatriates and the lack of structure reintegrating expatriates back into the home organisation. Mr. Khoza reminds us “it should be remembered that this is a SAAB project, financed by SAAB. We are the recipients of the technology. Therefore we can participate, but we can’t really change things within the project.” We believe it is crucial for the board to be committed and involved in all stages of a project because without active board involvement on both sides knowledge transfer would amount to nothing. It is unreasonable to believe that when the board lacks commitment in a project the people involved would be committed. The board and also top management thus act as role models to which the organisation would mimic itself.

![Figure 5.4: Widening performance gap as decline deepens (adapted from Sadler, in Dierkes et al, 2001)](image)

Several interviewees have emphasised the implications of cultural differences. It has even been suggested that more cultural adaptation is needed, from both sides. Given that both Swedes and South Africans get some orientation in their respective cultures, some kind of common framework has probably been created. As mentioned by Mr. Linde and Mr.
Edwards, however, it is impossible to be fully prepared for expatriation; thus, most secondees experience culture shock in the beginning. This is probably also the case for the SAAB employees; even though they learn about the complexity of South Africa, it is difficult to be prepared for working with individuals from another country. We believe it is the type of knowledge that, although it can be written down in a document and taught in a classroom, takes much longer to really understand and implement in the individual mind. Hence, we believe that the orientation that both sides undergo is sufficient; they will have to deal with the different cultures when starting to work together.

There seems to be differences in people’s perception of cultural diversity. From the survey, it appears that the secondees do not regard cultural background as very important in knowledge transfer, which leads us to believe that the Swedes more than the South Africans regard cultural differences as an issue. This can certainly be related to the fact that South Africa as a nation is very complex and diversified in itself. Probably, most secondees are used to working with people from different cultural backgrounds. There also seems to be a difference within the South Africans; the European-orientated South Africans seem closer to their buddy families and some even suggest that Sweden and South Africa are very alike. Maybe the European-oriented find it easier to adapt to Sweden, because there exist more common cultural qualities between them and the Swedes. As mentioned in the framework, different cultural backgrounds may affect the knowledge transfer negatively. This would imply that European-oriented secondees would experience less difficulty in the learning process than other secondees. In our opinion, that might be true to some extent, but considering the exposure that South Africans in general get to different cultures back home, we believe that cultural differences are not of a big importance to them.

This reasoning can be connected to the network diversity proposed as a facilitator in the framework. Network diversity (Reagans and McEvily, 2003) implies that if source and recipient have a wide network, they are probably used to many different perspectives, why they should be able to realise the need for discussion and understanding. Hence, the secondees might have a very wide network range including individuals from different parts of South Africa speaking different languages. That, we believe, may be the reason for them not regarding cultural background as important in knowledge transfer.
As to language, which can be considered a boundary to knowledge transfer, it does not seem to be a big issue in this project. The secondees regard their English as almost excellent, and Mrs. Dackemyr does not experience any problems with the language. Maybe it is because Swedes in general have a rather high level of English, but most of all we believe that language is not a barrier in this project because it involves a lot of close collaboration; learning by doing rather than speaking.

As has been suggested in the framework, a common culture could be created instead of having two cultures in conflict with each other. We are of opinion that this is partly done by the continuous focus on openness, trust, roles and responsibilities, collaboration, etc. However, it does not really serve as a common culture, since it is already the SAAB culture. Thus, the SAAB people already know it, while the secondees have to learn it on arrival in Sweden. Furthermore, we believe that being a Swedish company; some Swedish values must be reflected in the SAAB culture, why it is neither an entirely common culture nor a culture without influence of national culture. What it could be considered though, is a knowledge-sharing environment/culture, because it encourages collaboration and trust between individuals.

