Merja Karppinen

CULTURAL PATTERNS OF KNOWLEDGE CREATION

FINNS AND JAPANESE AS ENGINEERS AND POETS
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HELSINKI SCHOOL OF ECONOMICS

ACTA UNIVERSITATIS OECONOMICAE HELSINGIENSIS

A-271
Their colours are bright but still they fall:
who lasts forever in our world?
Today I cross the far peak of Transience:
no more shallow dreams, no drunkenness

Anon. (translation by Janine Beichman)
要旨

この研究は国際ビジネスでの知識創造の分析を行ったものであり、知識創造のどの観点が文化の影響を受けるかを探ることを目的としている。言語とコミュニケーションにあらわれる文化的違いは、この研究では異なった知識創造の型から始まるものであるというものを前提としている。これらの型は言語と文化の本質の可変性、自己と理解力、コミュニケーションのプロセスの変化自在な組み合わせである。本研究では文化にはそれぞれ独自の知識創造のスタイルがあることを示している。

本研究の調査方向としては文化との関連ではイミテーション、アプローチの点では説明的、解釈的であり、複数の理論的枠組みを適用している。本研究では、特にフィンランドと日本に焦点を当て、それぞれの文化に特有の知識創造のスタイルをエンジニアと詩人の知識創造と描画した。実証的データはフィンランド・日本ビジネスコミュニティマネージャーたちにインタビューを行い集めたものである。

知識創造においてエンジニアとしてのフィンランド人とは彼らの知識創造が機械的生物を背景としていることを意味している。フィンランド語の表現はラテンアルファベットを基礎として書きわかれており、音節表記体系である。音と記号の対応度が高いので、文字は透明度が高い。このタイプの発音文字はデジタル論理を強化する。フィンランド語は左から右へと書かれる視覚焦点を右へと導き、左脳を刺激する。フィンランド語は単一方向で、正しい絵文字はひとつしかないと、そのような文字表現から学ばれた問題解決アプローチは原則に基づく（機械的な）学習を強化する。フィンランド語の知識のカテゴリ化は抽象的である。フィンランド人にとって、識字能力とは理論的学習のスタート地点であり、直線的論理を強化する。

本研究の知識創造において詩人である日本人という概念は知識の詩的な処理プロセスが視覚像と連想に基づいているというところから発している。日本で強調される世界観は有機的な。日本の書記体系はアルファベット文字と、表語文字である漢字と2つの音節文字体系（ひらがなとカタカナ）、音節的なラテンアルファベット（ローマ字）の組み合わせである。漢字は具体的カテゴリ化と連想的論理を可能とする概念体系を備えている。漢字を処理することは左右対称に働く脳（どちらか一方の側の脳に偏るのとは反対に）を育てると言われている。日本語の言葉では文脈（背景）の縁え間ない解釈が必要となるため、問題解決は先頭に解決が与えられる。漢字は視覚的な意味を持っており連想回路を生成するため、カテゴリ化は具体的で、連想的である。この複雑な書記体系は不明瞭度が高く（透明度が低い）、デジタル論理の使用とともにアナログ的な論理を強化する。

漢字の暗記は長期的に体を使っての繰り返しによってのみ可能となるため、日本人は体を使っての学習を採用している。これは物理メモリー（または運動記憶）とも言える。

キーワード：知識創造、暗黙的知識、文化、言語、文字、日本、フィンランド
Abstract

This study analyzes knowledge creation in international business, the aim being to determine which aspects of it vary cross-culturally. Cultural differences in language and communication are assumed here to launch different patterns of knowledge creation. These patterns are kaleidoscopic combinations of variability in the nature of language and script, in the concept of the self and receptivity, and in the communication process. It is claimed that each culture has its own unique knowledge-creation style.

The research orientation of the study is *emic* in relation to cultures, and *interpretative* or *hermeneutic* in approach, and a *multi-theoretical* framework is used. The specific focus is on Finland and Japan, and the knowledge-creation styles considered typical of these cultures are described as those of *Engineer* and *Poet*. Empirical data was collected in interviews with managers in the Finnish-Japanese business community.

*Finns as Engineers* in knowledge creation means that the Finnish knowledge-creation style is linked to the underlying mechanistic world view. The script that is used to write Finnish is based on the Latin alphabet, which is a phonetic writing system. Since sound-to-sign correspondence is very high, the writing could be considered very *transparent*. This type of phonetic script enhances *digital logic*. Finnish is written horizontally from left to right, which directs visual focus to the right eye and stimulates the *left side of the brain*. Since there is *mono-direction* and only one correct spelling of words, the problem-solving approach learned from the script enhances *learning by rule*. Categorization of knowledge in Finnish is *abstract*. For Finns, literacy is the starting point for *theoretical learning*, and enhances *linear logic*.

The notion of *Japanese as Poets* in knowledge creation put forward here arises from the idea that the poetic processing of knowledge is based on visual images and associations. The underlying worldview in Japan is *organic*. The Japanese writing system is a combination of logographic Chinese characters (*kanji*) and two sets of syllabaries (*hiragana* and *katakana*), and the phonetic Latin alphabet (*rōmaji*) is used along with Arabic numerals. *Kanji* comprise a conceptual system allowing *concrete categorization* and *associative logic*. Processing *kanji* is said to promote a *symmetrical brain* (as opposed to bias towards either side). Because of the need for constant interpretation according to the context in Japanese writing, problem solving also focuses on *learning by experience*. Categorization is *concrete* and *associative* since *kanji* have a visual meaning and generate an associative network. This complicated writing system is highly *ambiguous* (low on transparency) and enhances analogue logic along with the use of digital logic. The Japanese adopt *learning by doing*, because memorizing *kanji* happens in the long run only by physical repetition: one could even talk about *physical memory* (or kinesthetic memory).

Keywords: *knowledge creation, tacit knowledge, culture, language, script, Japan, Finland*
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There are a few people who have kindly taken the time to read the manuscript. Above all, I would like to thank Jaana Holvikivi for her encouragement and intellectual discussions, which have moved forward the whole process. I am also grateful to Professor Jarmo Eronen and Professor Marjatta Maula for their comments. In addition, I have gained insights from discussion with Professor Karl-Erik Sveiby. My warmest thanks are also due to Joan Nordlund for the English revision of the manuscript. Responsibility for the remaining errors rests with me.

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March 10, Dog Year 2006, Helsinki

Merja Karppinen
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1 INTRODUCTION

1.1 Background of the Study

This study is about how cultural differences influence international business. I have selected to focus on the knowledge creation-process since this underlies all other aspects in international business: market research and management issues are all grounded on concepts of knowledge and knowledge creation. Moreover, knowledge-creation theory came into prominence in recent years in the academic field of international business. As companies become international, cooperation between people from various cultural backgrounds is inevitable and even desirable. In order to create new knowledge, multinational teams must be able to work effectively together, bringing into the teamwork different ways of thinking and communicating. This creates the need for the cross-cultural application of knowledge-creation theory.

Organizations are characterized by complexity, contradiction, and paradox, and international organizations even more so. When confronted with a contradiction or paradox we can use different problem-solving strategies. Quinn and McGlaughlin (1985) suggest four different approaches: isolation and closure, accommodation, dominance, and transcendence. These correspond to some extent to cultural-adaptation strategies (Bochner 1982; Furnham and Bochner 1994): isolation and closure suggest segregation; accommodation is similar to integration as vacillation; dominance could be considered assimilation; and transcendence resembles integration as mediation, synthesis. The aim of this study is to analyze the different knowledge-creation patterns in order to induce a paradox to be solved by transcendence in international organizations.

Knowledge management and knowledge creation have become more and more important in international business during the past ten years. McGraw and
Harbison-Briggs (1989, 8) see knowledge acquisition as the most significant aspect of expert system development, but also the most problematic. Knowledge is the most vital asset in competition in today's business. Since the key players in global business are all multinational companies, there is need for an analysis of how the knowledge-creation-process model can be applied to the cross-cultural context.

It has been suggested that cultural differences are especially important in acquisitions (Kogut and Singh 1988). The match between administrative practices, cultural practices, and the personal characteristics of the target and parent firms is what Jemison and Sitkin (1986, 147) call their organizational fit. In order to find a fit in the knowledge-creation patterns of different companies one must understand which areas in knowledge processing and transfer are most affected by cultural differences. International research is needed to discover the underlying phenomena. International business research clearly is international, however? Usunier (1998, 66), a French professor of international Marketing and Management and pioneer in taking a deeper interest in cultural differences answers this as follows:

"I do not believe so. Language barriers and differences in intellectual styles and academic systems are major elements for cross-border management research. In this human rather than technological field of knowledge, meaning must be constantly fine-tuned. The ability to take cultural diversity into account in international management research is nearly impossible by the Anglo-Saxon bias. True international research, which is still rare, should always be the product of collaboration between native researchers coming from diverse cultural and linguistic contexts."

Ideas from one culture can interact with and fertilize those of quite a different culture by means of creative dialogue (Clarke 1997, 106). It is believed in this study that by making explicit the different patterns of knowledge creation in Japan and Finland we can get new ideas of how we can create our own ability to be more creative. It has been said that truth becomes visible only through the other (Clarke 1997, 13). Furthermore, to name a thing makes it exist. Hudson (1980, 99) gives an example of a practical experiment in which naming
objects helped to solve a problem. He claims that one of the main social functions of speech is in the area of problem solving, to enable us to ‘talk through a problem’ with other people.

The relevance of the present study is in raising the issue of the existence of multiple worlds instead of only one universal world in the international business context. After identifying the key issues in the knowledge-creation process we can compare how the objective worlds differ, and by looking at the practical business world we can learn how international managers are able to bridge these worlds.

Form of Presentation

The study at hand is a doctoral dissertation proposed for acceptance in International Business at the Faculty of Marketing at the School of Economics in 2006. Because the audience is understood to be the wider academic community in International Business, the language of the presentation was selected to be English (although the native language of the researcher is Finnish); English is generally acknowledged to be the international language in the field, denoting that it is the most commonly understood language among researchers and thereby guaranteeing the widest possible dissemination.

However, I am also using secondary sources in Finnish and Japanese. In quoting Japanese sources, I made the decision to refer to both the source and the translation.

1 The subjects were given a candle, a box of tacks and two or three matches, and asked to fasten a wax dripping of the candle to the wall in an upright position so that the wax would not drip. Some subjects were simply given the objects and told what to do, but others were also told what the objects were - a box, some tacks, some matches and a candle. Naming the objects drew attention to the box as a separate object, rather than just a container for the tacks, and this led those concerned to see the solution to the problem - tack the box to the wall and stand the candle on top of it. Those who were simply given the objects took an average of nearly fifteen times longer to solve the problem than those who had the objects named. Hudson 1980, 98 referring to Clark & Clark 1977, 556.
Japanese concepts in Japanese script. I use the Latin script transliteration for some Japanese words, such as *ikebana* (flower arrangement), because these words have become settled in the English language. For example, when I refer to a book in Japanese by Nonaka, I use 野中 (1990), but when I refer to his publication in English, I use Nonaka (1994). This choice is defensible in that if the reader does not understand Japanese, he or she has no access to the original source either. The list of references for sources in the Japanese language follows the same logic; however, the English translation is also given for each source which is in Japanese or Finnish.

Since cultural analysis of the central concepts of knowledge-creation theory is an important part of this study, I use the original terms in Japanese, for example, 暗黙の知識. The transliteration of this term would be *anmokutekichishiki*, but in phonetic writing it does not disclose any of the qualities necessary for understanding its meaning. I believe that it's useful for the non-Japanese-speaking reader to get used to seeing Japanese terms written in the native writing system.

Since the academic international business community predominantly consists of Western academics, there's a certain bias in the focus and presentation of the analysis in my study. I refer to 'us' or 'our' as the common background of being brought up in Western industrial societies shared by the target audience and myself. Therefore, I elaborate more on 'the different', the Japanese way, because I am assuming that 'we know less about it'. Had I been writing with my Japanese colleagues in mind, I would have skipped some of the detailed parts in describing the Japanese writing system. However, I believe that my findings and insights about the influence of the Japanese writing system on knowledge processing will also prove to be both novel and thought-provoking for the Japanese audience. And focusing on the Western audience partially because I believe that the Japanese are already aware of Western processes, and although we do not know how they write, they are already using our
writing system in addition to their indigenous scripts. Thus there exists an asymmetry of knowledge in this respect, and I am aiming at balancing it to some degree.

Background of the Researcher

My interest in Japan began when I studied as a Rotary International exchange student there in 1982-1984 at the International Christian University (ICU) in Tokyo and at Hokkaido University in Sapporo. After this I married a Japanese and lived and worked in Japan for several years, gaining insight and experience as a marginal member of Japanese society in different roles: an exchange student, a company employee, a university teacher, and an entrepreneur, but most important were the family roles of being a wife, a daughter-in-law and a mother. I felt completely accepted by the surrounding society, and at times it was only the reflection in the mirror of my own 'foreign' face that made me remember that I was a gaijin, a foreigner. Interestingly, when I moved back to Finland I felt a marginal member of my native society as well. Usniener (1998, 65) suggested that the researcher in international management must be a cultural translator, that is he or she has to transfer meaning across cultures. In my role as a marginal member in Japan and Finland, I feel I have the potential of being a cultural translator, or a cultural mediator.

Since the present study concerns cultural differences in knowledge creation, I believe that my learning of the Japanese language has provided me with an insight into how language, and especially written language, affect thought processes. Since I learned to read and write anew at the age of 22-23 years, I believe that I gained a fresh approach to the influence of the writing system on the way of thinking. Luria (1979) tells fascinating stories of how he observed a man with brain lesions learning to walk anew, another to write and yet another to recount a story. These skills that we take for granted in our lives become complicated sets of rules when we forget them and have to start learning them
We gain new insights by observing someone learning a skill or by learning new skills ourselves.

For me, learning written Japanese took place after I had mastered and had been using the alphabetical writing system for many years. Thus some unlearning was necessary (for example, in how to hold a pen, how to fill a space, and in what direction to write), and there was some association between some signs in the different systems (for example, I was unsure later how the letter ‘H’ should be written, because of the similarity of sign ‘ዅ’, in katakana.) However, I was lucky in that the university in which I studied Japanese for about one year was very advanced in the methods used for teaching Japanese as a foreign language. Among other things, after the introduction of the two Japanese syllabaries (hiragana and katakana), which took place during the first week of the course, the instructor only used these scripts in teaching the Chinese characters (kanji) and the language in general. I believe this was important not only because it imposed the accurate pronunciation of words from the start, but also because it cut out the world of ‘romaji’, the alphabetic script, and embraced the Japanese written world. Finally, the opening of the world of kanji, the logographic Chinese characters, became a formidable adventure that has certainly changed some of the ways in which I think.

Being a member of the Finnish-Japanese Chamber of Commerce for the past ten years has given me a great opportunity to be a participant observer in Finnish-Japanese business society. Over the years I have been able to establish trust and personal relationships with many of the members. Consequently, even during the years when I was not doing research officially, I accumulated knowledge about Finnish business operations in Japan and observed how Finnish and Japanese businessmen interacted together. I have also run training programs in Finnish companies about the Japanese business culture, and I have heard several stories of both success and failure. My current position as the head of the Finnish Association for Teachers of Japanese Language and Culture (フィンランド日本語教育協会) has allowed me to continue my work in Japan.
Links with Previous Studies and the Contribution of this Study

Since this is a multidisciplinary study, there are links with several research traditions and previous studies. It seems that cultural studies are not very attractive to researchers in international business, as Usunier (1998, 65) noted: "Culture is likely to appear non-mainstream and unattractive to researchers wishing to 'make it' professionally." This may explain why there exists a research gap in the cross-cultural adaptation of theories concerning internationalization and management. However, this precise the international context that invites analysis of the impact of these different cultural contents.

Organizational Learning

This study is principally linked with the field of organizational learning and management. Learning and the transfer of knowledge have traditionally been of interest in organizational studies. New ideas about the nature of knowledge and its transferability started to emerge in the 1980's. March and Olsen (1979) considered organizational intelligence, like individual intelligence, as being built on two fundamental processes: rational calculation and experience. Boisot (1986) made observations about the codification of these processes of knowledge transfer.

Kogut was already showing interest in the transfer of tacit knowledge in joint ventures in 1988 and suggested:

"Joint ventures are not merely a matter of equity control, but represent a set of governance characteristics appropriate for certain strategic or transaction cost motivations, or for the transfer of tacit knowledge" (Kogut 1988).
He considered an advantage embedded in specific organizational routines less diffusible among firms, and one embedded culturally and institutionally less diffusible among countries (Kogut 1988; Kogut and Singh 1988).

Hamel's (1990) study of joint ventures between US American and Japanese companies came to with results showing that there was out-learning of American partners by the Japanese partners. He used the term 'transparency of knowledge' to indicate the openness and accessibility of skills of one partner, which are fully susceptible to the intent to learn of the other partner, and noted that asymmetry of transparency was inevitable in partnerships (Hamel 1990, 17; 51). For me, this was a very important discovery because I could immediately relate the transparency of knowledge to cultural differences between the Japanese and the Americans. At that time I was also aware of the core element of Nonaka's knowledge-creation theory (野中 1990), which later became the basic framework for my study of cultural differences in knowledge processing and transfer.

Nonaka's Knowledge Creation Model (野中 1990)

I met Professor Ikujiro Nonaka for the first time in spring 1991 at Hitotsubashi University in Tokyo, and he presented me then with his Japanese book on knowledge creation. Intuitively, I felt that his model was very Japanese, although I could not clearly explain why. I saw immediately the importance of applying that model to the cross-cultural context, and conveyed my thoughts to Professor Nonaka. He encouraged me to go ahead with it. However, I was then working on my licentiate thesis (Karppinen-Takada 1994), so I had to postpone further investigation into knowledge creation until later.

Imai, Nonaka and Takeuchi (1985) had earlier described how Japanese companies learn and unlearn in the new-product-creation process. Nonaka was one of the writers in Kagawa et al. (1989) comparing US and Japanese strategy and organization by contrasting what they called 'strategic versus
evolutionary management'. He also considered innovation management a self-renewing process (Nonaka and Yamanouchi 1989).

Although there were several English publications on the knowledge-creation process (Nonaka 1991a; 1991b; Nonaka and Heeks 1991; Nonaka 1994), the breakthrough for the knowledge-creation theory or model was the English publication by Nonaka and Takeuchi that appeared in 1995. This started a growing interest in the knowledge-creation process and several researchers applied the model in their studies (for a range see Dierkes et al., 2001).

The present study is directly linked with this chain of studies in applying the theoretical framework of knowledge-creation put forward by Nonaka. However, its contribution is in analyzing the extent to which the model could be considered applicable across cultures. Nonaka and Takeuchi (1995) originally pointed out the huge differences between Japanese and Western companies in knowledge processing, but the model has nevertheless been interpreted in the West as a universal framework. It is the aim of this study to show that there are several knowledge-creation patterns and not one universal model.

Internationalization Studies
Organically this study is related to the tradition of internationalization studies in international business at the Helsinki School of Economics. It is also a natural continuation of my earlier research on learning in internationalization (Karppinen-Takada 1994).

Hymer (1960) was the initiator of a field of study focusing on the international operations of companies. Researchers in the Nordic countries have been especially keen on this topic, and there are two different Nordic schools of thought, one originating in Finland (Luostarinen 1979; 1991; Luostarinen and Wech 1990) and the other in Sweden, the 'Uppsala School of Thought' (Johanson and Vahlne 1977, 1990; Johanson and Wiedersheim-Paul 1975; Hörnell et al. 1973). Knowledge management in internationalization had an
important role even in these early studies. For example, Luostarinen (1979) introduced the concept of lateral rigidity: change in the degree of lateral rigidity is regarded as a function of the amount of experience and information flow, as well as the nature of these flows. He also considered experiential knowledge more vital for internationalization than information.

The perception of cultural differences by key informants is the focus of interest in the empirical part of this study. This aligns with the Nordic tradition of internationalization studies, which introduced the concept of psychological distance (Johanson and Vahlne 1977; Nordström 1991; Vahlne and Nordström 1991). The concept of business distance introduced in Luostarinen (1979) also encompassed the component of cultural distance.

The contribution of this study to the field of internationalization studies could be considered as conceptualizing the final stage of internationalization as internal internationalization. After having learned to use multiple business operations in multiple markets, firms are finally developing the cultural skills necessary for managing foreign operations successfully. This was evident in the longitudinal observation of Finnish companies operating in Japan in 1991-2003. The development of cultural mediators is an important indicator of this type of internationalization.

Language and Communication Studies
Organizational learning and communication have been linked together in earlier studies (e.g., Farace et al. 1977; Murry 1988), but usually from a monoculture perspective. Communication is considered in this study from a multicultural point of view - both in the comparison of culturally different communication styles and as cross-cultural communication.

Edward T. Hall was the founder of the field of intercultural communication and one of his major innovations was the concept of contextuality of communication (Hall 1977). Use his concepts of high-context and low-context
communication here to further basic a two-dimensional model of the contextuality of communication, which forms the basis for knowledge conversion on the group level.

There is also a link with other communication studies through the analysis of the concept of the self in different cultures (especially Kim 1995), and with comparative studies of communication (e.g., Niscačić 1987).

The link between language and thought became evident to me after reading Goody (1989; 1991). His inspirational analysis of the interface between oral and literate cultures guided me to understand the importance of written language and I immediately started to apply his ideas to Japanese. I have also gained a lot from reading Ong (1990) on orality and literacy, and returning to the insights offered by McLuhan (1962; 1987) who considered the phonetic script an important innovation in Western scientific history. I share with these writers a firm belief that language, and especially the script, influences the way we organize knowledge.