Trust itself, plus source credibility, is considered important facilitators, both according to the respondents and to the literature, especially when transferring knowledge across cultural boarders. By working with the SAAB culture of trust already from the beginning, trust will have the chance to be built up over time to a reasonable level needed when starting the on-the-job training and mentoring. In the framework it is stated that trust is particularly important in tacit knowledge transfer, but rather insignificant in explicit knowledge transfer (Reagans and McEvily, 2003). An interesting finding in the survey is that management orientated secondees regard trust more important than do the technical orientated secondees. This might be due to the fact that management oriented secondees are probably searching for more tacit skills, which would then support Reagans’ and McEvily’s (2003) theory. Even though the trusting bond might not be as important to explicit as to tacit knowledge transfer, we believe that the cultural barriers within this programme outweigh that fact. Hence, in our opinion, trust is a key facilitator.

Since the secondees seem closer to each other than to the Swedes, there is probably more trust within the group of South Africans than between South Africans and Swedes. Thus,
stronger friendship bonds would probably facilitate further. We are also of opinion that trust could depreciate as a result from the security issues. Some secondees might feel that they are not trusted when they cannot access all information. That, however, appears hard to do something about. Something that we believe increases the credibility is the fact that SAAB, according to Mr. Khoza, is improving all the time through constant planning and evaluation. In our opinion, that should improve the over-all impression of the project.

Trust and credibility could also be considered facilitating a learning environment based on doubt and sense of safety. Doubt is created in the SAAB environment through the means of having clear goals but giving some latitude of freedom to participants to pursue these goals. It is expected from the expatriates to identify gaps in his knowledge (PDP) and then to find ways to fill these. Sense of safety is achieved by having an open blame free environment based on clear roles and responsibilities. Roles and responsibilities create structure and structure facilitates sense of safety.

What also seems very important is personality. This is stressed both in the framework and in the empirics. Given the importance of on-the-job training, it is not surprising to find that personality plays a vital role in this knowledge transfer. In our opinion, this should be reflected in the whole process, from recruitment to return to South Africa. It appears that the selection of candidates were not large enough to take personality traits that much into account. Although Denel and SAAB had interviews where they got an impression of the candidates, most emphasis still seems to have fallen on the right education and experience. In addition to this, they had to take governmental demands into consideration. As put forward by Mr. Linde and Mr. Edwards, people have to be enthusiastic, open and willing to pursue knowledge on own intent, and according to them this is not always the case. To this we would also like to add the extent to which the expatriate is respected in his home organisation. Only if the expatriate is well respected, his fellow colleagues will be willing to learn from him when he returns.

With all this in mind, we claim that personality traits should have to be taken more into account than they are today, both in recruitment and when putting people together. Considering that the knowledge transfer is not only about the technology per se but also about the SAAB processes and softer organisational/cultural skills, it might be advisable to try to find the enthusiastic, extrovert and communicative individuals suggested as facilitators.
in the literature. Since it seems to take a long time to understand the SAAB way of working, the purely technical background might not be that important. As it seems from Mr. Palm, it is easier to make an impact on the less experienced secondees. Some of the older may even be reluctant to change, maybe because they consider themselves experts already (Greengard in Bender and Fish, 2000) or because they do not want to appear weak (Ibid.). Therefore, personality could be considered a very important factor in knowledge transfer. Of course this is in contrast to the common knowledge, one of the other facilitators proposed in the framework. Common knowledge between source and recipient naturally requires similar engineer background, because they could impossibly have a similar background with regard to processes.

Due to the clear structure of roles and responsibilities within SAAB, we believe that social cohesion plays a role in facilitating the knowledge transfer. With the roles and responsibilities, it is rather clear who should do what work, which in our opinion could be a motivation for the source of the knowledge to transfer it. If he/she does not play the role as expected, he/she will risk a bad reputation according to the co-operative norms of SAAB.