Taylor and Taylor (1990; 1995) have been a very useful source in helping me to understand exactly how this happens, although they have their reasons to believe that the script itself has nothing to with the logic and thinking process. Fortunately I became acquainted with Luria’s (1973; 1976) studies of illiterate Russians, which made me convinced that achieving literacy gives us a tool for knowledge processing. Although this view has been challenged, the most recent neuroscientific studies have proved that language does indeed influence the way the brain processes knowledge (Tan et al. 2003).

An Emerging New Paradigm in Science

Finally, but not least importantly, in applying the idea of multiple objective worlds to studies on international management, this study is linked with a wider range of studies in different fields of science aiming at creating a new world paradigm. Some argue that there is a general logic of management, which has
Applicability to both developed and developing countries, or that management fundamentals (i.e. concepts, theories, and principles) have universal applications in every kind of enterprise and at every level of enterprise. (Fukuda 1991, 25-26) It is often thought that all cultures are part of the same evolution: at the end we will all be developed to the same (Fukuyama 1992). This view is not accepted by all; among others Iwai (2004) maintains that development from pre-industrial to industrial and post-industrial society is not a linear evolution, but that different stages of industrialization may coexist even within the same society.

Existence of multiple objective worlds means that we accept simultaneous existence of worlds based on different worldviews, different logics, as part of the present reality. Since the Western worldview is based on an idea of universal truth, it will take a paradigm shift for us to fully understand the concept of multiple truths.

There seems to be profound change happening in the way we (in the West) see the world and ourselves. The atomistic worldview, which can be traced back to the ancient Greeks, has come to an end in physics, and this change has also affected how other sciences see the world. A new paradigm is currently emerging in the West in different fields: for example, in mathematics (Penrose 1990), in psychology (Nisbett 2003), in physics (Cata 1991; Bloom 1986; 1999), in neuroscience (Damasio 2001), and in philosophy (Dennett 1999). This paradigm shift is reaching also management science (Reccing 1990).

In a pioneering work looking at the structure of scientific revolution Thomas Kuhn (1962) showed how the work of scientists is structured by a shared worldview, which he called a 'disciplinary paradigm'. This supplied a context within which people worked, often unaware of its shaping influence on their perceptions and work. After routine puzzle solving the problems that could not be solved by the current paradigm accumulated. Following a period of radical
...the attempts to construct a new cultural paradigm commenced. (Beare and Slaughter 1993; see also Rozak 1999)

Part of the new world paradigm involves the realisation that 'our way', the traditional Western way, is not the only way and not even necessarily the best. In its search for a new paradigm the West can look to the East - not to find a new model to replace the old one, but to learn and gain insights into different ways of organizing the world. Only by recognizing that there exist other radical approaches to the world can we start learning from these multiple solutions. If the world is thought of as being one and the same, we have only Fukuyama's (1992) 'the end of history' ahead of us as the evolution of societies continues.

The well-known American psychologist and a member of the National Academy of Sciences Richard E. Nisbett (2003) recently pushed forward a change in paradigm in cognitive psychology. He describes himself as having been a lifelong universalist concerning the nature of human thought:

"Marching in step with the long Western line, from the British empiricist philosophers such as Hume, Locke, and Mill to modern-day cognitive scientists, I believed that all human groups perceive and reason in the same way." (Nisbett 2003, xiii-xiv)

However, he has now come to realize that thinking processes differ radically across cultures, and that his earlier attempt to package the whole human world under the title 'human inference' (Nisbett and Ross 1980) was gravely mistaken. In the West a new inquiry into the fascinating notion of cultural differences in perception and thought has begun and it is hoped that this will improve the mutual understanding of mental differences between East and West.

The present study continues this inquiry into differences in thought processes by contrasting two very different cultural traditions, Finland and Japan. By looking at language, and especially the script, as a tool for organizing knowledge and understanding the world, I hope to reveal some of the reasons why thinking is different in these two cultures. At best this recognition will lead to the bridging of cultural differences in knowledge creation in international business with the help of cultural mediators.
Limitations

On the empirical level, this study is limited to analyzing cultural differences in the knowledge-creation process in and between Japan and Finland. Although some generalizations are made based on this, and a tentative theoretical model of knowledge-creation patterns is developed, its applicability to other cultural contexts has not been tested.

I am fully aware that my study contributes to a controversial argument concerning the uniqueness of the Japanese culture. There is a vast array of literature called 日本人論, literally 'discussion about Japanese', mostly by Japanese writers. Some Western critics are claiming that this is not serious empirical research, but could rather be defined as works of cultural nationalism concerned with the uniqueness of Japan in any aspect, and which are hostile to both individual experience and the notion of internal socio-historical diversity (Dale 1990).

Although I feel that Japan is my 'other home country', I have no nationalistic purposes behind this study. In my view, the Japanese writing system is such a unique combination of both phonetic and logographic scripts that it entitles us to consider Japanese culture a specific case even compared with its near-neighbors Korea and China. Moreover, I would hesitate to group together the Far East Asian countries although there are some similarities in their writing systems.

In this study Japan is compared generally to the West, and especially to Finland. In terms of script, the West in this case comprises industrialized countries cultures in Western Europe and North America that use the Latin alphabet. All these countries are also predominant Christian. I believe they share a lot in their knowledge-creation styles, but there are also many differences. Finland is used in this study as a representative of a Western country.
Since it differs considerably linguistically and in its history of literacy from other European countries, it provides an interesting point of comparison.

This study does not aim at the quantification of cultural differences in the manner of Hofstede (1991), for example, but rather seeks to analyze the quality of these differences. It could be considered a limitation that no easy solutions to managing cultural differences in knowledge creation are found or recommended, and that, on the contrary, several questions remain open. However, this is a cognizant choice by the researcher and aims at motivating further investigation by both academics and practitioners.

Outline

This study comprises six chapters.

Chapter 1 gives the background and shows the links with previous research. The limitations are also discussed.

Chapter 2 outlines the research design, and describes the approach and methods used in both the theoretical and empirical parts of the study. The general research question is phrased: 'How Does Culture Influence the Knowledge-creation Process in International Business?' A summary of the hermeneutic spiral of the research process is presented and issues of validity and reliability are discussed.

Chapter 3 begins with a theoretical discussion and analyses Morabito's knowledge-creation theory. This theory is the object of this study and the aim is to discover how cultural differences influence its application. Core concepts in the theory are analyzed on different levels, and their development in use is described. The meaning of tacit and explicit knowledge in knowledge creation is considered on different levels, and cross-cultural issues related to this are identified. It is suggested that tacit knowledge on the tacitical level is similar
to Jung's concept of unconscious knowledge, and explicit knowledge resembles conscious knowledge. The interaction between the two types creates new knowledge through feeling, intuition, thinking, and sensing, which corresponds to the SECI model in Nonaka's theory. Language is considered to play an important role in how these individual-level knowledge-creation processes vary in different cultures.

Cross-cultural differences in the knowledge-creation process are further examined. First, different concepts of the self and their relation to individualism and collectivism are discussed (orientation to the self and the other, and facets of individualism and collectivism). This helps us understand differences in the socialization process between the Japanese and the generally more individualistic Westerners.

Relevant approaches to cross-cultural communication are then discussed. Orientation in communication and the high-context–low-context framework put forward by Hall (1977) are linked to the externalization and combination processes described in the SECI Model. Finally, a two-dimensional model of the contextuality of communication is presented.

The internalization process is linked here to the capacity to earn, which is discussed in terms of transparency of knowledge and receptivity. The issue of receptivity is considered in terms of differences in the development of sensorial perception. There is evidence that we develop differences in using our senses in infancy. This later affects the way we scan the world, and what we pay attention to and consider meaningful information in the environment.

The influence of language on the development of cognitive capacities is analyzed in Chapter 4. The focus is on written language since it is a major tool in knowledge processing. Knowledge in science is acknowledged only after it has been written down (and published). A 'international' business too, especially in the West, the written word plays an important role in decision-making. Since
written language or script is something concrete and visible, it's possible to analyze how language shapes our cognitive styles.

The alleged associative logic of the Japanese is a natural consequence of their writing system, in the same way as linear logic is born of the Latin script.

Although I am not claiming that scripts explain all about our thinking processes, I will argue that throughout history people with a certain logic have created certain types of script that were selected and maintained by other people agreeing with this logic. A little schoolgirl in Finland or Japan has very little say in which script she would consider suitable for her logic: society has agreed upon it as ready. As a result, she will be conditioned to the logic of the script by becoming literate. Throughout my discussion on the influence of the writing system on cognitive style, I will be using the cases of Finland and Japan in order to make the ideas more concrete.

A theoretical model of knowledge-creation patterns is summarized and discussed in Chapter 5. The context is an empirical case of the Finnish-Japanese business community. The Finnish knowledge-creation style is called the Engineer style, and it is characterized by a theoretical and abstract approach, and digital logic. The Japanese style is that of the Poet, implying something concrete and associative, based on analogue logic. Differences in the meaning of the key concepts in knowledge-creation theory in the Finnish and Japanese languages are also analyzed.

Finally, Chapter 6 presents the conclusions and major findings of the study, and the implications are discussed.
"A science as a whole, an observation or technique is quite likely to lead to impotence."
(Berger, Peter 1963, 13)

2 RESEARCH DESIGN

2.1 The Hermeneutic Spiral

Since the present study has evolved from a thinking process that started many years ago, the visible part of it is only the tip of an iceberg. What is considered a starting point here is actually already the result of heuristic or hypothesis-generating research. I observed and recorded some aspects and contexts of knowledge creation aiming at the discovery or description of patterns or relationships yet to be identified. As Seliger and Shohamy (1989, 29) note about heuristic research:

"There may be no complete theories or models to guide the researcher or to stimulate specific research questions at this point. Data are collected in an attempt to include as much of the contextual information as possible. These data may then be categorized or analyzed or written up descriptively. Often the result of such research may be the formulation of hypotheses."

The approach in the preliminary part of this study was synthetic, which means that the phenomenon is viewed holistically as a composite of factors that might not be analyzable into separate parts easily or with validity. Data at the pre-understanding stage was collected both by participant observation and through secondary sources. My wide interest spread into multi-theoretical fields of study, including linguistics, cognitive psychology, cultural anthropology and communication studies, as well as management studies. Long-term participant experience helped me to make sense of even the most detached survey data (Okely 1994, 21). Gradually it was possible to discover patterns and explanations, and to form questions and actual hypotheses for further research.

The primary assumption arising from the pre-understanding was that there are cultural differences in knowledge creation. This generated the research question: How Does Culture Influence the Knowledge-creation Process in
International Business? This marks the beginning of this written study, which aims at theory building and could be considered basic research.

The formation of the research questions moved the study on to a type of deductive hypothesis-generating research, which means testing hypotheses in order to cede on a theory about the phenomena in question (Seliger and Shohamy 1989, 29-30). The process starts with a preconceived notion or expectation about the phenomena to be investigated. The formation of a question or a theory narrows the focus of the research and allows systematic investigation. Figure 1 summarizes the endpoints and differences between heuristic and deductive research objectives as discussed by Seliger and Shohamy (1989). There are research formats that take in attributes from both sides. I combined these approaches in my selection of a hypothesis generated by synthetic-hermeneutic pre-research as the basis for investigation within an analytic-deductive design.

<table>
<thead>
<tr>
<th>Heuristic</th>
<th>Deductive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data-driven</td>
<td>Hypothesis-driven</td>
</tr>
<tr>
<td>No preconceptions</td>
<td>Makes predictions</td>
</tr>
<tr>
<td>Can generate hypotheses</td>
<td>Tests hypotheses</td>
</tr>
<tr>
<td>Product: description of hypotheses</td>
<td>Product: theory</td>
</tr>
</tbody>
</table>

Source: Seliger and Shohamy 1989, 31

Figure 1: Characteristics of Heuristic and Deductive Research

The present study employs an analytic approach in which one or several factors of the phenomenon under study are selected for further analysis (ibid., 54-56).

Deductive research may be driven by theories or questions cede on in other fields of science. It could be said that a theory cede on in another field has explanatory value that complements the heuristic approach in the pre-study. In this case the object of the study was the theoretical mode of knowledge creation cede on by Nonaka (野中 1990; Nonaka and Takeuchi 1995).
Communication theories were used to identify the cross-cultural variables in the knowledge-creation process, and a model of the process as communication was outlined.

A review of cross-cultural studies identified several key aspects of knowledge creation. Three issues in addition to language were selected for further analysis based on their importance in Finnish-Japanese interaction: the concept of the self, communication, and receptivity.

Secondary empirical sources comprising ethnographic studies on language and communication were used along with theoretical approaches in order to gain deeper understanding of the selected variables. Cultural patterns of knowledge creation began to emerge. Language was identified as an independent variable in the knowledge-creation process. Although language is a means of communication, it also has an important role as a tool for organizing knowledge. Theoretical analysis of the influence of language on the development of cognitive capacities was performed, and secondary data on script and literacy was combined in order to show how different cognitive capacities influence the knowledge-creation process.

After summarizing the theoretical findings concerning cultural differences in knowledge creation, I proceeded to test the model of cultural patterns by looking at the empirical context of the Finnish-Japanese business community. The perceptions of key persons in the target group were compared with the theoretical framework. Comparing the data collected in 1991 and 2003 allowed some longitudinal observations.

The study has followed an iterative process moving between theory and empirical data from secondary and primary sources. The development of my understanding of the phenomena under study could be considered a hermeneutic spiral, which is
"an iterative process whereby each stage of research provides us with knowledge: in other words, we take a different level of pre-understanding to each stage of the process" (Gummesson 1991, 62).

The hermeneutic cycle of this study is portrayed in Figure 2. The research questions were focused on at each stage, and the methodological choices were reassessed in the transition from theory to empirical data at different stages. Finally, the iterative interplay of data collection and analysis led to the theory development. The outcome of this study is a theoretical model of cultural differences in knowledge creation and its application in the Finnish-Japanese business community that reveals cultural patterns followed by engineers and poets.

Figure 2: The Hermeneutic Spiral of Theory Building in this Study
2.2 Pre-understanding of the Phenomena

The research design of this study entailed continuous comparison of data and theory throughout the process. It began with the development of a rough working framework based on the existing literature and pre-understanding of the case contexts. There was movement back and forth between the emerging model and the evidence throughout the data gathering and analysis.

Gummesson (1991, 56-57) suggests that researchers use their pre-understanding but are not its slave: it is therefore important that pre-understanding is subject to change, and that the researcher is aware of paradigms, selective perception, and his or her own personal defense mechanisms.

My pre-understanding came from primary and secondary sources, which were the same as were used in the research process to gain further understanding. I had personal experience of the phenomena under study and secondary access to the experience of others via books, written reports and other literary sources.

Glaser and Strauss (1967, 254) refer to pre-understanding gained from personal experience as 'insight' and consider it "of no use to the theorist unless he converts it from being simply an anecdote to being an element of theory". My personal experience was an important source of understanding in two major ways.

(1) My experience as a member of the business community and my cooperation with companies allowed me to test the emerging hypotheses along the way. For example, teaching teams of engineers and managers about Japanese culture in a large multinational company gave me access to the practical problems in cooperation between the Japanese and the Fins.

What this experience told me was that Fins and the Japanese have some similarities in communication that allow them to feel at ease with each other in informal situations. For example, it was noted that 'A Finn and a Japanese
A Finnish manufacturer subcontracting from a Japanese company had difficulties trying to make the Japanese understand that they wanted to have precisely what they had ordered, not some 'improved version' of it.

My personal feelings when operating in the two contexts and using the local languages brought insight and empathy into my understanding of the different ways of thinking. Usunier (1998, 65) noted that the ability to cross cultural borders is a rare talent in international business research. It was a talent I utilized to its full extent.

I observed myself using different languages, and I noticed, for example, that the tone was higher in Japanese than in Finnish, and the communication style suddenly changed along with the language, even over the telephone (the famous 'bowing' on the telephone). The thinking process also seemed to change when switched language. However, I did not understand why this should happen or what it was based on.

I used books, articles and narratives to access the experience of others. There was a boom in publications on the Japanese management style in the 1980's, and many Western companies adopted selected aspects of it, such as quality-control management. Thus the typical characteristics of the Japanese organizational culture are well recognized. Japanese management is described as the 'organic type', which is based on group strength and an emphasis on human relations, whereas American management is considered a 'system type', focusing on individual strengths and functional relationships. (See Fukuda 1991 for a review.)

Interest in Japanese-style management faded in the 1990's when economic recession affected Japanese companies. Japan was no longer seen as a model for improvement, but was rather considered an experiment that had failed. This was
also reflected in publications on Japan. Characteristics of Japanese organizations, such as long-term employment, became synonymous with inefficiency, even to the extent that some Japanese companies started applying Anglo-Saxon-style reforms and drastically reduced their personnel. By now this strategy has a ready prototype (Iwai 2004).

Studies on intercultural communication have often used the Japanese communication style to represent 'the other' with which the American or Western style is compared. There are several studies describing how the Japanese communicate, and the differences between Americans and Japanese. The intellectual style of the Japanese is described as ambiguous, emotional, subjective, situationa, and silent, whereas the American style is logical, rational, objective, rigid, and talkative (see, for example, Dale 1990 on stereotypical images). However, communication studies are descriptive and seldom explore the reasons behind the communicative behavior. Thus the question why the Japanese are so ambiguous remains unanswered, and occasional vague reference is made to 'historical reasons'.

General assumptions about knowledge creation in Japan based on the literature and 'public opinion' include the belief that 'the Japanese only copy'. It seems that the image with which Japan was stamped after the Second World War is hard. A recent article in a Finnish daily newspaper noted that Japan's success was based on copying technical innovations from Western countries, and that now China was doing the same. Although the Japanese seem to the learning from others, it is another issue to evaluate the extent to which all late industrialized countries use the ready-made solutions created by pioneering countries. When license agreements for paper machinery expired in Finland the Second World War, the Finns started developing their own machines based on the same idea.

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3 Based on key informant interviews.
Conversely, it is commonly thought that 'Finns are very creative', and Finnish originality in design is often cited as evidence of this. Interestingly, however, it is especially in the area of art and design that the Finnish and the Japanese sense of aesthetics coincide, and there are well-established connections between artists and designers in these two countries, including institutional exchange. Perhaps from the European point of view the Finns seem original and unique, but for those who can recognize it, there is clear evidence of Japanese influence.

There was also contradictory evidence of the Japanese knowledge-processing style in the literature. Whereas most writers seemed to think that the Japanese have either no logic or one that is very different from the Western one, van Wolferen (1990, 236) reports that:

"...in Japan one meets intelligent people who claim that 'logic' is something invented in the West to allow Westerners to win discussions. Indeed, the belief is so widespread that the Japanese can easily contort logic now as they supposedly have done for centuries past. That is of course untrue. Japanese engineers and scientists are as familiar with logical thinking as their counterparts anywhere else, and some have received Nobel prizes for it."

**Research Orientation**

The research orientation in this study could be summarized as *emic* in relation to cultures, and as *interpretive* or *hermeneutic* in approach. The study is also eclectic in the sense that it applies a multi-theoretical framework.

The *emic* versus the *etic* cross-cultural research orientation is a classic distinction in cognitive anthropology originating from Sapir (1921) and further developed by others, and applied from linguistics to other areas of culture by Goocernough (1956) (Usunier 1998, 36; Bernard 1994, 338). According to Usunier (1998), the *emic* approach assumes that attitudes or behavioral phenomena are expressed in a unique way in each culture which, taken to the extreme, means that no comparisons are possible. On the other hand, the *etic*
approach aims at identifying universals and considers constructs applicable to all cultures.

Usunier (1998) compares research strategies in terms of underlying theories of research and visions gained (Table 1). Within this framework, the strategy adopted in the present study is emic, concerned with differences in nature.

<table>
<thead>
<tr>
<th>Underlying Theories</th>
<th>Expected Picture</th>
<th>Universal Specific</th>
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<tbody>
<tr>
<td><strong>Similarity</strong></td>
<td>Assumed universality</td>
<td>Assumed universality</td>
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<tr>
<td>Differences</td>
<td>Etic with differences in degree</td>
<td>Emic position</td>
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<td></td>
<td>Differences in nature</td>
<td>Polycentric research</td>
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Table 1: Comparative Research Strategies

The underlying assumptions in several scientific fields have started to change. Western scientists have finally realized that their assumed universality has been a fallacy. Nisbett (2003, xiv) recalls with irony a book he co-authored years ago, entitled 'Human Inference' - not 'Western Inference' or 'American College Student Inference', but 'human Inference'. This book had a typical universalist approach, which had been, and perhaps still is, dominating cross-cultural management research. If we were to accept a paradigm shift teaching us to understand that there are profound differences in people's views and cognitive processes, there would no longer be any dispute over the emic versus the etic. We could take a synergistic approach not as a way to create universality, but rather as a way towards bridging existing worlds.

Knowledge creation in the cross-cultural context is defined here as a process, and thus it is impossible to evoke a single uniting theory. The process consists of communication involving the transformation and transfer of knowledge both within individuals and between people in different contexts. Since it is such a multifaceted, multidisciplinary subject, it requires a multi-theoretical approach. (Littlejohn 1978, 374-376) Putting it in a cross-cultural context adds even more complications. By taking a multi-theoretical approach...
we can understand this process through a variety of theoretical and methodological viewpoints. The eclectic approach enables us to develop a framework within which the work of many disciplines may be integrated around a single issue, problem, or theme.

Drawing on notions about the communication process described by Littlejohn (1978, 375), I support my arguments for using a multi-theoretical approach to the study of knowledge creation in the cross-cultural context as follows.

1. Knowledge creation is a ubiquitous and complex process. There is no consensus about the concept of knowledge to start with, and the definitions vary both in history and across cultural traditions in different contexts. In order to fully understand the knowledge-creation process, we have to view it from different perspectives, of which the cross-cultural is an obvious and fruitful example. This focus on the cross-cultural context is also useful in that it naturally calls for a multi-theoretical approach.

2. Knowledge creation as communication is a complex process of psychological and social events involving symbolic interaction in the form of coding, meaning, thinking, and persuasion. All these events and behaviors are embedded in culture, and thus the process of knowledge creation varies accordingly. There is no single theory to explain this process within one culture, not to mention the cross-cultural context, and it is enriching to learn about different theories and approaches.

3. Theories are constructions of reality, and it seems that language affects the way we perceive this reality. Thus it could be said that, in fact, we live in different realities. There are multiple ways of perceiving the same sensory experience. It is no wonder, then, that we have a cornucopia of descriptions of these realities. Indeed, a single theory will represent only one viewpoint, and a multi-theoretical and multi-cultural approach is needed in order to gain understanding of the variety of meanings in a knowledge-creation event.
(4) There is no single methodology that could lead directly to full understanding. The method selected will automatically guide the theory development. Thus a multi-theoretical approach needs to be combined with a multi-method approach, which provides some kind of convergent validity in terms of what we know about knowledge creation in the cross-cultural context.

(5) Knowledge creation is an area of study that is in the interest of many disciplines and thus calls for a truly multidisciplinary approach. Studies in knowledge creation and knowledge management belong to the social sciences in areas such as psychology, sociology, and management studies. Adding the cross-cultural perspective also brings in cultural anthropology. It is impossible for any single theory to accommodate the valuable work of the many disciplines that are dealing with knowledge creation in the cross-cultural context. A multi-theoretical approach is therefore justified.

2.3 Research Methodology

This is qualitative research using a multi-method approach in order to analyze the research problem from a relativist position. One of the main aims of qualitative research is the generation of concepts that can form building blocks of theory (Glaser and Strauss 1967).

Knowledge-creation patterns are analyzed here through dependent variables such as written language, the concept of the self, receptivity, and communication orientation and contextuality that are part of culture. These variables are strongly related with national language and educational systems. Both Finland and Japan could be considered relatively homogeneous in these respects: education is centrally planned in both countries by Ministries of Education, and government-approved textbooks and curricula are used throughout both nations. They both have culturally dominant national languages (Finnish and Japanese) that create boundaries around them and isolate them from their neighboring countries. Another common factor is that the native languages are not related to the languages used in the geographically close countries (for
Finland meaning Russia and Sweden; for Japan meaning China and Korea. Japan was isolated for over 250 years before the Meiji Restoration in 1868, and established a homogenous and unique culture and language during that time. Finland became independent only in 1917 after having been ruled by the Swedes and the Russians for centuries, but her native language maintained its ethnic identity throughout.

Despite the existence of minorities (e.g., Korean, Ainu, burakumin) in Japan, the homogenous programming of the mind is guaranteed by one national language, which is used in education and the mass media. Finland is officially a bilingual country with six percent of the population being Swedish speakers with their own schools and universities. The existence of the "Finnish-Swedish" world is very interesting from a cultural point of view, however it is beyond the scope of this study to analyze further how this world differs from the conceptual world of the Finnish-speaking majority. The Finnish language is taken here to represent Finnish culture. More generally, the case of Finland is used as an example of Western culture due to the fact that the script used in Finnish is the Latin script. The case of Japan is not generalized here to cover other East Asian cultures because, despite some similarities, there are also differences in the writing systems, but some comments on possible similarities in knowledge-processing styles are made.

Finally, there is the question of culture as a dependent or independent variable. Since cultural dimensions are difficult not only to measure but also to define in the first place, it is not easy to broach clear specified relationships between measurable dependent and independent variables (Usunier 1998, 65). Culture is used here as an independent variable. It is operationalized as the national language, and especially the writing system. The aim of this study is to explain how culture influences the knowledge-creation process, so there is no danger of using culture as a residual variable.

4 These are 'outcasts' of a sort in Japan, people who were traditionally involved in 'unclean' professions such as butchery.
The present study analyzes the theory (or model) of knowledge creation and aims at finding out which aspects of it vary across cultures. The selection of two distinctive different cultures and writing systems serves to highlight the cultural specificity.

Research Questions and the Aim of the Study

The experience and interests of the researcher guided the formulation of the research questions. At first I was generally interested in the impact of cultural differences on international business. After reading other research in this and in other fields I narrowed down the phenomena to organizational learning and knowledge since these were considered to underlie all other aspects of international business. Different management styles are based on different concepts of knowledge and learning.

The object of this study is the theoretical model of the knowledge-creation process by Nonaka (1990; Nonaka and Takeuchi 1995). The aim is to find out how knowledge-creation theory can be applied in different cultural contexts. The general question addressed in the research was:

How Does Culture Influence the Knowledge-creation Process in International Business?

In terms of feasibility, evaluation focused on this general question: the research questions were assessed at each stage of the study, and methodological choices were made according to Sei ger and Shohamy (1989, 52).

This resulted in the following sub-questions:

- How Do the Concepts of Tacit and Explicit Knowledge Differ in Different Cultures?
How Does the Conversion of Tacit Knowledge into Tacit Knowledge (Socialization in the Knowledge-creation Process) Differ in Different Cultures?

How Does the Conversion of Tacit Knowledge into Explicit Knowledge (Externalization in the Knowledge-creation Process) Differ in Different Cultures?

How Does the Conversion of Explicit Knowledge into Explicit Knowledge (Combination in the Knowledge-creation Process) Differ in Different Cultures?

How Does the Conversion of Explicit Knowledge into Tacit Knowledge (Internalization in the Knowledge-creation Process) Differ in Different Cultures?

Analysis of the cultural dimensions of knowledge-creation theory generated more focused research questions:

LANGUAGE
(a1) How do the concepts of tacit and explicit knowledge differ in different languages and cultures?

(a2) How does language, especially the script and achieving literacy, influence the development of cognitive capacities?

CONCEPT OF SELF
(a3) How do the culturally different concepts of the self influence the knowledge-creation process?

COMMUNICATION
(a4) How do culturally different communication orientations influence the knowledge-creation process?

(a5) How does contextuality of communication affect the knowledge-creation process?

RECEPTIVITY
(a6) How do cultural differences in receptivity affect the knowledge-creation process?

Several approaches could have been used in addressing these questions. Earlier studies have analyzed data on how knowledge is created in multinational...
companies in mono-cultural contexts. All these together give some idea of what kind of cultural differences exist, but they do not provide deeper understanding of the phenomena and, moreover, cannot explain why these differences have come about. It was thus considered meaningful to take an analytical approach by using theories from other fields.

The **Empirical Research Questions** were defined as follows:

(a) How and why does the knowledge-creation process in Finnish and Japanese companies differ?

(b1) How do the concepts of tacit and explicit knowledge differ in Finnish and Japanese?

(b2) How do the Finnish and Japanese languages, especially the script and achieving literacy, influence the development of cognitive capacities in Finnish and Japanese?

(b3) How do the concepts of the self differ in Finnish and Japanese, and what is their influence on the knowledge-creation process?

(b4) How do the communication orientations differ in Finnish and Japanese, and how do they influence the knowledge-creation process?

(b5) How does contextuality of communication differ in Finnish and Japanese, and does it affect the knowledge-creation process?

(b6) How do the Finns and Japanese differ in receptivity, and how does that affect the knowledge-creation process?

The objective of this study is to move the discussion on cultural differences in international business to a new level. The starting point is that we live in multiple objective worlds. It is shown that there are cultural differences at a very deep level (world-view level), and that the knowledge-creation process follows a different pattern in different cultures. This means, in practice, that there are logical and conceptual differences across cultures. The realization that knowledge-creation patterns vary culturally will give us new insights into knowledge management and creation within multinational companies.
Nisbett (2003, xvii–xviii) declares, "If people really differ profoundly in their systems of thought—their models and cognitive processes—the differences in people’s attitudes and beliefs, and even their values and preferences, might not be a matter merely of different inputs and teachings, but rather an inevitable consequence of using different tools to understand the world. And if that’s true, then efforts to improve international understanding may be less likely to pay off than one might hope."

However, the aim of this study is to improve understanding of different types of knowledge creation in international business. Making visible the cultural differences in organizational learning is the first step towards bridging them.

Research Data

The research design, the data collection and the analysis are often simultaneous and continuous processes in qualitative research (Bryman and Burgess 1994b, 217). Usunier (1998, 65) notes that, although culture is omnipresent, it is also difficult to provide recipes for taking that dimension into account.

Pre-understanding of the research field guided the data-collection process in this study. Data was collected from multiple sources using different techniques. For the theoretical part, pre-understanding of the phenomena and longitudinal participant observation were important sources, along with theoretical and secondary empirical studies from multidisciplinary fields. The primary methods used in the empirical part were participant observation and focused informant interviews.

Participant observation is also called ethnographic fieldwork and it involves establishing rapport with the community face to face. Bernard (1994, 160-161) notes that it makes it possible to collect different kinds of data, and reduces the problems of reactivity. It also helps to formulate sensitive questions in the native language. Naturally, the use of participant observation presumes native-language ability.
Participant observation as a data-collection method was a natural choice here because of the researcher's background as a marginal member of the Japanese and Finnish societies. It has also been suggested by Seiger and Shohamy (1989) that in second-language research, the researcher can be a participant observer of language acquisition by recording (e.g., by keeping a diary) her own foreign-language acquisition process. This kind of historical and current data was used in the present study. For example, the researcher could well recall her own process of learning to read and write Japanese as an adult. As the study progressed and as the mother of a primary-school first-grader, she was also able to observe how her daughter learned to read and write Finnish.

In the same way as key informants can be 'deviant' members who are at the same time both outcasts and yet 'solid insiders' (Agar 1980), so researchers as participant observers can be what anthropologists usually call a 'marginal native' (Freilich 1977).

Self-identity as a marginal member of society could be part of the researcher's personality before he or she becomes an anthropologist, and that could be an important motive (often unconscious) in career selection. Belles (1984) found several excerpts in writings by well-known anthropologists demonstrating that marginality is characteristic of them.

How does marginality influence the research? It may be a research approach, which means that you will be intellectually curious, not seeking ready answers. The researcher as a marginal member or 'intellectual exile' sees things in 'a double perspective that never sees things in isolation'. Said (1996, 60) summarizes this as follows:

"Intellectually this means that an idea or experience is always counterposed to another, therefore making them both appear in a sometimes new and unpredictable light".

A second advantage of the exile standpoint for an intellectual is that he or she can see things 'not simply as they are, but as they have come to be that way':
"Look at situations as contingent, not as inevitable, look at them as the result of series of historical choices made by men and women, as facts of society made by human beings, and not as natural or god-given, therefore changeable, permanent, irreversible." (Said 1996, 60-61)

Empirical data was collected using the key-informant technique, which is traditionally used by ethnographers who define good informants as people who you can talk to easily, who understand the information you need, and who are glad to give it to you or get it for you (Bernard 1994, 166). Careful selection, and possible training and assessment of key-informant competence are important parts of anthropological study. Bernard (1990, 179) suggests that the best informants are the people who are cynical about their own culture. They claim to feel somewhat marginal and they are always observant, reflective, and articulate.

The key informants in this study were defined as key persons involved in business between Finland and Japan. Two informants from the Euro-Japanese business community were also interviewed. Since the focus was on the perception of cultural differences in knowledge creation, the snowball sampling technique was considered the most appropriate for the selection of the key informants. There were two main reasons for this.

(1) It was known prior to the empirical data collection that the Finnish-Japanese business society was relatively small and the key persons knew each other. It was thus left for the first key persons to decide who would be other important players in the field.

(2) It allowed what Schatzman and Strauss (1973) call 'mapping' the social scene, that is, getting down the names of the key players and charting their relationships. This facilitated understanding the role of key persons as cultural mediators.

Often a key informant is also the person who helps the researcher to enter the society. In this case, the president of the Finnish-Japanese Chamber of Commerce recommended the first key informants to me. This also worked as an introduction to the business community in Japan. The access gained allowed me
to participate in the activities of the Finnish Chamber of Commerce in Japan: I was able to join their monthly luncheon meetings, for example.

In the pursuit of a deeper understanding of the knowledge-creation process in a Finnish-Japanese business context, I selected a Japanese company with a subsidiary in Finland as a case. Access to it was gained through the president of the subsidiary, who was a member of the Finnish-Japanese Chamber of Commerce. A matching sample of managers was selected from the Finnish subsidiary and the Japanese parent company, and a total of eight managers were interviewed in Japan and Finland. Since these managers were not key informants in terms of Finnish-Japanese cultural differences, it allowed comparison of the knowledge and perceptions between novices and experienced persons.

To gain a better theoretical understanding of the cultural differences in the knowledge-creation process, and to test my pre-understanding of the Japanese knowledge-creation style, two Japanese experts on intercultural communication were interviewed. The two interviewees are professors at a Japanese university and have both lived longer periods of time outside Japan.

Focused Interviews

I interviewed 26 persons altogether (15 Finns, 10 Japanese and one third-country national). Twenty of the interviewees were female and 15 male, and all held managerial positions or had had a supervisory position. They ranged in age between 30 to 70 yrs. Two were 60-70 yrs., eight were 50-60 yrs., 13 were 40-50 yrs., and three were 30-40 yrs. I inquired about their impressions of Finnish-Japanese cultural differences, especially in terms of knowledge creation and communication, and used probes to help them focus on the topic. Each interview lasted 30-180 minutes. I tape-recorded them and transcribed them in order to allow direct quoting. The critical factors in Finnish-Japanese communication were analyzed based on the theoretical framework developed.
The empirical material provided support for the theoretical assumptions.

The language of the interviews depended on the language fluency and mother tongue of the interviewee. Generally, Japanese informants were interviewed in English in order to test their foreign-language ability and to get more direct answers than is possible in the Japanese language. However, in some cases the discussion continued in Japanese because that was felt to be more comfortable for the interviewee. The Finns were interviewed in Finnish with one exception, when the informant felt more confident speaking English.

Bernard (1994, 149) suggests trying to cede the skill of being a novice by maintaining naïveté, which can be difficult if you are familiar with the culture. I tried to avoid making statements about the topics in the interviews in order not to influence the perceptions of the interviewees. In one case this led to a defensive and almost hostile reaction by the interviewee. For example, when discussing the meaning of silence in the Japanese and Finnish cultures, I asked "Is a Finnish person able to interpret silence?" and the informant replied:

"I am surprised by this question... if you are a 'native' that it is completely unnecessary to answer because in Finland this kind of question never emerges... it is not disturbing and that is the point that we can also be silent sometimes" (Interview جا)."

I collected data for my earlier study (Karppinen-Takada 1994) by interviewing 62 persons in 46 business operations in Japan controlled by 26 Finnish parent companies. This data was collected in 1991 in Japan and it was used in the present study to observe organizational changes in the Finnish-Japanese business community. It also included perceptions of cultural distance between Finland and Japan, and descriptions of major cultural issues in business. The respondents in the earlier study were key persons selected by their own companies, most often subsidiary managers, both Japanese and Finnish.
Since patterns and priorities impose themselves during fieldwork, researchers cannot separate the act of gathering data from that of its continuing interpretation:

"Ideas and hunches emerge during the encounter and are explored or eventually discarded as fieldwork progresses. The ensuing analysis is creative, demanding and all consuming." (Oleyy 1994, 21)

In the present study too, analysis of the data took place at all stages of the research process.

Reliability and Validity

The degree of reliability of a study can be evaluated in terms of the extent to which the results would be the same if the study were replicated by another researcher (Yin 1986, 40). Most researchers seek generality in their studies. However, as Usunier (1998) points out, in cross-cultural research the key words are 'complexity' and 'emergent reality'. Any attempt at generalizing about culture is seen by Brannen (1996) as a monolithic whole leading to reductionism and incomplete meaning. Usunier (1998, 39) suggests that general knowledge is better 'shared' than 'true' in cross-cultural context:

"Complexity reduces the chance of getting any full generalization from a single study, more informed and well designed. The realities emergent of cross-cultural generalization can only appear at the multi-study level, involving researchers from different cultures and multiple research perspectives, using an orientation toward knowledge as a shared meaning rather than merely toward science as external truth. Emergent realities are generalizable through a double increase in shared meaning: the comprehension of certain phenomena is enlarged while more and more people around the same understanding. Cross-culturally, generalizable knowledge is better 'shared' than 'true'."

Empirical reliability was affected by the reliability of the key informants and the researcher herself. Often a foreign researcher relies on third persons (interpreter, translator, and guide) in the collection of data through personal interviews. This is usually the case when a Western researcher is doing a study on Japan. It was
as a marginal member of the society, who assessed the reliability of the key informants in this study.

The key informant is more than a person who has a lot of knowledge about the culture or the phenomenon and who is willing to talk (Bernard 1990, 177). He or she is in a key position in terms of how the researcher forms the total picture. Thus, the selection of key informants affects the reliability of the study. The objective is often to compose a representative sample of the population under study, but one should remember that a key informant must also be qualified, and not only the representative sample unit. Snowball sampling increased the key-informant reliability in this study.

There is natural interaction between the key informant and the researcher: the researcher is able to set the information given by the informant against the informant's background; for example, he or she can perceive that 'this is something that would have gone unnoticed by him'.

It could be said that whatever data-collection methods are used, participant observation maximizes the chances of making valid statements (Bernard 1994, 142). The validity of the empirical data collected in key-person interviews can be assessed by evaluating both construct validity and external validity (Yin 1986).

Construct validity means establishing correct operational measures for the concepts being studied (Yin 1986, 36). In this study, the construct involving multiple sources of evidence increased the validity: participant observation, secondary data from multidisciplinary fields, and key-informant interviews. Combining other data-collection methods with participant observation helps in the formulation of sensible questions in the native language, and increases the problem of reactivity. One of the major reasons for using participant observation in cultural studies is that it gives the researcher an intuitive understanding of what is going on in a culture and allows him or her to speak with confidence about the meaning of the data.
"It lets you make strong statements about cultural facts that you've collected. It extends both the internal and external validity of what you learn from interviewing and watching people. In short, it helps you understand the meaning of your observations." (Bernard 1994, 141)

**External Validity** concerns the extent to which the study's findings can be generalized (Yin 1986, 38-40). In a case study this means analytical rather than statistical generalization. The case contexts in this study are two different cultural environments (Japan and Finland), and the results of comparing the knowledge-creation process in these two cases are generalized to a broader theoretical model of knowledge-creation patterns. The final validity of the study can thus be evaluated only after the model has been tested in other cultural environments.

Mumby (1988, 127-128) notes that the search for generalizability, replication, and prediction and control reflects the preeminence of a perspective that views the establishment of human 'essences' as the end goal of science. Positivists conceive of such an approach as essentially value-free in that researchers claim to make purely ontological statements about the world, arrived at through rigorously tested methods that minimize researcher influence on the object of study. However, the interpretive approach taken in this study reflects the search for understanding rather than generalizability as the major objective.

### 2.4 The Concept of Culture in This Study

In everyday vocabulary in many languages refers both to 'high culture' such as painting and classical music, and also to all products of human life such as pop music and fashion. According to Berry et al. (1992, 165), the term *culture* was first used in an anthropological work by Tylor in 1871, who defined it as "that complex whole which includes knowledge, belief, art, morals, law, customs and any other capabilities and habits acquired by man as a member of society." Herskovits (1948) later proposed a shorter definition, which
became quite popular: "Culture is the man-made part of the human environment."

Culture was compared to a map by Kroeber and Kluckhohn (1952; Berry et al. 166): "If a map is accurate and you can read it, you won't get lost; if you know a culture, you will know your way around in the life of a society." There is no agreement among anthropologists on a single definition of culture. Kroeber and Kluckhohn found more than a hundred and fifty definitions of the concept and classified them under the following six categories: descriptive (listing all aspects), historical (stressing accumulation), normative (emphasizing shared rules), psychocological (focusing on the variety of psychological features), structural (the pattern or organization of culture), and genetic (stressing the origin) (Foster 1965, 10).

Kroeber and Kluckhohn (1952) concluded their review of conceptualizations of culture by proposing their own description:

"Culture consists of patterns, explicit and implicit, of and for behavior accepted and transmitted by groups, constituting the distinctive achievements of human groups, acquiring the emergent elements in artifacts; the essential core of culture consists of traditional (i.e., historically formed and selected) ideas and especially their attached values; cultural systems may on the one hand be conceived as products of action, on the other as conditioning elements of further action." (Berry et al. 1992, 166)

The terms explicit and implicit were used in this concise definition. Explicit culture refers to the set of observable acts and products regularly found in a group, while implicit culture consists of the organizing principles that are inferred to lie behind these regularities on the basis of consistent patterns of explicit culture. Implicit culture cannot be observed directly by an outsider, and often cannot even be articulated by the persons exhibiting these regularities. Learning attitude and the cognitive processing of knowledge are examples of implicit culture. To some extent, neuroscience has made it possible to observe the physical dimensions of cognition, such as the location and volume of brain activity when processing written text, but the biological process does not increase our understanding of culturally different patterns of knowledge creation.
It is important to note that culture is not synonymous with 'civilization'. The ethnocentric categorization into 'civilized' and 'primitive' are remnants of social Darwinism. All human groups have culture. Moreover, culture is not the same as society, although they are closely linked. Society is composed of people, while culture is the way of life they hold in common. (Berry et al. 1992, 167) This distinction is often buried in ethnographic writing.

Characteristics of Culture

Members of a particular society agree quite unconsciously on the basic rules for living together. "Culture" is the shorthand term for these rules which guide the way of life of the members of a social group, and according to Foster (1965, 11), "...culture can be thought of as the common, learned way of life shared by the members of a society, consisting of the totality of tools, techniques, social institutions, attitudes, beliefs, motivations, and systems of laws known to the people." Society means people and culture means the behavior of those people.