A facilitator, one would expect to be important is expected direct benefit. From the Swedish side though, there does not seem to be any direct benefits from sharing knowledge, it is more of a demand and expectation from the environment. From the secondees’ perspective, however, we believe that there are several direct benefits to be expected. For instance, Mr. Edwards distinguishes between two motivators: motivation for career enhancement and motivation of foreign experience. We believe it is important for the organisation to distinguish between these two motivators, because people motivated by foreign experience might be less committed to hard work. Since knowledge can be regarded as power, we also believe that secondees might see that as a direct benefit, especially considering the importance of titles in South Africa. As shown in the empirics, both the expectations fulfilled and job satisfaction varied a lot between technical orientated and management orientated secondees. Considering this project is intended to create technical experts, it is interesting but not surprising that the management-orientated secondees’ expectations are considerably less fulfilled and they experience lower job satisfaction. This once again emphasises that the right candidates should be selected.
A negative influence on knowledge transfer is the *fear of losing power*. We do not think that is the case with the SAAB people, since they are not likely to feel threatened by the secondees who are only temporary workers. The secondees, on the other hand, when returning to South Africa, might be reluctant to spread their knowledge if given the opportunity. Hence, we believe fear of losing power is a very important barrier back in South Africa. Another barrier to knowledge transfer in South Africa is the *hierarchical structure* proposed both by the literature and in the empirics. Once back in South Africa, the secondees may risk retaining the acquired knowledge due to weak management support and “they” and “us” feelings.

As *communication* is emphasised a lot by Mr. Palm and Mr. Khoza, and as it is also mentioned in the survey, we find it relevant to relate it to communication as put forward by Sarker et al (2005) in the framework. Sarker et al’s (2005) idea is that there has to be communication between remote members of a team to facilitate the knowledge transfer. It appears to us that the “team” in this case would be the secondee and his colleagues and managers in South Africa. There needs to be more communication between the secondees in Sweden and their managers in South Africa. As it seems now, it is mainly the flight test secondees who have regular contact with the home organisation. Thereby, they know what they have to learn and how that knowledge is going to be used, which in turn increases their motivation to learn. Moreover, their managers will be able to prepare how to receive them on return to South Africa. Hence, communication also appears to be an important influence on knowledge transfer. Communication increases motivation and prepares the South Africa managers by creating clear goals and shared visions with secondees in Sweden. Clear missions and goals scored high in the survey as assisting criteria in knowledge transfer.
6 CONCLUSION

This final chapter will briefly summarise the results of our study and end with some suggestions for future research.

The knowledge transferred is both explicit and tacit. The contractual obligation mostly consists of intended explicit knowledge. This explicit knowledge however is very rooted in tacit dimensions (processes and work methodologies). It has also been found that tacit knowledge, such as cross-cultural skills, are transferred, although in a more emergent manner. It appears though that it is mainly the explicit knowledge that is getting through to South Africa. This can be attributed to the fact that the tacit knowledge conflicts with the South African culture. The extent to which explicit knowledge is rooted in tacit dimensions could make it difficult to implement the explicit knowledge in South Africa.

To date, knowledge transfer is not occurring in the same way at SAAB as in Denel. SAAB has a very structured approach to knowledge transfer actually divided into steps and phases that they have fine-tuned to the extent where they are timing the phases. Within the SAAB environment, knowledge transfer steps incorporate both tacit and explicit knowledge. Knowledge transfer is initiated by externalisation and combination emphasizing high velocity and single loop learning. Thereafter learning enters a longer phase through internalisation and socialisation emphasizing high viscosity, which facilitates double loop learning. The movement from high velocity to high viscosity we have come to believe is ideal for transferring structured knowledge. This led us to build the Dynamic Learning Model.

Denel, on the other hand, has no structured approach of implementing knowledge into the organisation. This has led to some conditions threatening the overall success of the program. We have carefully considered approaches to transfer the knowledge into the home organisation and concluded it best to duplicate the Dynamic Learning Model with some minor adjustments, which we then labelled the Structured knowledge transfer model (SKT model). It should be emphasised that knowledge transfer to the organisational as a whole is a long-term process that extends far beyond the model in time.
It is important before any knowledge transfer steps can be taken, that both receiver and source attempt to create ideal knowledge transfer conditions. The board should be the initiator of the process and be fully committed and take overall responsibility. The board and top management should also act as role model throughout the knowledge transfer process. Culture does play a vital role but not to the extent as can be expected, although awareness of underlying cultural norms and values will positively influence the process. Personality should be more emphasised in selecting participants. Other personality related factors found to be important are trust and credibility.