The following four typical aspects of culture are among those suggested by Foster (1965):

1. Culture is learned. This implies that it is not genetically or biologically determined, but is a kind of human social heritage. Every normal infant has the potential to learn any culture. When Japanese researchers first discovered that Japanese persons processed different sounds in a different side of the brain than Europeans (Ishihara 1985), it was thought that this was a genetic trait. However, they soon found out that a child born to Japanese parents living in the US and speaking English would cere on a Western style of processing sounds, whereas a child of foreign parents in Japan speaking Japanese would cere on a Japanese style of sound processing. It was therefore suspected that language had something to do with it.

2. Culture is a logically integrated, functional, sense-making whole. Each culture makes sense within its own context. The fact that there is no one
uniform objective reality does not mean that there are no objective realities. The Japanese cannot be dubbed 'illogical' just because they have a different logic from our own.

3. All cultures are constantly changing; no culture is completely static. Since cultures are changing and parts of a culture change at different speeds, it is impossible to integrate perfectly. Cultures adopt the ways of other people over time, but the meaning of imported ways, such as 'eating at a hamburger restaurant', is consistent with the original context.

4. Every culture has a 'value system'. We are not neutral in our attitude to our own culture, but tend to attach labels of 'good' and 'bad', 'right' and 'wrong' to elements of it. The particular ways in which we, as 'criticises, classify reflects the cultural orientation of the group in which we have been socialised. (Foster 1965, 18)

However, values seem to change more slowly than other aspects of culture. Although the reluctance to change in the face of rapid technological advances often induces serious stress, at the same time this essential conservatism of values serves as a brake on uncontrolled change, usually slowing the process to the point at which a society can assimilate innovations without threatening its basic structure. (Foster 1965, 19)

5. Culture makes possible the reasonably efficient, largely automatic interaction between individuals that is a prerequisite of social life. Language has an important role as a tool for communication and for organizing knowledge. Culture could be thought of as a memory bank in which knowledge is stored, and is available immediately and usually without conscious effort to guide us in situations in which we normally face ourselves. It supplies us with the 'tips' or 'cues' that enable us to understand and anticipate the behavior of other people and to know how to respond to it. (Foster 1965, 19-20)
Culture as Software

There is no single definition of culture accepted by management researchers either (Adler 1983b, 40). In a pioneering work on cultures in the field of organizational studies, Hofstede (1991, 5) uses the analogy of computer programming and calls patterns of thinking, feeling, and acting mental programs, or the software of the mind. According to him, culture is the collective programming of the mind, which distinguishes the members of one group or category of people from those of another.

Although this is an interesting analogy, there is a profound difference between computer hardware and the human brain: the latter is organic and capable of change. In fact, the human being is born with a 'half-fabricated' brain and only through use do its various parts assume specialized roles. According to the latest research, growth and specialization are not confined to the first years of an individual's life, but continue throughout his or her lifetime. Recent studies show that the adult brain can grow new cells: Harvard investigators produced the first evidence that the brain tries to repair itself after injury (Nature 2000, 405: 951-955).

Culture is defined in the present study as consisting of learned patterns of thinking and behaving. Language is an important tool for organizing knowledge along these cultural patterns, and communication reflects behavior in a culturally patterned way.
3 A THEORETICAL ANALYSIS OF KNOWLEDGE CREATION

3.1 Nonaka's Theory of Knowledge Creation

Knowledge creation and knowledge management as a field of study in business is of relatively recent origin. Masuda (1980) introduced the concept of the Information Society as the post-industrial society. For him, knowledge creation meant the creation of intellectual values in terms of problem solving and opportunity development. Although organizational learning and information management had attracted interest earlier, it was not until the 1990's that knowledge management became a hot topic in business research. Seelby (1990) was one of the pioneers in introducing the term Knowledge Management (Kunskapsledning in Swedish) into the discussion on organizational learning. He defines it as: "Kunskapsledning är ett sätt att se på omvärlden och organisationen." (Seelby, 37) (Knowledge management is a way of seeing the world and one's organization.)

Interestingly, it was a Japanese professor, Ikujiro Nonaka, who developed the first basic model of knowledge creation. He used concepts from Western research, such as Polanyi's 'tacit knowledge'. The model of knowledge creation in which tacit knowledge had an essential role was then transferred to the West. As with the boom in Japanese management studies in the West, this new model was adopted and used without regard to the context from which it had arisen. In fact, the original book written in Japanese by Nonaka (野中 1990) had the subtitle 日本企業のエピステモロジー ('The Epistemology of the Japanese Enterprise'), but it was soon forgotten that the specific context of Japan might need to be considered when the model was applied outside.

Nonaka and Takeuchi (1995, 226) point out that the interaction between tacit knowledge and explicit knowledge tends to take place mainly on the individual level in Western methodology, whereas in Japanese methodology it also takes...
place on the group level. Knowledge creation on both levels is discussed below.

Although knowledge is created only by individuals, in the sense that an organization cannot create knowledge on its own without individuals, the organizational knowledge-creation process takes place on the group level through dialogue, discussion, experience sharing, and observation (Nonaka and Takeuchi 1995, 239).

Nonaka’s theory of Knowledge Creation (Nonaka 1990; Nonaka 1991a, 1991b; Nonaka and Takeuchi 1991; Nonaka and Takeuchi 1993; Nonaka 1994; Nonaka and Takeuchi 1995) specifically targets the interaction between explicit and tacit knowledge. Spencer (1996, 50–51) criticized the theory for focusing on the transformation and communication of what is already known tacitly by employees, i.e., on the way other employees learn what an “expert” has discovered rather than on Nelson and Winter’s notion of the firm itself learning by acquiring better routines. For Nonaka and Takeuchi (1995, 62; 239), organizational knowledge is the knowledge stored by individuals, a belief transformed and amplified by the two modes of thinking around the firm. Their theory of the firm, in the sense of explaining (a) how tacit ideas generate tacit knowledge and (b) how the obvious agency problems are resolved, remains unexplained."

This is brings us to the basic question of what organizational learning is. In order to answer this, we have to define what we mean by an organization or a company. In the West, a company is a legal entity that can exist without people. It follows that the Western concept of organizational learning focuses on explicit knowledge that can be stored in the company regardless of the changing personnel. Nelson and Winter, as quoted in Spencer (1996, 51), presume that the firm has an ability to know Tacit knowledge of its employees. A notable exception to this is the view put forward by Sveiby (1990; 1997; 2001): he considers knowledge a human faculty, and something that can or the be "managed" by the individual himself.

In Japan, a company consists of people. Japan has no native concept of ‘organization’ abstracted or divorced from actual man: ‘organization’ is perceived as a kind of succession of direct and concrete relationships between
man and man (Nakane 1984). Consequently, the Japanese associate organizational learning with people. For them, an organization is not a machine for processing information, but a 'living organism' (Takeuchi 2001, 321). Thus Spencer's criticism could be considered a result of a different worldview.

If we accept that organizational learning is based on individual people, it does not necessarily follow that organizational knowledge is just the sum of the knowledge vested in individuals. "The sum is more than its parts", and in the same sense interaction between individuals in an organization generates new knowledge. This is exactly what Knowledge Creation Theory is all about. Organizational knowledge creation is a process that 'organizationally' amplifies the knowledge created by individuals, and crystallizes it as a part of the knowledge network of the organization (Nonaka 1994, 11). Exposure to other people and to the environment creates new knowledge. The organization can support creative individuals or provide a context for such individuals to create knowledge.

In addition, knowledge can exist in relationships: a chain of overlapping common experience can be constituted from the project members. The direct opposite of archival-based knowledge is system knowledge, which means the integration of specialized knowledge with other information, and its application to specific contents. (Aoshima 2002, 606)

It seems that Japanese researchers are willing to limit the application of their findings or models to the Japanese context, for example by making explicit comments that the companies under study have been Japanese. On the other hand, there is a tendency among Western writers to omit the national (or cultural) background of the companies, and to present the findings as if they were naturally applicable all around the world. Thus it seems that there is asymmetry in terms of perceiving the influence of cultural differences among researchers in international business. This may affect not only the conduct and interpretation of the studies, but also the selection of research topics.
Given the assumption that knowledge is created through interaction between tacit and explicit knowledge, knowledge creation could be described in terms of four modes of knowledge conversion (Nonaka and Takeuchi 1995). This is called the SECI model and it consists of the following knowledge-conversion processes: (1) Socialization: from tacit knowledge to tacit knowledge; (2) Externalization: from tacit knowledge to explicit knowledge; (3) Combination: from explicit knowledge to explicit knowledge; (4) Internalization: from explicit knowledge to tacit knowledge (Figure 3). I will refer to this process as 'SECI model' from now on.

<table>
<thead>
<tr>
<th>Tacit knowledge</th>
<th>To</th>
<th>Explicit knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tacit knowledge</td>
<td></td>
<td>Tacit knowledge</td>
</tr>
<tr>
<td>To</td>
<td></td>
<td>Tacit knowledge</td>
</tr>
<tr>
<td>Explicit knowledge</td>
<td></td>
<td>Explicit knowledge</td>
</tr>
</tbody>
</table>

![Figure 3: The SECI Model - Modes of Knowledge Creation](image)

Organizational knowledge is continuous and dynamic interaction between tacit and explicit knowledge, and the contents of the knowledge created by each mode of knowledge conversion interact with each other in the spiral of creation. Socialization yields what could be called 'sympathized knowledge', externalization outputs 'conceptual knowledge', combination gives rise to 'systemic knowledge', and internalization produces 'operational knowledge'. (Nonaka and Takeuchi 1995, 70-72)

Tacit and explicit knowledge are not only knowledge-specific but also knowledge-processor-specific. The receptivity of the receiver determines the extent to which knowledge is tacit or explicit. Knowledge creation as interaction between tacit and explicit knowledge can be analyzed both on the individual level and in the interpersonal context. After presenting my conceptual analysis,
I will move onto the individual level and analyze the related cross-cultural issues.

I will then turn to knowledge creation as a process between individuals: knowledge transfer is understood here as the communication process that also creates new knowledge. I will not discuss the group/organization/inter-organization separately in this context.

### 3.2 Definitions of Tacit and Explicit Knowledge

Usunier (1998, 40) pointed out that most of the concepts in management are borrowed from the USA: "In fact more frequently the actual words have been borrowed rather than their whole sense and the social practices in one or ec."

Nonaka and Takeuchi (1995) present a case of organizational theory originating in non-Western culture. The concepts of knowledge used in the theory of Knowledge Creation originated in the West, but were applied first to Japan by Nonaka (野中 1990), and then re-imported to the West (Nonaka and Takeuchi 1995). The meaning of the concepts is not the same in these different contexts, however (see Figure 4), and neither are the practices into tacit knowledge creation.

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**Figure 4**: The Transfer of the Concept of Tacit Knowledge between the West and Japan

<table>
<thead>
<tr>
<th>Japan</th>
<th>The West</th>
</tr>
</thead>
<tbody>
<tr>
<td>暗黙の知識 (Tacit Knowledge) 野中 (1990)</td>
<td>Tacit Knowledge (Polanyi in the 1950's)</td>
</tr>
<tr>
<td>Mode of Knowledge Creation in Japanese companies</td>
<td>Applicable as such to the Western context by several authors</td>
</tr>
<tr>
<td>Nonaka and Takeuchi (1995)</td>
<td></td>
</tr>
</tbody>
</table>

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49
it seems that there is some confusion about the meaning of two central concepts in the knowledge-creation model: those of tacit and explicit knowledge. It is clear that the meaning of tacit knowledge is not the same as in English and Japanese. Different concepts of knowledge are based on different worldviews: Nonaka's theory of knowledge creation has been criticized for its 'relative lack of interest in information technology' (Maula 1999). Here lies an important worldview-related difference between the West and Japan. Managing and measuring knowledge is very important for Western companies.

Toffler and Toffler (1994) refer to 'a priori's par a' and the 'over-compartmentalization' of knowledge in Western organizations. The mass collection of data by technological means has resulted in a ce-emphasis on the collection of information from human sources. The information society has created an 'interconnected knowledge universe,' which is based on open sources. However, what matters is not the collection of data but the interpretation of it. Toffler and Toffler (1994) suggest that even in military intelligence it is important to know the 'knowledge terrain': religious views, the time perspective, type of education and training, sources of information, media watched off duty, and other elements related to knowledge power.

Mead (1976, 905) refers to two sources of knowledge: external and internal. In addition to observing external factors and collecting information, we also need introspection and even empathy. These two points of view are not in contradiction but complement each other. William James (Rees 1984, 175) uses the concepts of 'knowledge about' and 'knowledge of acquaintance.' The former is gained through observation of phenomena in the external world, whereas the latter is gained through intuition and empathy. In some languages, there are different terms for these two types of knowledge: in French 'savoir/connaître,' in German 'wissen/kennen.' The French words indicate the meaning of the word: 'savoir' means to know by seeing, and 'connaître' indicates knowing by experience (birth). Interestingly, English has only one word for these two types of knowing. It has been speculated that this may have influenced the
Japanese also has two words for different types of knowing: 知っている and 分かる. 知っている means to know something (a thing or a matter), whereas the latter word for knowing, 分かる, can be used also to talk about understanding and feelings, 気持ちが分かる. The Finnish words 'tietää' and 'tuntea' correspond to these two: 'tietää asia' and 'tuntea henkilö' correspond to knowing a matter and knowing a person. 'Tietää' and related words such as 'tietäjä' (see) 'ac'cate knowing by seeing', and 'tuntea' means, among other things, experiencing emotions or feeling. In Finnish the word 'tietää' covers both knowledge (tietämä) and information. It also means learning (oppi); insight (tuntea); notice, advice, intelligence (onottaa); message (sanoma); word (sana) (Alanne 1980). I will analyze the meaning of these concepts in more detail later.

Polanyi may well have developed the concepts of 'tacit' and 'explicit' knowledge because of the lack of appropriate words for 'knowing' in English. His concept of tacit knowing is similar to 'knowing by acquaintance', and explicit knowledge is by definition something that is made visible, thus 'knowing by seeing' or 'knowing about'.

Tsoukas (1996) argues that since tacit and explicit knowledge are mutually constitutive and connected, distinguishing them in the knowledge-creation model is not relevant. However, the main focus in models of organizational learning and knowledge creation is not on the type of knowledge as such, but rather on the process of transferring and transforming it. Thus the 'tietää', 知っている, wissen and 'savor' type of (explicit) knowing is transferred in a different

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5 Etymologically, 'tietää' comes from 'tie' (way, road).
process than the 'tantea',分かる, kennen and 'connaître' type of (tacit) knowing. Tacit knowledge can be 'felt', 'acquainted' and 'experienced', whereas explicit knowledge is 'known' and 'articulated'.

If we consider tacit knowledge as 'emotion' we might see how it is transferred in the knowledge-creation process. Emotions can be hidden; they can also be shared without words. They can be expressed in words, most effectively in poems, or expressed in works of art. Explicit knowledge thus becomes the opposite of emotion, the 'ration'. Articulated knowledge is already arranged according to some logic, of both language and script.

Why is it apparently assumed that the knowledge-creation process using tacit and explicit knowledge is applicable to the cross-cultural context? It may be that if we substitute tacit by non-verbal and explicit by verbal we get a simple mode of communication patterns. Since learning on the organizational level can be explained as communication processes, the exchange of verbal and non-verbal messages becomes a mode of knowledge conversion.

A few researchers have pondered about the definition of tacit and explicit (see, for example, Spencer 1996; Scharmer 2001; Tsoukas 1996; Tuomi 1999), but most have referred to Polanyi and/or to Nonaka and Takeuchi (1995). It is thus worthwhile analyzing the development of the concepts here. I will first discuss their dictionary meaning and how they were originally brought into the area of knowledge management, and how they have changed along the way. Then I will compare Polanyi's concepts of knowledge to that of Jung, who was his contemporary. Finally, I will reflect on some of the recent understandings of how our brain and consciousness work.

The Dictionary Meaning of Tacit and Explicit

Since English was not the mother tongue of Polanyi, with whom the concept of tacit knowledge creation is associated, it could be argued that he
adopted the word 'tacit' from its dictionary meaning. By definition, 'tacit' means 'silent, saying nothing'. It's something that can be understood without being openly expressed, implied (tacit approval) (Webster's 1989, 1446). Derivatives of the word include taciturn and taciturnity, both of which refer to the lack of speech and to silence (as the lack of speech).

The dictionary suggests in the dictionary for tacit are 'unexpressed, unsaid, implicit', and the antithesis is 'expressed'. We thus learn that 'expressing' means generally 'expressing verbally' (spoken, said) in English.

Polanyi's Concept of Tacit
Polanyi considered tacit knowledge as knowledge that is incapable of full explicit expression. Thus, he defined tacit by stating what it was not. He saw tacit

<table>
<thead>
<tr>
<th>Tacit</th>
<th>Explicit</th>
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<tbody>
<tr>
<td>Silent</td>
<td>-</td>
</tr>
<tr>
<td>- saying nothing</td>
<td>- outspoken</td>
</tr>
</tbody>
</table>

Table 1: The Dictionary Meaning of Tacit and Explicit

Polanyi's Concept of Tacit
Polanyi considered tacit knowledge as knowledge that is incapable of full explicit expression. Thus, he defined tacit by stating what it was not. He saw tacit

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6. 1. inclined to silence; reserved in speech; reluctant to join in conversation. 2. cold, stern, and silent in expression and manner. Webster's 1989, 1446
7. 1. the state or quality of being reserved or reticent in conversation. 2. Scots law a form of relinquishing a legal right through an unduly long delay, as by silence of the creditor. Webster's 1989, 1446
knowledge as consisting all explicit knowledge. A fact, he drew our attention to the unconscious and conscious elements in knowing (= having tacit understanding) and saying (= making explicit). He declared: "We can know more than we can tell", and explained that the very act of communication discloses knowledge that we cannot verbalize. All knowledge is gained through tacit power (Polanyi 1983, 4-5).

Polanyi suggests that tacit knowledge explains the classical Platonic paradox: it is absurd to search for a solution to a problem, because either you know what you are looking for and then there's no problem, or you do not know what you are looking for and thus cannot expect to find anything: by knowing that a statement is true, we know more than we can tell (Polanyi 1983, 22-25).

As a member of the Western scientific community, Polanyi found the idea of non-objective, non-scientific knowledge radical (1983, 20):

"The declared aim of modern science is to establish a strictly detached, objective knowledge. ... But suppose that tacit thought forms an inseparable part of all knowledge, then the idea of eliminating all personal elements of knowledge, in effect, aims at the destruction of all knowledge."

There is no reason to believe that Polanyi ever considered the applicability of his concept of tacit knowledge in an independent-sel type of culture, or in a communication mode in which tacit knowledge could be directly transferred between persons (as in meditation). This may explain why he did not look around for different scientific fields for similar concepts. As psychology the term the 'unconscious mind' has a meaning that is very similar to that of tacit knowledge, and it has become a part of everyday vocabulary. I will discuss the unconscious and conscious elements of tacit knowledge, and the differences between Jung's and Polanyi's concepts, later.
野中(1990): 明示的 Articulable and 暗黙的 Tacit 知識 Knowledge

The original work on the theory of knowledge creation by Nonaka (published in 1990) was written in Japanese, but in his references to Polanyi he gives the English correspondence in parentheses after the Japanese word for 暗黙的知識 (tacit knowledge) and 明示的知識 (articulable knowledge) (野中 1990, 54).

It is important here to note that the term that Nonaka (野中 1990) gives in English for explicit knowledge is 'articulable', stressing the 'ability to be articulated' (if wanted). Thus the opposite is tacit, as "we know more than we can tell" as something that we are 'not able to articulate' (even if we wished to).

In fact, Nonaka (野中 1990, 54) defines the two forms of knowledge as follows:

"暗黙的知識 (tacit knowledge) は、語ることのできる分節化された明示的知識 (articulable knowledge) を支える、語れない部分に関する知識である。この知は分節化されず、感情的色彩をもつ個人的な知である。しかし、この個人的な知こそ、自ら経験を能動的に統合していく場合には、明示知識を生み、これに意味を与え、これの使用を制御するのである。"

For Nonaka (野中 1990), tacit knowledge concerns knowledge that supports divided (partitioned) articulable knowledge that can be spoken (articulated, verbalized). This knowledge (knowing) cannot be divided (into parts) and it is personal knowledge (knowing) that has an emotional (impulsive) tint (color, hue). He closely follows Polanyi’s idea that tacit knowledge is personal knowledge from which explicit knowledge arises, and stresses the importance of personal experience.

My translation: “Tacit knowledge concerns knowledge that supports divided (partitioned) articulable knowledge that can be spoken (articulated, verbalized). This knowledge (knowing) cannot be divided (into parts) and it is personal knowledge (knowing) that has an emotional (impulsive) tint (color, hue). It is exactly this personal knowledge (knowing) from which explicit knowledge stems when personal experience is actively integrated, and which gives meaning to "a tacit control of use."
In the Japanese cultural context, it is more natural to understand explicit knowledge as articulable (as so wanted) rather than as already articulated. The Japanese are very skilled in 'reading between the lines': 察し, a sort of guessing, has an important role in the communication process (Nonaka 1995). In fact, it is considered a more refined form of communication not to articulate, not to finish your sentences, but to let others do that in their minds.

From Articulable to Articulated and to Explicit Knowledge

Nonaka published some articles on knowledge creation in English and processed his ideas together with the Swedish professor Hedlund before publishing his theory of knowledge creation in English (in 1995). It is interesting to look at the conceptual development in the working paper (Nonaka and Hedlund 1991) that was later processed into a chapter in Hedlund and Nonaka (1993), and two articles (Nonaka 1991a; 1991b).

Nonaka and Hedlund (1991) propose two modes of knowledge management: Western and Japanese. They also discuss their relative strengths and weaknesses with regard to industries. They comment at the end of their paper as follows:

"The fact that analysis of Western multinational corporations on the one hand, and of the Japanese firm on the other - by authors from quite different backgrounds - lead to similar conceptions suggests that the underlying issues are more general than having to do with peculiarities of national culture or organizational history." (ibid., 34)

Thus it seems that they were agreeing on the concepts of knowledge. Tacit knowledge is again defined, in line with Polanyi (Knowing and Being 1969), as "a knowledge which is intuitive, non-verbalized and yet unarticulated" (Nonaka and Hedlund 1991, 3). Nonaka's earlier 'articulable' knowledge has now become 'articulated' knowledge and it is defined as knowledge that "specifies either verbally or in writing, computer programs and the like". The attention here is clearly on verbalizing: tacit knowledge is not yet verbalized, and articulated knowledge is already verbalized. An interesting nuance difference is
that Nonaka (1990) stresses the potential to be verbalized as the opposite of tacit, which cannot be verbalized. Nonaka (1991a, 248) still explains that direct and continual dialogues between people create new information as a result of the conversion of tacit knowledge into articulate knowledge. Nonaka and Hedlund (1991) shift this potential to tacit knowledge, which is 'not yet articulated'.

The English word 'articulate' has two conflicting meanings: (1) to divide into parts and (2) to put together by joining. Thus the word encompasses two opposite concepts: analysis (decomposition) and synthesis (integration). Kodama (1995, 145) uses this as a foundation for his concept of demand articulation, which he defines as “a dynamic interaction of technological activities that involves integrating potential demands into a product concept and decomposing this product concept into a development agenda for its individual component technologies.”

The shift in definition demonstrates how differently we can perceive these concepts. Nonaka (1990) was simply translating the term into English, while defining and understanding it through Japanese. When the Japanese and Swedish researchers worked together they found consensus in a common term and definition for articulated knowledge. Since the terms articulate and articulated would both be translated as 明示的 in Japanese, this did not change the Japanese conceptualization of knowledge. It should be noted, however, that during the same year Nonaka’s article (Nonaka 1991b) on knowledge creation was published in English in Harvard Business Review, and here he was a ready using the term ‘explicit knowledge’ instead of ‘articulable’ or ‘articulated’ knowledge. He elaborated further the theory of knowledge creation in an article in 1994, in which he also used the term ‘explicit knowledge’, and developed notions about the digital character of explicit knowledge and the anagoge type of tacit knowledge (Nonaka 1994). However, Hedlund and Nonaka (1993) refer
to 'articulated knowledge', and he continued to use the term.

Nonaka and Takeuchi (1995): Tacit and Explicit Knowledge

The Knowledge Creation Theory was finally published in English by Nonaka and Takeuchi in 1995 as *The Knowledge-Creating Company*. Prior to this, Nonaka had published articles in English on knowledge creation, for example, in 1991 in *Advances in International Processing in Organizations* (Nonaka 1991a); in *Harvard Business Review* (Nonaka 1991b); and in 1994 in *Organization Science* (Nonaka 1994). Nonaka and Takeuchi (1995) is not a translation of Nonaka (1990), although the basic framework and many of the examples were presented in it. As the subtitle *How Japanese Companies Create the Dynamics of Innovation* suggests, Nonaka and Takeuchi (1995) analyze the Japanese knowledge-creation model and thereby aim to explain why Japanese companies have been so successful.

Tacit knowledge is defined in Nonaka and Takeuchi (1995, 8) as "highly personal and hard to formalize, making it difficult to communicate or to share with others. Subjective insights, intuitions, and hunches fall into this category of knowledge." Further, "It is deeply rooted in an individual's action and experience, as well as in the ideas, values, or emotions he or she embraces". Tacit knowledge contains a technical (skills, know-how) and a cognitive dimension (schemata, mental models, beliefs, and perceptions).

Explicit knowledge is something formal and systematic that "can be expressed in words and numbers, and easily communicated and shared in the form of data, scientific formulae, codified procedures, or universal principles" (Nonaka and Takeuchi 1995, 8). Polanyi (1958, *Personal Knowledge*; 1966 *The Tacit Dimension*) appears on the list of references, although it is not mentioned whether these were used in the Japanese translations or in the English original. Table 2 summarizes the conceptual development of tacit and explicit knowledge in the publications on knowledge-creation theory discussed here.
<table>
<thead>
<tr>
<th>SOURCE / DATE</th>
<th>TYPE OF KNOWLEDGE</th>
<th>SOURCE / DATE</th>
<th>TYPE OF KNOWLEDGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dictionary Meaning</td>
<td>Tacit</td>
<td>&quot;Unexpressed, unsaid, and implicit&quot;</td>
<td>Tacit</td>
</tr>
<tr>
<td>Polanyi (1966-1983)</td>
<td>Tacit Knowledge</td>
<td>&quot;We cannot verbalize&quot;</td>
<td>&quot;We can verbalize&quot;</td>
</tr>
<tr>
<td>Morina (1990)</td>
<td>Tacit</td>
<td>暗黙的知識 (Tacit)</td>
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<tr>
<td>Nonaka (1991a)</td>
<td>Tacit</td>
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<tr>
<td>Nonaka and Hedlund (1991)</td>
<td>Tacit Knowledge</td>
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<tr>
<td>Hedlund and Nonaka (1993)</td>
<td>Tacit, non-verbalised, yet articulable</td>
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<td>Hedlund (1994)</td>
<td>Tacit Knowledge, yet unarticulated</td>
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<td>Nonaka (1991b)</td>
<td>Tacit Knowledge</td>
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<tr>
<td>Nonaka (1994)</td>
<td>Tacit Knowledge</td>
<td>Analogue</td>
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<tr>
<td>Nonaka and Toyama (2003)</td>
<td>Tacit Knowledge</td>
<td>Produced by practical consciousness</td>
<td></td>
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<tr>
<td>Nonaka and Takeuchi (1995) claim that Japanese companies understand knowledge primarily as tacit, whereas Western companies seem to focus on explicit knowledge. This was also an important argument in their later writings, but seems to have gone largely unnoticed by Western researchers in the field.</td>
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**Polanyi and Jung as Contemporaries**

In order to understand the concept of tacit knowledge as developed by Polanyi, we have to consider his background. Michael Polanyi (1891-1976) was born in...
Hungary and his first university degree was in medicine. Because of poor health he switched his field and launched his career as a physical chemist after World War I. In 1933 he moved to the University of Manchester in England. His interests grew to include questions about organization and order in science and society, and in 1947 he moved from the faculty of science to the faculty of humanities where he created his philosophy of science and of society, including the concept of tacit knowledge.

It is most probable that Polanyi was aware of the work of Carl Jung (1875-1961), since he had explored his ideas about the interplay between the conscious and the unconscious in 1912, long before Polanyi moved to England. However, at that time the Cartesian concept of the human being was dominating medicine. The mind had been pushed aside to the realm of religion and philosophy, and even after it had become a special field of study, i.e. psychology, it had to wait for acceptance by medicine and biology until quite recently (Damasio 2001, 238). This was why Polanyi (1983, originally in 1966) made no reference to Jung's work, although his concept of tacit seems similar to Jung's concept of the unconscious.

Along with Freud, Jung established psychology as a field of study. Jung expanded the concepts of the conscious and unconscious mind in explaining how the human mind works. Jung's definition of the unconscious mind differs radically from Freud's definition, and in fact this issue was one reason why Jung created his own school of analytical psychology. According to Jung, the unconscious mind constitutes the things that occur in our mind, of which we are not conscious. He described the unconscious as having an active role: "the unconscious is no mere depository of the past, but it is a source of genius of future psychic situations and ideas..." (Jung 1978, 25)

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9 See, for example, www.ceesight.org/articles/polanyi.htm accessed 26.8.2002
Table 3 compares the related concepts developed by Jung and Polanyi. The main difference between the Jungian concepts of the unconscious and the conscious and the concepts of tacit and explicit developed by Polanyi are in the focus of the analysis. Jung was interested in the individual (personal unconscious) and, to some extent, in the idea that some of the unconscious could be shared (collective unconscious and archetypes): for him the unconscious mind consisted of unorganized knowledge that was pre-linguistic and emotional in nature, whereas the conscious mind represented linguistic, organized knowledge, and rationality.

<table>
<thead>
<tr>
<th>Jung (1875-1961)</th>
<th>Unconscious</th>
<th>Conscious</th>
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</thead>
<tbody>
<tr>
<td>- Occurs in the mind, not the consciousness</td>
<td>- Personal unconscious</td>
<td>- The Conscious mind</td>
</tr>
<tr>
<td>- Collective unconscious</td>
<td>- Pre-linguistic knowledge</td>
<td>- Organized knowledge</td>
</tr>
<tr>
<td>- Archetypes</td>
<td>- Emotional</td>
<td>- Rational</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Polanyi (1891-1976)</th>
<th>Tacit Knowledge</th>
<th>Explicit Knowledge</th>
</tr>
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<tbody>
<tr>
<td>- We cannot verbalize</td>
<td>- We can verbalize</td>
<td></td>
</tr>
<tr>
<td>'Tacit knowing'</td>
<td>'Telling'</td>
<td></td>
</tr>
</tbody>
</table>

Sources: Jung (1978; 1990), Polanyi (1983)

Polanyi combined both the intra-individual and the interpersonal in his definition of tacit by referring to both 'knowing' and 'telling'. Knowing takes place within the individual (and can be both conscious and unconscious), but telling means sharing this knowledge with another person. Polanyi thereby linked knowledge to sharing it with others.

However, if we think of knowledge creation within an individual, there is no need to be able to share it. In fact, it has been recently discovered that highly talented people and those working in scientific professions have more artistic
traits than average people. This conceptual difference may explain why the use of Polanyi’s tacit and explicit knowledge has provoked some criticism in the West. It was mentioned earlier that Tsoukas (1996, 14) claims that such distinction is not justifiable. One cannot, in fact, distinguish between them because they are mutually constituted and inseparably related. This makes sense on the ‘intra-individual’ level because the processes of transformation between tacit and explicit knowledge take place within the individual.

However, on the ‘interpersonal’ (group/organization) level it is important to distinguish between these two types of knowledge in order to be able to analyze the process of transferring knowledge between individuals. It may be that Western readers consider only transfer within explicit knowledge possible between individuals, whereas for the Japanese it is self-evident that individuals can also share tacit knowledge without converting it first into explicit knowledge. For this reason, I think it is important to analyze the knowledge-creation process on both the ‘individual’ and the ‘interpersonal’ (group/organization) levels.

Descartes’ Error

Until very recently, researchers had limited access to what goes on in a person’s mind. Jung (1990) tried to reach the unconscious by the careful observation and recording of every fantasy, vision, dream and thought, however odd. At this time the psyche was neglected in medical textbooks and lectures. By developing the field of psychiatric studies, both he and Freud legitimized scientific discussion of the existence of the ‘spirit’ or the ‘mind’. Neuroscience today has been able to map the functioning of the brain and the new findings are radically changing the view of how the mind and the body work. For Jung (and his contemporaries), spirit and matter were two opposites, whereas recent studies have been able to prove that the mind (brain) cannot operate or exist without the body (Damasio 2001).
One of the world's leading researchers in neuroscience, Antonio Damasio, integrated recent findings in studies of the mind and consciousness in his book 'Descartes' Error' (1994), and developed a vision of the brain and its parts that makes sense biologically, psychologically, and philosophically (Dennett 1995, 3). According to Damasio (2001, 127), an organism is born with automatic survival mechanisms, and education and cultural acculturation add a number of socially acceptable and desirable decision-making strategies, which increase the chances of survival, drastically improve the quality of life, and are thus the basis for building the self at birth and at the beginning of human life. At birth and at the beginning of human development, there are instincts in the brain that govern both the physiological toolbox for regulating one's metabolism and social cognition and behavior. The brain acquires additional layers of survival strategies during childhood development. The neurological basis of these strategies has something to do with instincts, and this both changes and extends their operations. Operations that are wider than instincts are supported by neural mechanisms, which may be structured in a basically similar fashion as those that regulate biological instincts, and may be bounded by them. However, they absorb some influence from society in becoming what they become. In this way, they are linked equally strongly both with the given culture and with general neurobiology. In addition, this twofold imitation implies that the survival strategies that are wider than instincts create a unique human characteristic: a moral perspective, which sometimes extends beyond the immediate interests of a group or even a whole species.

There are several implications in Damasio (2001) concerning Jung's four types of interplay between the conscious and the unconscious. The most important finding is that the mind and the body are even more strongly interrelated than was previously thought in the West. Interestingly, Polanyi (1983, 15) also suggested this: "Our body is the ultimate instrument of all our external knowledge, whether intellectual or practical." For Jung, Western civilized consciousness had already separated itself from the basic instincts. Although these instincts have not disappeared, they have lost their contact with our
consciousness and are thus forced to assert themselves in an indirect fashion (Jung 1978, 49). Damasio (2001, 166-167) suggests that the inference process of a 'civilized' person is in fact based on emotional mechanisms, and is thus a result of interaction between the mind and the body.

We could link the idea of tacit and explicit knowledge on the individual level to the awareness of knowing. Tacit knowledge would relate to the unconscious, and explicit knowledge to conscious knowing. There seems to be evidence of a type of memory of which we are not consciously aware, yet which stores knowledge. Daniel Schacter and Endel Tulving refer to this type of memory as implicit memory, which they distinguish from explicit memory.

According to Schacter (1996, 190-191), implicit memory could be seen as constituting part of tacit knowledge:

"The nonconscious world of implicit memory revealed by cognitive neuroscience differs markedly from the Freudian unconscious. In Freud's vision, unconscious memories are dynamic entities embroiled in a fight against the forces of repression; they result from special experiences that relate to our deepest conflicts and desires. . . [I]mplicit memories . . . arise as a natural consequence of everyday activities as perceiving, understanding, and acting."

3.3 Knowledge Creation on the Individual Level

The individual knowledge-creation process could be described as interplay between the conscious and the unconscious mind. Jung (1978, 49) describes four different means by which the conscious obtains 'its orientation to experience: sensation (i.e. sense perception) tells you that something exists; thinking tells you what it is; feeling tells you whether it is agreeable or not; and intuition tells you whence it comes and where it is going. For Jung (1978, 24-25), 'it is the process of bringing something from the unconscious to the conscious.'

It seems that some conscious perception goes on without self-consciousness: it is possible to be unaware of having experienced something, and to be unable to remember the experience, but still give evidence that one has had the experience. There are examples of 'implicit memory' in brain-damaged persons. See, Schacter (1996) for example.

http://skepdic.com/psychoan.html 29.06.2003
that creates new knowledge: new ideas, inspirations, and "revelations". In the following I will link these processes to knowledge creation in terms of interaction between tacit and explicit knowledge.

Feeling: within tacit knowledge

Jung describes feeling as telling you whether something is agreeable or not. It belongs to the realm of emotions, which rest in the unconscious mind. Tacit knowledge could be defined as "emotional knowledge" as opposed to explicit knowledge, which is "rational knowledge". However, emotions are their distinct two different things. When emotions are expressed, either verbally or non-verbally, they become part of explicit knowledge. Thus the process of feeling could be described as tacit to tacit knowledge transfer, without conversion into explicit knowledge. In this way we can also see the emotional side of sharing tacit knowledge. In the SECI model, this takes place at the group level through the process of socialization, which involves sympathized knowledge. Nonaka, Toyama and Boisier (2001, 495) underline the importance of arranging "ba" or contexts for this process to begin. They use the terms "ore", "care" and "trust", all of which are related to emotion. On the individual level, dreaming and imagining are means of dwelling in the unconscious. It is still unknown what the significance of sleeping is to human beings. Recent research suggests that we reconstruct damaged brain cells during sleep.

Damasio (2001, 134) further expands understanding of the Jungian idea of 'feeling' when he explains the neurological basis of feelings and emotions. Ontologically, primary emotions give way to secondarre emotions, which emerge when we start experiencing feelings and form systematic connections between classes of objects and situations on the one hand and primary emotions on the other.

We have primary emotions: the innate ability to react to an emotion in a pre-ordered way when we sense certain characteristics of the world or our body receives stimulation. Examples include size (like a big animal), a wide wingspan...
(like the eagle in flight), movement style (like a lizard), certain sounds (such as a 'murmur'), and certain bodily states (such as the pain during a heart attack) ('b/c, 131).

These characteristics are processed alone or together, after which the limbic part of the brain, for example the amygdala, perceives them. The nucleus of its nerve cells has a dispositional representation, which eases the bodily state characteristic of fear emotions and changes cognitive processing in a way that fits the state of fear. There is no need to 'recognize' the bear or snake as such in order to observe and classify certain characteristics. ('b/c, 132)

For humans the next stage is feeling the emotion in connection with the object that caused it. Awareness of this connection gives more security: if one learns to know that an animal, object, or situation, M, causes fear, there are two ways to react when meeting M. The first is innate and it cannot be regulated. In any case, it is not connected only with M, because a variety of creatures, objects and circumstances can create the response. The other way is based on one's own experience and it is associated only with M. Because one knows M, one can think of the future and predict the possibility of M being in a certain environment. Then one can avoid M by anticipating it and not reacting to its appearance in an emergency. ('b/c, 133)

There are other advantages of 'knowing' the emotional reaction. One can generalize knowledge and decide to be careful when facing something resembling M, for example. In this way, we could say that awareness of emotional states is the basis of all learning. This is very important in terms of the knowledge-creation process within an individual.

Although Damasio ('b/c, 127) talks about ontological development, he stresses the fact that organisms are in a constant interaction with their environment, which means that the development of secondary emotions is also partly manipulated by society and culture. This idea is further developed in his analysis of cultural
Intuition: from tacit to explicit knowledge

Intuition is the flow of knowledge from the unconscious to the conscious, from in to out, and results in new ideas, "revelations" (Jung 1978, 24-25). Thus we could apply this and say that new knowledge is created when tacit knowledge is converted into explicit knowledge. On the interpersonal level, this corresponds to the Internalization Process in the SECI model, it's the stage of the knowledge-creation process at which new conceptual knowledge emerges.

Jung (1978, 25) pointed out that the French mathematician H. Poincaré and the chemist A. Kekulé owed important scientific discoveries to sudden pictorial "revelations" from the unconscious. Damasio (2001) and Penrose (1990) also refer to Poincaré when describing the role of intuition in decision-making in mathematical knowledge-creation. Poincaré had a sudden flash of inspiration (which made him connect Fuchsian functions with non-Euclidean geometry) when he was stepping onto an omnibus. Penrose (1990, 533) recalls similar flashes in his own career as a mathematician. He refers to external insight as an ability to "intuit truth from falsity and beauty from ugliness!" and considers this the hallmark of consciousness. For Damasio (2001, 180-181), "intuition means sorting out, selecting different possible alternatives. Pre-selection of possible alternatives is sometimes called 'inspiration', sometimes not. The biological mechanism takes care of pre-selection: it examines candidates and allows only a few to take the final test.

Leo Szilard, physician and biologist, has claimed that the creative scientist has a lot in common with the artist and the poet. Logico-analytical ability are necessary but not sufficient requirements for creative work. Revelations leading to scientific breakthroughs were not logically derived from existing knowledge: the creative processes on which scientific achievement is based work in the unconscious (Damasio 2001, 181-182).
Maslow (1993) termed this type of sudden discovery or uplifting incident "peak experience", and Csikszentmihalyi (1991) refers to "flow experience". There is a feeling of great satisfaction when one solves a problem or discovers a new idea. This may well be the driving force behind computer hackers, and distinguishes their relation to information technology from that of users, (Himanen 2001).

Since users of information technology only consume information, they tend to get dulled by it. There is something coming out of the unconscious to the conscious level all the time and it is not necessarily an innovation or a great discovery. The very act of memorizing entails externalizing knowledge from the tacit to the explicit within an individual. The senses constantly perceive a lot of data, but the brain processes only a fragment of this. Just part of what has been perceived will be stored in the short-term or the long-term memory for later retrieval.

In a strict sense, sensory data becomes knowledge only after it has been organized according to some schema. After hearing a sound, the mind connects it with some meaning and thus creates knowledge of what it means. The processes of sensing and connecting take place at such short intervals, virtually simultaneously, and it is difficult to distinguish between them. All this takes place before the mind can make explicit what this knowledge is. We could thus say that tacit knowledge is the source of organized (explicit) knowledge.

Dreaming is an interesting case of both dwelling in the unconscious and entering the conscious level occasionally (as in remembering dreams). Different visual images emerge without any apparent logic. Reflecting back on these images, one may conceptualize them later and attach a meaning to them. This was one of the principal ideas in Jung’s study of the importance of dreams. He saw the unconscious sending messages to the conscious through dreams.
Thinking: combining explicit knowledge

Thinking is communication within one's head. However, it is part of the conscious process and could be said to take place with explicit knowledge. According to Jung, thinking explains what something is. It is therefore the combination of information into comprehensible knowledge, or systematic knowledge. On the group level, this refers to the Combination Process in the SECI model. Thinking as ta lking (see Vygotsky on internal speech in Luria 1976). Therefore, dialoging is part of this process. Talking and thinking are similar in the way they use concepts that are determined linguistically.

Conscious knowledge can also be arranged in the mind by writing, drawing or modeling. Conceptual processing is the conversion of explicit knowledge into explicit knowledge. It is a cognitive process in which language has a crucial role.

Conceptual processing can also be an unconscious process, as when we are "absorbed in our thoughts" or when we internalize a skill based on conceptual thinking. In both of these cases tacit knowledge is handed in its conceptual form. Burton (1999) claims that most of one's knowledge is of a non-explicitly conceptual nature. He gives the following example:

"...situation in which conceptualization is likely to be explicit is when one is learning, and has not yet mastered, some skill. While learning a piano-sonata, for example, the pianist must explicitly conceptualize the musical directions in order to play the music. But as he becomes more familiar with the music - with practice - he will less and less need this explicit conceptualization. When the pianist has perfected his playing, I suspect that there is little explicit conceptualization which takes place. This is not to say that the pianist's experience becomes non-conceptual (i.e. in the sense of 'not discriminating anything'), for we certainly do discriminate the music when we play. But the pianist is unlikely on the whole to be aware of the conceptualization which occurs. He simply plays, naturally and without noticing the various notes which he is discriminating." (Burton 1999, 77-78)

Recent findings in neuroscience suggest that thinking consists mostly of images. Most words that we use in the internal speech that precedes saying or writing exist as acoustic images in our consciousness (Damasio 2001, 110). Some excellent mathematicians and physicists say that images coordinate their thinking. Often these images are visual and they may be a somatosensory.
Damasio (ibid, 111-112) refers to famous scientists, such as Albert Einstein and Richard Feynman, who have acknowledged the importance of visual images in their thinking processes. Descartes also seemed to think in images. It has been said that he liked glancing through books just by looking at the pictures, and he had revelations in dreams (Ljatker 1984, 173).