Due to the fact that the knowledge transfer into the home organisation is a much longer process then from the source to the expatriate, this study mostly rely on information from the latter. It could be interesting to investigate this project on the South African side in a couple of years. Further suggestions for research are how an organisation can create a knowledge-sharing environment or more on corporate board influences on organisational learning.
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Email questionnaire and survey
Email questionnaire, Thivian Vadivelu, Programme Manager, South Africa, 2005-12-13
Survey, 10 expatriates currently at SAAB, 2005-12-12 – 2005-12-16
Appendix 1 - Questionnaire expatriates

"Knowledge transfer in a high technology industry"

Dear participant!

We are two master level students at the University of Linköping currently carrying out research for our final Thesis. This questionnaire below is designed to study knowledge transfer process within the STTP. We value your contribution greatly as the information you provide is vital to establish the key factors that have an impact on the knowledge transfer process. We would appreciate it if you take a few minutes to answer the questions below that are related to the STTP’s activities. Your answer will be kept completely confidential. As a gesture of our gratitude, upon your request, you will obtain a copy of our Thesis by E-mail.

Please submit the completed questionnaire by email no later than Thursday 15th of December 2005

Thank you very much for your time and co-operation. We greatly appreciate the help your organisation has had in furthering this research endeavour. The Questionnaire enclosed has 3 pages.

Yours sincerely

Cecilia Gullberg and Pieter Pelser

Mobile phone: + 46 731 500 222
Email: piepe885@student.liu.se
**Home Organisation:**

Please rank these questions on a scale of 1-5 where;
1 = Disagree, 2 = Mostly Disagree, 3 = Partly Agree
4 = Mostly Agree, 5 = Fully Agree, 0 = Don’t know

### I learn by:

<table>
<thead>
<tr>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>doing</td>
</tr>
<tr>
<td>manuals and documents</td>
</tr>
<tr>
<td>coaching and mentoring</td>
</tr>
<tr>
<td>lectures</td>
</tr>
<tr>
<td>informal dialogues</td>
</tr>
<tr>
<td>meetings and brainstorming</td>
</tr>
<tr>
<td>metaphors and storytelling</td>
</tr>
<tr>
<td>Databases and computerised communication</td>
</tr>
</tbody>
</table>

### I have acquired:

<table>
<thead>
<tr>
<th>Skill</th>
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<tbody>
<tr>
<td>decision-making skills</td>
</tr>
<tr>
<td>technical/functional skills</td>
</tr>
<tr>
<td>knowledge of international business</td>
</tr>
<tr>
<td>communication skills</td>
</tr>
<tr>
<td>cross-cultural skills</td>
</tr>
<tr>
<td>negotiation skills</td>
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<tr>
<td>supervisory skills</td>
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</tbody>
</table>

I am certain of the means/ways to achieve my goals
I experienced a high degree of culture shock
I have previous international experience
Swedes are easy to work with
It is easy to acquire new skills at SAAB
I see weaknesses within the knowledge I have acquired
I get the opportunity to exploit proven knowledge
I get the opportunity to explore new potentials
I feel encouraged to express new ideas
My prior knowledge overlaps a lot with my new knowledge
I am satisfied with my job
I feel I’m a part of the SAAB family
My expatriate expectations were fulfilled
I believe that the knowledge transfer in this program is highly successful
It’s easy to communicate with the Swedes
My English is excellent
I have established a close relation with my buddy family

**Rank 1 to 5 how important you perceive the following criteria for assisting in your knowledge acquisition.**
1= Not important at all, 2= Not important, 3= Moderate, 4= Important, 5= Extremely important, 0= Don’t know