Damasio (2001, 96) explains that as organisms acquired greater complexity, 'brain-caused' actions required more intermediate processing. Other neurons were interpolated between the stimulus neuron and the response neuron, and varying parallel circuits were thus set up, but it did not follow that the organisms with this more complicated brain necessarily had a mind. The brain may take many intervening steps in the circuits mediating between stimulus and response and still have no mind if it does not meet an essential condition: the ability to cognize images interior and to order those images in a process called thought. Images are not only visual, and may be based on 'sound' and 'smell'.

Non-conceptual knowing processing is thinking without words or concepts. However, conceptual thinking also involves processing images into linguistic concepts even if these are not voiced out, that is spoken or written. Small infants dwell in the non-conceptual (or pre-conceptual at this age) tacit world. It is therefore said that we cannot trust our early infanthood memories because they took root in the pre-conceptual stage of development. During the early stages of a child's development, words are not an organizing factor in terms of categorizing experience (Luria 1979, 67). As children grow and acquire language, their thinking becomes more conceptual. Piaget and Vygotsky had different opinions about the meaning of egocentric speech in child development. The relationship between language and thought is discussed further in Chapter 4.

Sensation: from explicit to tacit knowledge

Nonaka (1994) associates internalization, the conversion of explicit knowledge into tacit knowledge, with organizational learning.
"For explicit knowledge to become tacit, it needs if the tacit knowledge is verbalized or diagrammed into documents, manuals, or oral stories. Documentation means to articulate one's tacit experiences, thus enriching their tacit knowledge." (Nonaka and Takeuchi 1995, 69)

The dictionary definition of knowledge states that it is "an organized body of information; or the comprehension and understanding consequent on having acquired and organized a body of facts" (Webster's 1989, 730). In a strict sense then, tacit knowledge as residing in the unconscious mind is not knowledge at all, but rather unorganized pieces of information gathered through different senses. However, common usage of the word "knowledge" refers to "something that we know". This knowing can result from data pouring in through different sources: touching ("I know from the touch that it's silk"), smelling ("I know by the smell that it's coffee time"), tasting ("I know it's salty by the taste"), or hearing ("I know by the sound that it's an ambulance"). Therefore, it is justified to call this data gathered from experience "knowledge". This is to acknowledge that knowing can take place through different senses.

The Jungian concept of sensation or sense perception is the flow of information from out to in, corresponding to the conversion from explicit to tacit knowledge. On the individual level, it is the internalization process in the SECI model. It includes reading, listening, and also perceiving with all the senses (sensation): an intake of external knowledge, which is then processed or forgotten. Most lost memories are lost because they were never elaborately encoded. If this explicit knowledge may be in a form that different senses can "read", it is thus something that is understandable through any of the senses, not only something articulated. Dogs leave messages for other dogs by spraying urine. They are able to encode messages left by other dogs and receive a lot of information (gender, state of mating time, for example) from it. Human beings can also read non-verbal messages and obtain information in that way. It is through the process of sensation or internalization that we obtain operational knowledge.
Neuroscience explains the same process in terms of the environment leaving its signs for the organism in a variety of ways, such as by stimulating the function of the nerves in the eye or ear or the many nerve endings in the skin, the gustatory nerves or the pituitary membrane. Nerve endings send messages to certain incoming points, i.e. to the area in which sight, hearing, bodily sensations, taste and smell are registered. (Damasio 2001, 97)

Perception is mostly a filtering process. Our interests and needs affect it, but most of what is available to us as potential sense data will never be processed, and most of what is processed will be forgotten. Amnesia is not rare, being rather the standard condition of the human species. We do not forget in order to avoid being reminded of unpleasing things. We forget because we did not perceive closely in the first place or we did not encode the experience either in the parietal lobes of the cortical surface (for short-term or working memory) or in the prefrontal lobe (for long-term memory) (see, for example, Schacter 1996).

For Jung, the flow from the conscious to the unconscious is a sort of forgetting. Forgetting itself is a very important aspect of knowledge creation. Without the unlearning (forgetting) of old ideas, there is no room for the emergence of new ones. However, to say that conversion from explicit to tacit knowledge merely denotes forgetting would be to ignore the meaning of implicit memory. Tacit knowledge is the container of all knowledge acquired so far: some knowledge, which has been explicit, becomes unorganized and mixed with other elements of tacit knowledge.

Cultural Differences in the Individual Knowledge-creation Process

Analyzing the knowledge-creation process on the individual level raises many important cross-cultural issues. Some those that are incorporated into the SECI mode were selected for further investigation in this study (see Table 4). Cultural differences in terms of considering creating and meditating as ways of knowing are discussed after this.
**Type of Knowledge Conversion:**
(SECI Model)

- Tacit-to-Tacit Knowledge
  - **Socialization**
  - *Nonaka and Takeuchi (1995)*
- Tacit to Explicit Knowledge
  - **Externalization**
  - *Feeling, Intuition, Thinking, Sensation (Jung, 1978)*
- Explicit to Explicit Knowledge
  - **Combination**
  - *Dreaming, Meditation, Note: Somatic Markers (Damasio, 2001)*
- Explicit to Tacit Knowledge
  - **Internalization**
  - *Language, Cognitive processing, Cognitive elements, Cross-cultural issues (Nisbett, 2003, xiv)*

<table>
<thead>
<tr>
<th>Type of Knowledge Conversion</th>
<th>Process</th>
<th>Cross-Cultural Issues</th>
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<tbody>
<tr>
<td>Tacit-to-Tacit Knowledge</td>
<td>Socialization</td>
<td>Note: Somatic Markers (Damasio, 2001)</td>
</tr>
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</tr>
</tbody>
</table>

Explicit knowledge is understood as 'knowledge that is transmittable in formal, systematic language' (Nonaka 1994, 16). The externalization and combination of knowledge is clearly bound up with its organization through cognitive processes, which means using language. There are over 5,000 different languages in the world (Gibbs, 2002), and there is ample evidence that language is an essential tool in cognitive processing. The internalization process also includes understanding and interpreting knowledge expressed in language. Moreover, it seems that the cognitive elements involved in processing tacit knowledge are also influenced by the cognitive skills developed by using language. Cognitive psychologists and neuroscientists thought for a long time that cognitive processes were the same for all human beings; that we all relied on the same tools for perception, memory, causal analysis, and inference. However, recent findings are proving that there exist culturally different cognitive processes, which shape the way we process knowledge (Nisbett, 2003, xiv).
Sense perception is also an important way of internalizing explicit knowledge. What, then, happens with sensation? Surely a human being remains biologically constant. However, it seems that at the infant stage we cerebrate a cultural bias for sense perception, i.e., we start focusing more on perception through certain senses. I will discuss the development of sensory perception in connection with the internalization process on the group level.

Are feelings universal, or are there cultural differences? There are several studies showing that emotions are universal, but their display is culturally regulated (Matsumoto 1996). Recent findings also suggest that secondary emotions, and especially the development of somatic markers, are gained through experience, which is regulated by the internal preference system and by the influence of external circumstances, including social customs (Damasio 2001, 172-173).

Since the cognitive process is a central element in knowledge creation, an analysis of the impact of culture on cognitive development is a major theme in this study. Nonaka and Takeuchi (1995) consider the articulation (i.e., using language) of tacit mental processes the key factor in creating knowledge. There is ample evidence to support the idea that language influences our cognitive skills. In Chapter 4 of this study, I analyze how language, especially writing systems and achieving literacy, shape the way we process knowledge.

Dreaming and Meditation as Ways of Knowing

During these periods of relaxation after concentrated intellectual activity, the intuitive mind seems to take over and can produce sudden clarifying insights, which give such joy and delight.

Jung (1990, 333) considered dreaming to be an important way in which the unconscious communicates to the conscious mind. He even believed that dreams could sometimes inform us of things that, according to all logic, we could not possibly know, concerning synchronistic phenomena, premonitions and dreams that come true, for example. It has been said that all the information
necessary for spying is actually available in different media and other sources. The critical element in obtaining the necessary knowledge is the right combination of pieces of information. It could be that the unconscious works for us in this selection and combination task.

Dreaming could be considered a creative way of combining elements in unconscious or tacit knowledge. Without conscious control by the mind, these different elements join together, sometimes in surprising ways. Something 'clicks' and the result may be an innovation that one is able to express as explicit knowledge upon waking up.

Some of the most revolutionary ideas in the world started as revelations in dreams. One famous example is Descartes' Angel (Rozak 1986, 210):

"On the night of November 10, 1619, René Descartes, then an aspiring philosopher still in his early twenties, had a series of three dreams which changed the course of his life and of modern thought. He reports that in his sleep, the Angel of Truth appeared to him and, in a blinding revelation like a flash of lightning, revealed a secret, which would 'lay foundations of a new method of understanding and a new and marvelous science'. In the light of what the angel had told him, Descartes set to work on an ambitious treatise called 'Rules for the Direction of Mind'."

Descartes never finished his treatise. Neither did he ever spare time in his writing for the role of dreams, revelations, and insights as the wellspring of thought. Instead, he gave all his attention to formal, logical procedures that supposedly begin with zero, from a position of radical doubt. (Rozak 1986, 211)

According to cultural anthropologists, dreaming has a different status in different cultures, especially as a source of information (Gell 1992). Meditation is also a way of gaining access to tacit knowledge. It has traditionally been practiced in Eastern religions and is essential to Zen Buddhism.

We may also try to reach the non-conceptual world consciousness. Artists who are able to think in visual images are capable of this. In some philosophies (or religions), such as Buddhism, meditation has a central role in reaching
consciously to the non-conceptual world. Burton (1999) studied second-century
calar Buddhist philosophy and followed the discussion about non-
conceptuality and knowledge of reality. He concluded that (78-79):

"At the time of the meditation, the meditator, due to his absorbtion in his
experience of emptiness, does not reflect 'this is emptiness', nor does he
proclaim 'this is emptiness'. He does not stand-back from his experience
in which he is immersed. He is simply absorbed in the experience, like
the pianist who is totally familiar to the music and can play a tis
sense, then, the meditator on reality also does not have a view, a position,
or a thesis. He does not formulate or express a proposition that entities
lack svabhāva, a ta’as a, a tātār; he is accustomed to discriminating. In a face-to-
facing encounter, tais act of s abhā a."

It is of course possible to reflect later on meditative experience and to
come to the "absence of emptiness".

3.4 Knowledge Creation as a Communication Process

Eila Kivikkaho, 1961

Knowledge creation on the group level or between organizations entails the
transfer of knowedge between actors and could thus be paraelec to the
communication process. There are several studies focusing on knowedge
transfer through alliances and joint ventures (for example, Kogut 1988a;
Kogut and Hamer (1992) discuss tacit 'know-how', defined as "the accumulated
practical skill or expertise that allows one to do something smoothly and
efficiently", and information or 'know-what', which accommodates more
articulable dimensions of knowedge. For Kogut (1988), tacit is 'organizationally
embedded knowedge'. Hamer (1991) noted that tacit knowedge was more
difficult to transfer than articulated knowedge.
Bresman, Birkinshaw and Nobel (1999) studied knowledge transfer in international acquisitions and they considered the extent to which knowledge can be articulated to be positively related to knowledge transfer. This is typical of the Western communicative approach in which the focus is on the explicit or the verbal. Although these studies also discuss tacit and explicit dimensions of knowledge, their primary interest is in how easily knowledge can be transferred, and not in the knowledge-creation process itself. Thus the focus is on how we can make tacit knowledge explicit, i.e. more easily transferable.

野中（1990）based his theory of knowledge creation on the experience of Japanese companies. However, Nonaka and Takeuchi (1995, 197-223) also considered the applicability of the Japanese-style knowledge-creation process outside Japan, and the adjustments needed when Japanese companies start to work jointly with non-Japanese partners.

It has been suggested that the source of Japanese managerial success may not be the Theory Z social skills stressing team-building, consensus and trust, as put forth by Ouchi (1981), but rather the Japanese cognitive skills at carrying out organizational learning (Nonaka and Johansson 1985; Sullivan and Nonaka 1986; Kagono et al. 1989). However, I believe that the Japanese management style reflects the Japanese cognitive skills. The major differences between knowledge creation in Japanese and Western organizations as summarized by Nonaka and Takeuchi (1995) are given in Table 5. These parallel the differences between the Japanese and American styles of management analyzed by Wiblen (1991).
The Japanese represent a collectivist culture, in which organizations are group-based and group autonomous (an emphasis on human relations, collective decision-making, and group harmony) prevails. There is a danger of 'group think' and 'overadaptation to past success'. In terms of knowledge creation, the Japanese are oriented towards tacit knowledge and are especially strong in socialization and internalization processes.

Japanese-style management allows emphasis on experience (lifetime employment, seniority-based pay/promotion), creative chaos through overlapping tasks (group duties and responsibilities), and access to requisite variety through cross-functional teams (job rotation and on-the-job training). There is also frequent fluctuation in top management (management by consensus, the manager as facilitator). The organizational intention in Japanese companies is ambiguous (organic type of organization), and there is redundancy of information.

Western, or American, culture is individualistic and based on individual autonomy. The requisite for variety is realized through individual differences.
There is emphasis on analysis (analytic decision style) to the extent that there is a danger of ‘paralysis by analysis’. There is clear organizational intention (system type of organization) and creative chaos comes through ‘incivility’ differences (emphasis on functional relationships). Compared to the Japanese organization, there is less fluctuation from top management (management by objectives, the manager as decision-maker) and less redundancy of information. In terms of knowledge creation, Western organizations are oriented towards explicit knowledge and are strong on externalization and combination processes.

The flexibility of Japanese companies in adjusting by synthesizing Western approaches allows them to take advantage of the diversity provided by a foreign environment. The question remains whether Western companies are as flexible in this respect; there may be an asymmetry of flexibility. Hamel (1990) suggested this in his discussion of partner out-learning in US-Japanese joint ventures. The Japanese partners were eager to learn from the American counterpart, but evidently not vice versa.

Nonaka and Takeuchi (1995, 243) suggest that Western companies should “start paying more attention to the less formal and systematic side of knowledge and begin focusing on a more subjective insights, intuitions, and approaches that are gained through experience or the use of metaphors or pictures”. Their recommendations are the opposite to those of Japanese companies, which according to them need “to make better use of advanced information technology, software capabilities, and computerized management systems to accumulate, store, and disseminate explicit knowledge throughout the organization”. Western companies are required to learn how to amplify or crystallize knowledge on the group level through dialogues, discussion, experience sharing, and observation. Japanese companies need to learn how to build up stronger capabilities on the individual level, not only at the top, but also throughout the organization. (Nonaka and Takeuchi 1995, 244)
It is suggested in this study that differences between Japanese and Western knowledge-creation processes are based on cultural differences. Thus, it is not easy to change these knowledge-creation patterns. A discussion on the knowledge-creation process as communication follows, and critical cultural issues are identified for further analysis.

Conscious and Unconscious Knowledge on the Group Level

Jung's concepts of the conscious and the unconscious in knowledge creation were applied earlier on the individual level. To what extent could we apply the interplay between them (here: the tacit and the explicit) on the group (interpersonal) level? The conscious and the unconscious on the interpersonal level could be interpreted as 'known to others' and 'unknown to others'. Luft's (1969) model of human interaction, known as the Johari Window, is an awareness-understanding-disclosure model. Aspects of a person (in terms of feelings and behaviors) may be known or not known to others and to oneself. When we say more than we know that we say - the window is open to others but blind to the self; when we know more than we can say - the window is hidden from others and sometimes also unknown to oneself.

Spender (1996, 51) draws attention to notions of non-accidental knowing because "while the Japanese tradition, the European tradition springs from Durkheim's sociology and notion of 'conscience collective', the collective knowing suggested by the term 'organizational culture'. By separating the 'psychological individual type of tacit knowledge, on which Polanyi focused' from the 'sociological or collective type proposed by Durkheim', he aims to clarify the non-explicit modes of knowing.

If we understand explicit and implicit in terms of awareness, we could apply Luft's (1969) Johari Window to types of organizational knowing. Spender (1996) does not make clear if his explicit and implicit apply at the same time on both individual and social levels. What is explicit (known) to the individual (self) may be not known to others (HIDDEN), or it may be known to others (OPEN).
Thus conscious knowledge could be either hidden or open to others depending on whether it is shared. Similarly, Spencer’s objectified knowledge is not necessarily only open, since it can be known to others but not known to the self, which makes one blind to it. (Figure 5)

<table>
<thead>
<tr>
<th>Implicit</th>
<th>Explicit</th>
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</thead>
<tbody>
<tr>
<td>Conscious</td>
<td>Objectified</td>
</tr>
<tr>
<td>Hidden</td>
<td>Open</td>
</tr>
<tr>
<td>Objectified</td>
<td>Unknown</td>
</tr>
<tr>
<td>Automatic</td>
<td></td>
</tr>
<tr>
<td>(1)</td>
<td></td>
</tr>
<tr>
<td>Collective</td>
<td></td>
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</tbody>
</table>

Sources: Spencer 1996; Luft 1969

Figure 5: Spencer’s Different Types of Organizational Knowledge and Luft’s Johari Window

Automatic knowledge can either represent both the blind and unknown (Johari) windows, because what is not known to the self may not be known to others either. Collective knowledge would seem to fall into the window of the unknown. Luft’s (1969) unknown area can become known through reflection, certain drugs, projective techniques, and dreaming. Jung also suggests that we can reach the collective unconscious through dreams.

Luft (1969) based his model on eight assumptions about human behavior: (1) human behavior should be approached holistically; (2) what is happening to a person or group is best understood subjectively in terms of the individual’s perceptions and feelings; (3) behavior is primarily emotional, not rational; (4) the person and the group tend to operate without awareness of the sources of their behavior; (5) qualitative factors such as acceptance, conflict, and trust are highly important, although they are difficult to quantify; (6) process and change are more important than structure in behavior; (7) induction by personal experience is better suited to studying behavior than deduction by abstraction; (8) behavior
should be understood in its complexity rather than in rigid simplicity (Littlejohn 1978, 221). The nature of a person is holistic!

According to Jung (1978), the unconscious contains two distinct components, the personal unconscious and the collective unconscious. The collective unconscious is a vast mental universe that contains a constellation of patterns that he called archetypes, or symbols that represent universal images that he believed were commonly experienced in all cultures and societies. He argued that archetypes were part of the genetic inheritance of all humans and, as such, were mental contents that existed prior to the formation of the consciousness.

There has been growing interest in the study of consciousness in recent years. According to Damasio (2001), this is due to the maturing of the sciences of the brain and the mind:

"There are new techniques that permit the effective study of the neural substrates of mental processing and produce new findings. In parallel, there are new theoretical developments spurred by the new findings. The combination allows for effective formulation and testing of hypotheses." 13

There is an interesting parallel between Jungian archetypes and the way Damasio (2001) explains primary emotions. An archetype is described by Jung as a "preconscious psychic disposition that enables a (man) to react in a human manner." This potential for creation is actualized when it enters the consciousness as an image. In his earlier work, Jung linked archetypes to heredity and considered them innate and based on instincts.

Damasio (2001) uses the concept of 'innate dispositional representations', which exist as potential patterns of neural activity in small ensembles of neurons that he calls 'convergence zones'. They are required for control of the metabolism, drives, and instincts. Although innate dispositional representations are not conscious to generate images, the consequences of their activity can produce

13 Harvard Brain Spring 2001, Vol. 8., Interview with Antonio Damasio
imagery. As specialist agencies that set off chains of reaction that reach deep into the body's accumulated experience, they call to mind not only further images of reliably appropriate content, but also "somatic markers", emotional states that color everything with specific varieties of urgency and calm, rendering various further thoughts relatively unthinkable while driving others into the attention. (Damasio 2001, 109; 167; see also Dennett 1995)

Table 6 compares the concepts developed by Jung and Damasio. The major difference between them is that Jungian archetypes were mythic images common to all individuals in all cultures to the extent of forming what he called the 'universal unconscious', whereas Damasio (2001, 131) considers dispositional representations to be linked to primary emotions, which are not visual images but sensations of the world or bodily stimulations. At a later stage within the formation of secondary emotions, somatic markers are developed as partially culturally-conditioned responses and may appear as visual images (ibid., 173). Thus the 'universal unconscious' suggested in Damasio's study seems more limited in scope than Jung's concept. However, different cultural environments could be expected to produce spaces of 'collective unconscious' characteristic of each culture. This is further explored in the analysis of cultural differences in literary culture.

<table>
<thead>
<tr>
<th>The Universal Unconscious</th>
<th>The Collective Unconscious</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jung: Archetypes</td>
<td>Damasio: Primary emotions</td>
</tr>
<tr>
<td>- Hero, Goc, etc.</td>
<td>- Dispositional Representations</td>
</tr>
<tr>
<td>Jung</td>
<td>Damasio: Secondary emotions</td>
</tr>
<tr>
<td></td>
<td>- Somatic Markers</td>
</tr>
</tbody>
</table>

Sources: Jung 1978; Damasio 2001

I have since found out that Carr (1996) suggests a similarity between Jungian archetypes and Damasio's thoughts (Charles R. Carr, The Emergence of Archetypes in Present Day Science and Its Significance for a Contemporary Philosophy of Nature, Dynamical Psychology 1996 [http://www.goertzel.org/dynapsyc/index.htm#1996 accessed 06.01.2004]).
Jung (1978) maintained that archetypes were the fundamental source of human creativity. This is an important notion in terms of the know-edge-creation process. We can tap this source of shared tacit know-edge by using symbols and myths shared in the culture. We can communicate to others something that we do not know ourselves (BLIND and UNKNOWN in the Johari Window). This may take place verbally (in the unconscious selection of words) and nonverbally (in certain behavior).

**Knowledge and Communication**

Knowledge and communication are strongly interrelated. Habermas' Theory of Communicative Action also marks a shift from the theory of know-edge to the theory of language (Cooke 1994, 9-10). On the interpersonal level, know-edge creation is a process by which tacit know-edge is transferred between people, while other words it becomes communication. In order to understand the full richness of communication we should treat it as a broad concept encompassing a variety of phenomena. Thus refer to Littlejohn's (1978, 375-376) definition of communication:

"It is a complex process of psychological and social events involving symbolic interaction. These events occur within and between people in interpersonal, group, organizational, and mass contexts. Communication events involve varying combinations of coding, meaning, thinking, information, and persuasion."

Symbolic interaction means the exchange of messages by the use of symbols. Since language is our primary symbol system, it is the most important mechanism of the mind and the self. Speaking and writing could be considered the principal modes of communication in an organizational context (Mumby 1988, 15).

The prevailing view of the communication process is that it involves two distinct activities: the mechanics of communicating and the process of gathering the information pertinent therein. However, Mumby (1988, 14) considers communication in an organizational context as a process through which
meaning is created. Meaning is not conveyed through communication, neither
is it the product of individual interpretation or an objective, existing entity
outside of social interaction. It is produced in communication:

"Communication - as an institutional form - articulates meaning
formations; over time, these become background of common experience that
gives organization members a context for their organizing behavior. Communication is thus
not simply the vehicle for information, but rather the very process by which the notion of
organizing comes to acquire consensual meaning. Organizing is therefore
continuously created and recreated in the act of communication among
organization members." (Mumby 1988, 14-15)

Mumby (1988) claims that communication must be considered the means by
which organizational structure and reality are produced and reproduced. In
other words, organizations are constructed through the articulation of meaning
as produced in communication.

Language has an essential role in both cognitive processing and communication.
Conceptualization is possible only because language exists, and it is distinctive
a human phenomenon to use language to transfer knowledge. Communication
theories and models are predominantly Western (and especially Anglo-Saxon),
and they stress the importance of verbal communication. Thus the basic
communication model distinguishes between verbal and non-verbal
communication, indicating that verbal communication is so important that every
other type of communication can be grouped together as its opposite. The
definition of non-verbal communication is therefore not an easy task, as
Harrison (1973) points out:

"The term 'non-verbal communication' has been applied to a broad
range of phenomena: everything from facial expression and gesture to
fashion and status symbols, from dance and drama to music and mime,
from the flow of affect to the flow of traffic, from the territoriality of
animals to the protocol of diplomats, from extrasensory perception to
analog computing, and from the rhetoric of violence to the rhetoric of
terrorist cancers."
The SECI Model and Communication

Nonaka and Takeuchi (1995, 225) see organizational knowledge creation as a never-ending, iterative process of interaction between tacit and explicit knowledge. This knowledge conversion gives rise to the following four modes: socialization (from tacit to tacit), externalization (from tacit to explicit), combination (from explicit to explicit), and internalization (from explicit to tacit). Notions are not the organization itself, affect its knowledge conversion:

"But if the knowledge cannot be shared with others or is not amplified at the group or divisional level, then knowledge does not spiral itself organizationally. This spiral movement is one of the keys to understanding organizational knowledge creation."

Knowledge creation fires imagination, but knowledge per se does not. It is the dynamic process producing two different kinds of knowledge spirals that is the cornerstone of creative activities. The first spiral moves across the four modes of knowledge conversion, and the second is where knowledge core opens on the tacit level is transformed into knowledge at the group and organizational levels. (ibid, 235)

Boisot (1986, 139) argued that the codification and diffusion of knowledge are related: the more experience (tacit knowledge) has been codified (explicit knowledge), the more specific and extensive it can be diffused, although the actual diffusion depends on its semantic and pragmatic characteristics. He distinguishes between four knowledge flows: scanning (diffused to undiffused), knowledge creation (undiffused to codified), knowledge diffusion (codified to diffused) and knowledge absorption (codified to codified). Scanning and absorption take place in the internalization process, whereas codifying knowledge is part of internalization, and knowledge absorption would indicate combination in the Nonaka and Takeuchi (1995) SIC model.

Nonaka and Takeuchi (1995) define the two essential types of knowledge they are codified, in other words how they can be diffused or communicated. Explicit knowledge refers to clear, distinct knowledge that has been organized by means
of language (as a cognitive tool) into a coherent or meaningful whole. Its transfer equals what is called verbal communication, consisting of both vocal (speech) and nonvocal (writing) dimensions (Saville-Troike 1982). Explicit knowledge also covers mathematical formulas and technical inscriptions, as these could be considered a separate language (cognitive tools) and thus transferable verbally and nonverbally. In general, Westerners are focused on explicitness and emphasize explicit knowledge. (Nonaka and Takeuchi 1995, 243)

Tacit knowledge forms a basis for the emergence of explicit knowledge. It is incapable of full explicit expression (uncodified) and thus it can be transferred only by nonverbal communication. Parts of it are not transferable and remain within an individual until made more explicit. Some parts of it are transferable within individuals by sharing the same experience. The Japanese are considered group-oriented and focused on tacit knowledge. (Nonaka and Takeuchi 1995, 243)

Equating the transfer of explicit and tacit knowledge with verbal and nonverbal communication respectively opens up the possibility of applying cross-cultural communication theories to the knowledge-transfer process. This is important for two reasons: first, it helps us to see how different cultures are biased toward certain styles of knowledge transfer (the Japanese being skilled in nonverbal communication, the Americans focusing on verbal skills), and second, it enables us to analyze the different contexts of cross-cultural (and inter-organizational) knowledge creation in international business when multicultural teams set out to create knowledge together.

In this study, knowledge creation at the group level is considered communication, and the transfer of knowledge in a tacit form is equated with nonverbal communication. A genuine communication we not only transfer

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15 See the definition of articulated knowledge: articulate is understood here in the meaning of 'clear distinct; make clear, distinct, and precise in relation to other parts; having a meaningful relation to other parts; having some parts or distinct areas organized into a coherent or meaningful whole; unified (Webster's 1989, selected meanings).
existing meanings but also create new meanings. On the individual level, tacit knowledge is considered non-conceptualized knowledge, but on the group level even the conceptualized knowledge of one individual is perceived as tacit by another. We can transfer tacit knowledge between individuals by nonverbal communication; we can also understand nonverbally what has been communicated verbally. Thus both socialization (emphasizing) and internalization (embodying) could be considered nonverbal communication.

Verbalization makes knowledge explicit between individuals. As discussed earlier, the original term used for explicit knowledge was 'articulated knowledge', stressing its verbal character. Verbal communication incorporates both spoken and written language, and both externalization (articulating) and combination (connecting) could be considered verbal communication on the group level.

Table 7 summarizes the cross-cultural issues in the group-level knowledge-creation process (the SECI Model). These issues are analyzed further in the following sections. I will begin by discussing socialization in terms of empathizing and the collective unconscious. Orientation to the self and the other, and facets of individualism and collectivism, are important conceptions in analyzing cultural differences in tacit-knowledge transfer in the knowledge-creation process.

Internalization and combination processes on the group level are considered here as the communication of knowledge between individuals. Cultural differences are for a communication orientation, and the degrees of verbal and nonverbal communication. Dimensions of high- and low-context communication are discussed, and finally a two-dimensional model of the contextuality of communication is proposed to explain the different knowledge-creation patterns which emerge in different cultures.
<table>
<thead>
<tr>
<th>SIC Model</th>
<th>Communication Mode</th>
<th>Cross-Cultural Issues in This Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socialization</td>
<td>Verbal Communication</td>
<td>Nonaka &amp; Takeuchi 1995</td>
</tr>
<tr>
<td>- Empathizing</td>
<td></td>
<td>Role of Emotions, Collective Unconsciousness, Orientation to the Self and the Other</td>
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<td>Facets of individualism and collectivism, Language and Thought: Language as a Cognitive Tool</td>
</tr>
<tr>
<td>Internalization</td>
<td>Verbal Communication</td>
<td>Communicating, Communication orientations, Language and Thought: Communication, Language and Thought: Written and Knowledge Processing</td>
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<tr>
<td>- Internalizing</td>
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<tr>
<td>Combation</td>
<td>Verbal Communication</td>
<td>Communicating, Knowledge: High and Low Context Communication, Language and Thought: Psychological and Knowledge Processing</td>
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<tr>
<td>- Connecting</td>
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*Moraka & Takeuchi 1995*

Table 7: Cross-cultural Issues at the Group Level (the SIC Model)

Cultural issues in internalization are discussed as differences in the capacity to learn, and I present a review of studies on receptivity as perception and sensing with a view to furthering understanding of how we perceive knowledge from the environment.

The relationship between language and thought is focused on in this study, and it is discussed in Chapter 4. Language also has an important role in individual-level knowledge creation.

### 3.5 Socialization: Empathizing and the Collective Unconscious

Knowledge creation starts with socialization, which is the process of converting new tacit knowledge through shared direct experiences in a car-to-car social interaction, and in joint activities such as spending time together or living in the same environment (Moraka and Takeuchi 1995; Moraka, Toyama and Konno...
Defined in this way, socialization is not possible if the persons concerned do not live in the same country. Even if you do live in the same country, you could have a life that is very different from that of your colleagues. Since socialization is a group process, differences between individualistic and collectivistic cultures are to be anticipated. The group functions as the 'synthesizer' of knowledge:

"The more autonomous, diverse, and self-organizing the team, the more effectively it will function as a synthesizer." (Nonaka and Takeuchi 1995, R40)

Routines are said to be part of tacit knowledge because they are developed in close interaction over time. This assumes stability in the organization: if there is high personnel turnover, routines among colleagues are not developed.

Nonaka and Toyama (2003) consider walking around inside and outside the company, and accumulating and transferring tacit knowledge, parts of the socialization process. This is not an automatic process: accumulating tacit knowledge about the world that surrounds us is a matter of receptivity. There are both cultural and individual differences in perception. Nonaka and Toyama (2003) suggest:

"For example, one can accumulate tacit knowledge about customers through his/her own experience as a customer. These officials embrace contradictions rather than confront them. This enables actors to absorb knowledge in their social environment through action and perception. Hence the dichotomy between the environment and the organization can be synthesized in the socialization process as members of organizations accumulate and share the tacit knowledge of the environment through their practical consciousness." (Nonaka's mine)

However, the capacity for absorption and perception are embedded in one's cultural background.

According to Nonaka and Takeuchi (1995, R25), socialization starts with building a team whose members share their experiences and mental models.
Persons from different cultures and worldviews do not necessarily have the same mental models, and this will affect how they experience the world.

Tacit knowledge can be shared by empathizing with others. This requires skills in empathy, a sort of emotional intelligence (Goleman 1996). The role of emotions was acknowledged relatively late in Western management, whereas the Japanese have traditionally considered emotions and empathy important aspects of social interaction. Japanese-style management emphasizes human relations (Fukuda 1991).

Scherer and Tran (2001) discussed the effects of emotions on the process of organizational learning in the West. They conclude that emotions are powerful determinants of the organization's fitness in the modern marketplace:

"Emotions focus the energies of an organization on events, provide the organization with crucial learning opportunities, and produce the motivation and reasoning necessary for a sustained effort to adapt to changing environments." (Scherer and Tran 2001, 387)

In the present study, emotions are considered an important aspect of tacit-to-tacit knowledge transfer, which takes place in socialization. The role of emotions is discussed below with regard to both perception (in the internalizing process) and communication (in the externalizing and communication processes). They play an important role in knowledge processing and knowledge creation. If we accept the definition of tacit knowledge as emotions, and feeling as the processing of tacit knowledge within an individual, what, then, is the transfer of tacit knowledge between individuals? It is the so-called 'socializing' and 'empathizing' in the SEC model, but what does that mean and how do cultures differ in this respect?

Somatic markers are partly culturally learned, which means that individuals from different cultural backgrounds process emotions (tacit knowledge) differently. We have established cultural patterns of somatic markers that work within the same culture to enable us to share emotions and the tacit knowledge...
involved. However, it is to be suspected that there are several limitations in transferring emotions across very different cultures. Motions are the rules for emotional expression, the way in which the body reacts to a certain experience may also vary.

The following is an extract from Tsoukas' (1996, 14) article, which I have manipulated by replacing the word 'tacit' by 'emotional', and the word 'explicit' by 'rational':

"Contrary to what Nonaka and Takeuchi argue emotional knowledge can indeed be linguistically expressed if we focus our attention on it. Reciprocally, rational knowledge is a means grounded on an emotional component. Emotional knowledge is not external to a certain experience, as Spencer implies. Emotional knowledge is the necessary component of a tacit edge; it is not made up of discrete units which may be ground, lost or reconstituted. As I will show in the next section, to split emotional knowledge from rational knowledge is to miss the point - the two are inseparably related."

This is in line with the results of recent studies in neuroscience, which show conclusively that emotional knowledge is the component of all knowledge (Damasio 2001). However, the organizational possession of emotional knowledge may well be ceded. What is emotional knowledge or the organizational climate of something similar to somatic markers in that it establishes a relationship between the experience and the socially accepted emotional response to it? In that case it would be the organizational climate that allows the processing of certain experience into emotions.

Another important cross-cultural aspect of the socialization process concerns how tacit knowledge can be transferred between individuals. Jung (1978) suggested the existence of 'collective unconsciousness'. The extent to which we share this across cultures is another question. It seems that sharing tacit knowledge has to do with how we define the concept of the self. Individualism and collectivism have different dimensions based on the way they set boundaries between the self and the other, and there are cultural differences in
how these boundaries are set (Barnard 1980; Shweder and Bourne 1984; Marsella, Devos and Hsu 1985).

Orientation to the Self and the Other

Different degrees of the self are projected onto the public self-image known as ‘face’. Ting-Toomey (1988) developed a theoretical mode of facework, which distinguishes between strategies that threaten the self-face and the other-face, as well as strategies that are geared toward negative-face maintenance and positive-face maintenance. Face in this “is a projected image of one’s self in a relational situation. It is an identity that is defined conjointly by the participants in a setting” (Gudykunst and Ting-Toomey 1988, 85). A re-conceptualization of Ting-Toomey’s theoretical mode (Ting-Toomey 1988; Gudykunst and Ting-Toomey 1988; Ting-Toomey 1994) is used here to explain how differences in the concept of the self influence knowledge creation in the socialization process.

There is variance in the degree to which one wishes to project an ‘authentic self’ in a situation and in the degree to which one chooses to maintain a ‘social self’. Ting-Toomey (1988) argues that in individualistic cultures (such as Australia, Germany, and the United States), maintaining consistency between the private self-image and a public self-image is of vital importance. In other words, the public self-presentation of ‘face’ should correspond to an invariant ‘core self’ with an ‘individual’. On the other hand, in collectivistic cultures (such as China, Korea, and Japan), the ‘self’ is a situationally and relationally based concept. This is based on the Confucian idea of the self as a center of relationships in an open system.

According to Ting-Toomey (1988), the self in collectivistic cultures is maintained and codified through the active negotiation of facework, whereas in individualistic cultures it is often conceived as an intrapsychic phenomenon. The public self should then ideally correspond to one’s internal states.
Drawing on earlier studies on facework (Brown and Levinson 1978), Ting-Toomey (1988) built a two-dimensional grid of facework maintenance (Figure 6) based on negative-face and positive-face needs and face concern (self-face, other-face, or mutual-face). She explained negative-face need as the need for autonomy or dissociation, and positive-face as the need for inclusion or association. The self-concern and other-concern dimensions refer to the individual's orientation toward attention to the self versus the other. The grid displays four different sets of strategies that are present in all negotiation situations, but some of which may be preferred by members of one culture more than others (Gudykunst and Ting-Toomey 1988, 88-89).

(1) **SPF**: Self positive-face maintenance means the use of certain communication strategies to defend and protect one's need for inclusion and association.

(2) **OPF**: Other positive-face maintenance is the use of certain communication strategies to defend and support the other person's need for inclusion and association.

(3) **SNF**: Self negative-face maintenance means the use of certain interaction strategies to give oneself freedom and space, and to protect oneself from the other's infringement of one's autonomy.

(4) **ONF**: Other negative-face maintenance requires the use of certain interaction strategies to signal respect for the other person's need for freedom, space, and dissociation.

Ting-Toomey (1988) suggests that members of individualistic, low-context cultures tend to use SPF and SNF strategies, while members of collectivistic cultures prefer OPF and ONF strategies in interpersonal problematic situations.
The facework-maintenance model developed by Ting-Toomey (1988) could be extended to the analysis of cultural differences in the concept of the self by defining negative-face need as the 'autonomous' self-concept, and positive-face need as the 'negotiated self-concept. The autonomous self is a fixed idea of the self, whereas the negotiated self must be redefined in each new context or group. Dimensions of the self and the other could be seen as concepts of a 'person's self and the 'other persons' selves, i.e. 'self-perception' and 'view of others'. Members of individualistic and collectivistic cultures have both a self-perception and a view of the other. Thus there is a mixture of the four different strategies that Ting-Toomey (1988) suggests. Table 8 displays this reconceptualisation, which concerns orientations toward the self and the other.
### Table 8: Orientation to the Self and the Other

<table>
<thead>
<tr>
<th>Orientation</th>
<th>Negotiated Self</th>
<th>Autonomous Self</th>
<th>Negotiated Other</th>
<th>Autonomous Other</th>
<th>Courtesy</th>
<th>Negotiated</th>
<th>Autonomous</th>
<th>MIRROR</th>
<th>Negotiated Self</th>
<th>Autonomous Self</th>
<th>Negotiated Other</th>
<th>Autonomous Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy</td>
<td>Autonomous</td>
<td>Autonomous</td>
<td>Negotiated</td>
<td>Negotiated</td>
<td>Courtesy</td>
<td>Negotiated</td>
<td>Autonomous</td>
<td>MIRROR</td>
<td>Negotiated</td>
<td>Autonomous</td>
<td>Negotiated</td>
<td>Autonomous</td>
</tr>
</tbody>
</table>

Autonomy, as an orientation, means that there is a need to protect the freedom, space, and autonomy of both the self and the other. This is a combination of SNF and ONF strategies. The individual has a fixed concept of the self and has no need to be included in the group of others. The others are considered to be just like one; 'leave me in peace, and I won't disturb you'.

Courtesy type of orientation here means another individualistic orientation of the self, which is based on the need to defend one's autonomy, but at the same time to be included and associated with others. So although one keeps oneself autonomous, one desires to join groups of others. Membership of these groups is negotiated verbally with the necessary courtesy. This orientation is a combination of SNF and OPF.

The negotiated type of orientation combines both SPF and OPF and refers to negotiating both the self and the other. The private and public selves depend on contexts, and the boundaries of others (groups) are also flexible. Communication style reflects this in stressing elaborate verbal and nonverbal communication.
Mirror refers to an orientation in which the other is considered an autonomous whole, for example a group that has fixed boundaries. In contrast, the self is perceived as a reflection of the other; a concept of the self must be negotiated in relation to the other. It is a combination of SPF and ONF strategies.

Orientation to the self and the other is an important concept in analyzing the socialization process in knowledge creation. Both the autonomous and the courtesy types of orientation represent an independent self in which tacit knowledge exists within the individual and is transferable only after conversion into explicit knowledge. The two types differ in how they see the needs of the other. Socialization is something to be avoided for autonomous persons because they prefer emotional detachment and assume that others do also. Although the courtesy types also prefer their own autonomy, they are willing to respond to the emotional needs of others and would cordially accept invitations to business dinners or concerts. However, there would be very little transfer of tacit knowledge, but rather polite small talk.

When both the self and the other are negotiated, there is a mutual need for inclusion and association. Thus one would enjoy spending time with one’s colleagues even outside working time. Socialization may take place in the form of different sports activities, or in beer drinking, for example. Companies may also establish programs enhancing team work activities (such as Nokia’s Helping Hands) in order to provide possibilities for socializing.

The mirror represents the type of orientation in which the self merges into the other. Tacit knowledge is transferred, not by converting it into explicit knowledge, but also by extending the boundaries of the self to include the other. This is a very effective way of transferring tacit knowledge and it can be used in autonomous working teams or in self-organizing teams. The major difference between the negotiated and the mirror orientations has to do with emotional communication: in the mirror type one can take the position of the other and...
Thus feel empathy, whereas in the negotiated type one sympathizes from the outside.

Facets of Individualism and Collectivism

Kim (1995) conceptualized the relationship between individuals and groups based on an extensive literature review. He introduces the different facets of individualism and collectivism that delineate the central features. His framework can also be used to analyze individual- and group-level differences in the knowledge-creation process, and especially the transfer of tacit knowledge.

Kim (1995, 19) defines individualism as an explicit and firm boundary between the self and others. He then supplements this with an analysis of its relationship to collective entities. Facets of individualism include (1) the Aggregate Mode, (2) the Distributive Mode, and (3) the Static Mode. All of these prevent the merger of the self into the other, so that direct access to the tacit knowledge of the other cannot be gained. However, there are differences in how these modes view socializing activities.