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Rating</th>
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<tbody>
<tr>
<td>Autonomy in job assignments</td>
<td></td>
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<tr>
<td>Ability to deal with culture shock</td>
<td></td>
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<tr>
<td>Clear missions and goals</td>
<td></td>
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<tr>
<td>Long-term career planning for expatriates</td>
<td></td>
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<tr>
<td>Technical/functional training and mentoring</td>
<td></td>
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<tr>
<td>Orientation before expatriation</td>
<td></td>
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<tr>
<td>Orientation in the host country</td>
<td></td>
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<tr>
<td>Expatriate based training for host country nationals</td>
<td></td>
</tr>
<tr>
<td>Trust</td>
<td></td>
</tr>
<tr>
<td>Strong sense of group identity</td>
<td></td>
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<tr>
<td>Previous related knowledge</td>
<td></td>
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<tr>
<td>Expected related benefit</td>
<td></td>
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<tr>
<td>Personality traits</td>
<td></td>
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<tr>
<td>Norms and rules that encourage knowledge sharing</td>
<td></td>
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<tr>
<td>A knowledge sharing environment</td>
<td></td>
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<tr>
<td>Receivers’ perception of information value</td>
<td></td>
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<tr>
<td>Cultural background</td>
<td></td>
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<tr>
<td>Teacher/Instructor’s credibility</td>
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</tbody>
</table>

Select four and put them in order of importance (1 to 4) where 1 is the most important and 4 is the least important of the four selected. 

**Which four would you consider to be the most valuable strategic knowledge for your career?**

- Product knowledge
- Cultural knowledge
- Management knowledge
- Patented knowledge
- Technology knowledge
<table>
<thead>
<tr>
<th>HRM knowledge</th>
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<tbody>
<tr>
<td>R&amp;D knowledge</td>
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<tr>
<td>Processes knowledge</td>
<td></td>
</tr>
<tr>
<td>Other, please specify</td>
<td></td>
</tr>
</tbody>
</table>

**Concluding questions**

Any thoughts that occur to you while answering the above questions?

What recommendations can you make for the expatriation program?

I consider myself a good choice for the expatriate program because:

The buddy family system is highly effective. Yes or no and motivate your answer

*Please press *Save* once the form is completed before emailing it back to the sender’s address*
Appendix 2 – Email questionnaire Mr. Vadivelu

Dear Mr. Vadivelu,

We are two master level students at the University of Linköping currently carrying out research for our final Thesis. This questionnaire below is designed to study knowledge transfer process within the STTP. We have been in connection with Alf Palm, SAAB and Burger Linde, Armscor in Linköping. Your name has been forwarded to us by Alf Palm as a valuable source of information in South Africa. We value your contribution greatly as the information you provide is vital to establish the key factors that have an impact on the knowledge transfer process. We would appreciate it if you take a few minutes to answer the questions below that are related to the STTP’s activities. As a gesture of our gratitude, upon your request, you will obtain a copy of our Thesis by E-mail.

Please submit the completed questionnaire by email no later than Friday 16th of December 2005.

Thank you very much for your time and co-operation. We greatly appreciate the help your organisation has had in furthering this research endeavour. The Questionnaire enclosed has 2 pages.

Yours sincerely

Cecilia Gullberg and Pieter Pelser

Mobile phone: + 46 731 500 222
Email: piepe885@student.liu.se
1. What happens with repatriates after returning to South Africa? Sequence of events that led to knowledge acquired being transferred into the organisation.

2. How is the value of ‘knowledge acquired’ measured?

3. How would you rate the success of STTP to date?

4. How good is the corporate communication/understanding between Denel and SAAB?

5. How many repatriates’ knowledge acquired is not transferred and utilized within six months after homecoming?

6. According to you, what is the key factor/s for achieving a successful outcome?

7. Is there an aggressive ongoing move towards a matrix organisation within Denel? Motivate how the organisational structure of Denel facilitates competitive advantage.
Questions please rank on a scale from 1-5
1= Disagree, 2=Mostly Disagree, 3= Partly Agree
4= Mostly Agree, 5= Fully Agree, 0= Don’t know

The repatriates’ knowledge is transferred into Denel through:

- doing
- manuals and documents
- coaching and mentoring
- lectures
- informal dialogues
- meetings and brainstorming
- metaphors and storytelling
- Databases and computerised communication

The type of skills transferred into Denel is:

- decision-making skills
- technical/functional skills
- knowledge of international business
- communication skills
- cross-cultural skills
- negotiation skills
- supervisory skills