The Aggregate Mode of individualism requires emphasis on distinct and independent individuals who need to detach themselves from their ascribed relationships, such as those with family, relatives, the community, and religion. Abstract principles, rules, and norms provide the mechanisms for unrelated individuals to interact with one another. This type of individualism is self-contained, and emphasizes the values of freedom, independence, self-determination, personal control, and uniqueness (Sampson 1977). It could also be called inner-directed individualism, guided by the psychological gyroscope. The Aggregate mode also entails the “belief that each of us is an entity separate from every other and from the group” (Spence 1985, 128). This separation may also be evidenced to viewing oneself as separate a mind and body. This type of individualism therefore values explicit knowledge more than tacit knowledge, and would show preference for the abstract.
Individuals in the aggregate mode interact with others based on principles such as equality, competition, equity, and exchanges based on contracts. Members of a group are conceived of as independent and unrelated individuals, and no individual enjoys special privileges. (Kim 1995, 20) This type of detachment from others does not support the transfer of tacit knowledge even when opportunities to spend time together are organized.

The Distributive Mode of individualism differs from the Aggregate mode in the nature of the group: in the latter it is not clearly defined, whereas in the former the boundary of the group is explicitly set by commonality and fluidity (Kim 1995, 22). The Distributive mode emphasizes contracts, which define relationships between people, such as professionals and clients.

Socialization for distributive types of individuals might take place in organized events or teamwork where the professional identity could be maintained. This may allow a limited degree of tacit knowledge to be passed when the professional culture ('lawyers', 'architects') is shared, but socialization tends to be limited to work-related activities.

The Static Mode of individualism concerns the individual's inalienable rights, and institutions such as government that protects freedom and justice for all individuals (Kim 1995, 23). The boundary of the group is firm, but it is not permanent. Individuals may challenge the limits of existing laws and regulations particularly if they perceive them as infringing upon their rights.

Socialization by representatives of the distributive mode takes forms such as joining golf clubs and membership in the Rotary club. These activities often take place in private time, although many of the contacts made may also benefit the working life of the individual.

Kim (1995, 25) defines collectivism in terms of an explicit and firm group boundary, and it is considered to be more than the mere sum of its individual
characteristics. Analysis of the collective also incorporates its relationship to individuals. Kim (1995) defines the three facets of collectivism as (1) the Undifferentiated Mode, (2) the Relational Mode, and (3) the Co-existence Mode.

In the context of knowledge creation, it’s important to note that collectivism does not automatically entail ease with the transfer of tacit knowledge in the socialization process.

The Undifferentiated mode of collectivism is characterized by a firm and explicit group boundary coupled with an undifferentiated self-group boundary, and is typically represented by collectivists who have failed to achieve or who give up some degree of individualization and separation (Kim 1995, 25-26). It enables the merger of the self into the group, which is ideal for transferring tacit knowledge. The group may act as a self-organizing team in which members pursue different activities without predetermined specialization.

The Relational mode is defined by a porous boundary between in-group members that allows thoughts, ideas, and emotions to flow freely, and focuses on shared relationships (Kim 1995, 26). The transfer of tacit knowledge within the group is accomplished with relative ease, although to a lesser degree than in the undifferentiated mode.

The Co-existence mode of collectivism describes a mode that allows diverse and contradictory elements to co-exist within a culture and within a person, and separates the private self from the public self (Kim 1995, 27). In the context of knowledge creation, this type of collectivism signifies a group of diverse collectivists who may or may not commit themselves to the common targets of the group. If there is enough commitment to consider the organization part of the private self ('my company') it may enhance the transmission of tacit knowledge within the group. However, considering the organization as part of one’s public self may loosen the emotional ties necessary for tacit knowledge transfer between collectivists.
Individualism and collectivism provide backgrounds for understanding the meaning of values in different cultures. Kincaid (1987) gives an example of the meaning of 'freedom': the meaning of liberation in traditional Indian philosophy is intertwined with the related concepts of oneness, non-attachment, and material non-attachment.

"Freedom is something attained when one gives up his/her individuality, renounces material things, and spiritually becomes one with something greater than oneself. Freedom, at least in the American sense, is associated with the independence to pursue one's own—often material—interests in fair competition with other individuals. In the West you do something to achieve whatever ends make you happy. In the East you become one with something greater than yourself for no other conscious purpose. Both speak of freedom." (ibid, 335)

3.6 Externalization and Combination: Communicating Knowledge

The externalization process means converting tacit knowledge, which is personal, context-specific, and therefore hard to formalize and communicate to others, into knowledge that is transmittable and articulate, such as words or numbers. Externalization yields 'conceptual' knowledge, as in the 'Tall Boy' concept at Honda (Nonaka and Takeuchi 1995, R38).

Nonaka and Takeuchi (1995) consider this part of the knowledge-creation process the best. They stress the importance of metaphors and analogies, which enable team members to articulate in dialogue their own perspectives and thereby reveal hidden tacit knowledge that is otherwise hard to communicate (ibid, R25).

The combination mode is facilitated when the concept formed by the team is combined with existing data and knowledge that reside outside of the team, in order to create more sharable specifications. Combination has its roots in the information-processing paradigm and it yields 'systemic' knowledge such as prototypes and new-component technology (ibid, R25; R38).
Obviously language has an important role in how tacit knowledge is verbalized. "Verbal" equals language in both vocal (spoken) and nonvocal (written) forms, and language is the primary conceptualization tool. It is argued in this study that written language, or more specifically script, influences our habits of reasoning. There are cultural differences in the logic that people use to arrange their thoughts.

Both logic and communication styles influence the degree to which we use metaphors and analogies in communication. It should also be noted that metaphors are not always transferable cross-culturally. Familiar metaphors are often used in international business: we talk about 'mother' companies and 'daughter' companies. We refer to a joint venture as a marriage, although the meaning of marriage varies in different cultural contexts. Takahara (1974) studied the semantic meaning of marriage across cultures: for the French and the Americans it meant 'primary love', whereas for the Japanese it denoted 'trust', and 'love' came in sixth place.

When members of different cultures interact in the combination process, the language used becomes an issue. English is often used as the common language in international business. This may cause misunderstandings and make combination difficult.

Although language has an important role in externalization and combination processes, the major cultural differences in transferring explicit knowledge are in the realm of communication. Cultures differ in how they emphasize verbal and nonverbal communication, and the communication process itself may be receiver- or sender-oriented.

Communication theories are of Western origin, and thus reflect the Western communicative bias. As Baca (1987, 36) pointed out, communication theorists have focused their attention on the verbal symbols used in human speech since the time of Aristotle's Rhetoric. Plato also considered speaking
superior to writing for the purpose of informing as well as persuading. There has been less interest in the Chinese and Japanese cultures in analyzing the verbal communication process, partly because scientific activity is not part of the cultural tradition, and partly because very little confidence is placed on verbal communication. The academic study of communication started relatively recently in China (Gao and Ting-Toomey 1998, 5), and although the Japanese have been active in doing research on intercultural communication since the 1970's (Rogers, Hart and Yoshitaka 2002), they use Western communication theories, and thus the bias toward verbal communication has been replicated. Japanese researchers have been especially interested in nonverbal communication, but explore it along with the categories established by Western researchers.

Edward T. Hall is considered the founder of intercultural communication (in the 1950's in the US), he developed some important concepts still used in communication theories today. The major elements of his paradigm for intercultural communication have to do with nonverbal communication, which he defined as communication that does not involve the exchange of words. Together with Trager and Birdwhistell he instigated the empirical study of various types of nonverbal communication and developed concepts to be used by later researchers in the field. He emphasized the out-of-awareness level of information exchange in nonverbal communication, in which he was influenced by Sigmund Freud, among others. (Rogers, Hart and Yoshitaka 2002, 11; Hall 1977)

The Japanese-US American context of intercultural communication has been studied more than any other context in the world. One reason for this is that these two cultures are the two largest economic powers in the world, and thus there is a great deal of interchange between them. For the Japanese, intercultural communication is considered a useful skill in international business. Comparisons between the Japanese and Americans have also been fruitful in the sense that they represent two very different types of communication culture.
and worldview. Several Japanese researchers have used Hall's work and his theoretical framework to investigate Japanese nonverbal behavior from both interpersonal and intercultural perspectives (Miike and Ishii 1997, 1998; Rogers, Hart and Yoshitaka 2002).

However, the approach in communication theory is one of trying to fit nonverbal communication conceptually into a language system. For Hall, silence 'speaks', time 'talks' and space speaks'. The division of communication into the verbal and nonverbal dimensions was obstructing the study of communication in two respects. Firstly, since verbal and nonverbal communication were considered the extremes of one continuum, the tendency was to consider a lack of verbal communication to indicate nonverbal communication (Racaic 1987, 338). Secondly, the category of nonverbal communication came to include everything except verbal communication. This is discussed later in this study with an example of a theory of communication for dogs, in which communication is either olfactory or non-olfactory.

Two important dimensions of communication are now taken for further analysis. First, communication orientation is discussed by comparing studies in various cultures. It is suggested that the sender orientation in Western communication modes is not a universal one, and Japanese, Korean, Chinese, and Indian examples are used to illustrate various different orientations.

Secondly, the theoretical framework adopted by Hall (1977, 1983, 1990; Hall and Hall 1990) is analyzed and a revision is suggested in terms of dividing verbal communication and nonverbal communication into two different dimensions instead of considering them two poles of one continuum. This new two-dimensional mode is used as a basis for knowledge transfer between 'actors' in a theoretical framework of knowledge-creation patterns.
Communication Orientations

Communication could be considered a process in which information is shared by two or more persons and which has consequences for one or more of the persons involved (Cushman and Kincaid 1987, 2). Eastern and Western perspectives on communication theory present interesting contrasts in regard to goals, the means for achieving those goals, and the role of individuals in the communication process. The traditional Western communication model focuses on the individual sender who is communicating rationally with others and aims at self-realization. As Cushman and Kincaid (1987, 9) note:

"A Western perspective emphasizes self-analysis, rational reflection, audience analysis, and message adaptation as the chief instruments for achieving the practical cooperation from others necessary for self-realization."

In the traditional Indian model there is preference for authority and asymmetrical communication, and a belief that communication from a higher social to a lower one is more effective (Dissanayake 1987). This is in sharp contrast with US American culture, which places such a high value on equality, individualism, and freedom, and thus has a built-in bias that directs attention to other aspects of communication (Kincaid 1987, 340).

On the basis of a comparison of studies on communication in Japan, China, Korea, and India (Yoshikawa 1987; Yum 1987; Dissanayake 1987; Kincaid 1987) it is suggested here that orientation in communication falls into four different types: 1) Sender orientation; 2) Receiver orientation; 3) Interaction orientation; and 4) Internal orientation (Figure 7).
Sender Orientation

The standard textbook model of communication focuses on the sender, who is an individual communicating rationally with others. Cushman and Kincaid (1987, 9) consider the Western perspective as being one that focuses on and motivates human action through the individual's desire for political, social, and economic self-realization, and exports communication to that end.

Sender orientation is not limited to Western cultures. Tobin et al. (1989) note that in both China and the United States successful communication is believed to depend largely on the clarity of expression of the speaker, so there is emphasis on teaching children to express themselves clearly.

At its extreme, the Sender orientation is a series of monologues. It is an effective style in the externalization process of knowledge creation since the focus is on formulating the message and practicing the presentation skills, not on discussion skills or listening. Although textbooks on international management define communication as the dynamic process through which verbal and non-verbal human behavior is perceived and responded to, they tend to emphasize sender-
oriented skills as a solution to problems in intercultural communication: 'speak more slowly and distinctly' (Lane and D’Stefano, 1992).

**Receiver Orientation**

Receiver orientation in communication means active listening and picking up nonverbal cues from the participants and the environment. It is related to the internalization process in knowledge creation, in which explicit knowledge is converted into tacit knowledge. Yum (1987) relates the Korean communication style to Confucian influence, which is also shared in China and Japan. Confucianism discouraged oral communication and emphasized written communication. Since the human passions were considered obstacles to the pursuit of knowledge and truth, emotions were to be suppressed. When the sender does not send clear verbal or nonverbal messages, it remains the responsibility of the receiver to construct the message.

Successful communication in Japan is believed to depend largely on the empathic and intuitive abilities of the listener (Lebra, 1976), and thus children are taught less to express themselves than to be sensitive to others' spoken and nonspoken forms of self-expression (Tobin et al., 1989, 190-191). The Japanese style of communication is receiver-oriented to the extent that 'guessing' is considered its most sophisticated form. In a business meeting, the senior manager will utter 'それはちょっと...' (literally, 'That's a little bit...'), and it remains the task of the participants to understand how the sentence should be understood or completed (Yamada, 1992). The use of あいずち aizuchi—back-channel cues, such as 'ええええ', 'ええ', etc., in English, are also typical in Japanese receiver-oriented communication and may even involve sentence-length back-channel cues such as 'ん、ん、ん たしかに そうですねようね...' ('Yeah, yeah, yeah, that's exactly right'). According to Yamada (1997, 97),

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16 Literally "alternate hammering" (Kenkyusha's 1983).
Americans may misinterpret this as a sign of insincerity in cross-cultural communication with the Japanese.

Miller (1977) uses examples of foreigners who speak Japanese. One of these concerns Donald Keene, and how the Japanese apologized for not having *romaji* (Roman/Latin alphabet) on their business cards when they introduced themselves to this famous expert and translator of Japanese literature. Miller comments that they should have known that Mr. Keene could read Japanese. But this is not the point. The main point here is that the Japanese are receiver-oriented, which means that they look for answers and solutions in the other, not in themselves. So even though I might think that you probably know written Japanese, you are a foreigner and send signals indicating the opposite. Coulmas (1987) also noted that the Japanese had difficulties in realizing that the foreigner in front of them might actually speak Japanese. This has been attributed to the belief that the Japanese language is so difficult that no outsider can learn it. However, I believe that it is a natural reaction for the Japanese to adjust as receivers.

It seems that verbal communication (both written and spoken) is receiver-oriented in Japan. The receiver is supposed to "read between the lines" and to finish the sentence. A good example is gift giving: the sender carefully encodes the message that is sent, and the receiver does not even open the wrapped gift in the presence of the giver. The receiver's personal likes or dislikes have little to do with the gift selection.

*Interaction Orientation*

Interaction orientation in communication means taking and being genuinely interested in communicating with the other. This may involve both verbal and non-verbal communication, or just one of them. An example of interaction in non-verbal communication is reciprocal gift exchange in Japan. In terms of knowledge creation, interaction orientation is relevant in the Combination and
Socialization processes in which both verbal and nonverbal communication play an important role.

Buber’s (1878-1965) concept of the dialogical relationship explains this type of interaction orientation in communication. Buber (1965) developed a philosophy of dialogue that describes two basic attitudes a man has in relation with the other: 'I-Thou' and 'I-It'. The 'I' of man comes into being in the act of speaking one of the other of these primary words. The two 'I's are not the same, however: "The primary word I-Thou can only be spoken with the whole being. The primary word I-It can never be spoken with the whole being" (Buber 1965, 12).

Personality and the personal really exist in the I-Thou relationship, and it is characterized by "mutuality, directness, presentness, intensity, and ineffability" (ibid, 12). The other is treated as a living being, although Thou is not limited to humans and may include animals, trees, objects of nature, and God. Interaction orientation also brings to life inanimate objects, as can be observed in children's play.

The I-It relationship in Buber’s philosophy has to do with the objectification of the other. It takes place within a man and not really between him and the world. The 'I' of I-It may equally well be a he, a she, an animal, a thing, a spirit, or even a god, without a change in the primary word (ibid, 12). This orientation is closer to the Sender orientation in communication: the other is treated as an object in terms of categories and connections, and hence is comprehensible and orcerable. It is significant only in connection with something and not in itself, and thus it is entirely subjective and lacking in mutuality. Buber (1965, 12-13) summarizes the differences between these two types of relationship:

"'I-Thou' is the eternal canvas, the I-Thou eternal butterfly! At one moment a tree of an I-Thou relationship can become a I-It, and I-Thou must continually do so. The 'I' may again become a I-Thou, but it will not be able to remain one, and it need not become a I-Thou at all. Man can live continuously and securely in the world of I-Thou, but if he lives only in this world he is not a man."
Objectification of the other may lead to seeing oneself as an object (it-it), which can be observed in some extreme behavior, such as tattooing, piercing, and mutilating the self in the name of 'fashion'. On the other hand, the animistic view of the other may bring alive robots: Japanese factory workers are said to give names to robots and to treat them like human colleagues.

Yoshikawa's (1987) Dialogical mode of intercultural encounter and communication corresponds to the interaction orientation. In this, participants A and B are separate and independent, but they are also simultaneous interdependent when engaged in the communication process. He explains this type of paradoxical relationship in terms of Buber's dialogical relationships and Buddhist logic.

Internal Orientation

Internal orientation in communication is not to be confused with the absence of communication. Three-to-six-year-old children pass through a stage of egocentric speech when in their play they seem to talk to themselves. Vygotsky disagreed with Piaget about the meaning of the egocentric speech emerging at this stage of development. For Piaget, it signaled that a child was imperfectly adapted socially, whereas Vygotsky claimed that it was 'speech on its way inward' and would later become inner speech (Luria 1979). Thinking could be considered a form of inner speech, and the communication process may trigger the thinking process. Through recitation it may be possible to reach the state of sharing this internally oriented communication. An internal orientation in knowledge creation could be linked with socialization, which involves emotions in the transfer of tacit knowledge.

The Eastern mode of communication focuses primarily on how the receiver makes sense of the stimuli that he receives so as to deepen his self-awareness. In Western modes the basic questions have to do with how the communicator affects the receiver, and how the communicator and receiver share information and enter into a two-way relationship. According to
traditional Indian views, "meaning to a person's self-awareness. Hence, the Indian definition of communication would be that it is an inward search for meaning" (Dissanayake 1987, 158-159).

Kincaid (1987) notes that there is a cognitive bias in the West that emphasizes the aspect of how communication affects one's mind: what the audience thinks and believes. Conversely, the form chosen in Indian communication is aesthetic and artistic, and the consequence is the diminishing "of one's heart" of the difference (separateness) between oneself and others. The outcome is an emotional and spiritual convergence. The aesthetic pleasures that are mutually felt include erotic feelings, and feelings of hate, wonder, anger, compassion, and so forth. Sharing these feelings with the performers and others creates a spiritual unity and detachment from worldly concerns (Kincaid 1987, 335).

Cultural Differences in Verbal and Nonverbal Communication

Cultures differ in how much they emphasize verbal communication and also in what is verbalized. In Japan and China, language expression is centered on encouraging children to express what is socially shared rather than, as in the United States, on that which is individual and personal (Tobin et al. 1989, 191).

Wierzbicka (1999) notes that Polish and American expressions of emotions are very different: the Polish language has a variety of emotional expressions with different nuances. In Japan, language is considered a poor medium for expressing feelings but a useful medium for expressing social cohesion. Tobin et al. (1989, 153) claim that a culture in which children are encouraged and expected to verbalize their feelings, talk about their feelings, and perhaps even express their feelings themselves, will inevitably be more conventional and socially constrained than in a culture such as China, where children are not exposed to publicly talking about feelings, or in a culture such as Japan, where teachers stay largely outside the world of children's discourse.
Children's informal speech is modeled, corrected, and prompted by teachers in American preschools, while Chinese teachers at preschools direct their efforts at limiting rather than facilitating children's spontaneous use of language. Japanese preschool classes are extremely noisy, full of the voices of shouting, freely conversing children, and the teachers convey little monitoring or correcting of the children's speech during these periods of unconstrained child-to-child discourse, which make up much of the preschool day. (Tobin et al. 1989, 150-151)

In American preschools, again, words are thought to be critical for social as well as cognitive development: Tobin's informants thought that children needed to be taught to express their wants, needs, and feelings in order to be a friend, a group participant, a member of society, and a citizen in a democracy (ibid, 151-152).

The ideological dimension of American views on language becomes clear in comparison between American preschools and those in Japan and China. Although speech is spontaneous in American preschools, it is carefully monitored and constrained by adults. Newkirk (1989) maintains that American children enjoy great freedom to express their opinions and feelings, but conversely, they are much less free than children in China or Japan to remain silent and to hide their feelings. Speech is thus constrained differently, not less, than in China and Japan.

Oral skills are treated as an academic subject at preschool in China, and the emphasis is on language development as an elaboration, correction, memorization, and self-confidence in speaking and performing. Language in Japan, both in and out of preschool, is divided into formal language (tatemae) and informal language (honne). As Doi (1986, 33) notes:

"...to be Japanese is to be aware of the fact that things have an omote and an ura, and a person is not considered to be an adult until he or she has grasped this distinction."
In Japanese preschools, the untrained use of language (free, loud, even vulgar talk with other children) is alternated with periods of polite, formal, teacher-directed group recitation of expressions of greetings, thanks, blessing, and farewell. Language is viewed less as a tool for self-expression than as medium for expressing group solidarity and shared social purpose. In contrast, Americans view words as the key to promoting individuality, autonomy, problem-solving, friendship, and cognitive development in children. (Tobin et al. 1989, 189)

Japanese parents give less emphasis than Chinese and Americans to the importance of children learning to express themselves verbally. Instead, 'sympathy, empathy, and concern for others', were considered most important things to learn in preschool. (ibid, 190)

Morals, Morals and Borsière (2001, 494) describe tacit knowledge as subjective and as encompassing knowing of experience (body), simultaneous knowing (here and now), and analog knowing (practice). On the other hand, explicit knowledge is ceprec as objective. It includes knowing of rationality (mind), sequential knowing (there and then), and digital knowing (theory). However, the use of analogies presupposes understanding them in a similar way. For example, beckoning gestures can vary in degree of being misleading. Anyone using analogies and metaphors should be careful and sensitive to the cultural meanings attached to them.

Littlejohn (1978, 99) defines nonverbal signs as any signs other than spoken or written language used to represent something other than itself. It is assumed that such signs are meaningful to the persons using them. There are several ways of categorizing different types of nonverbal signs. Eisenberg and Smith (1981) describe the most common methods in their three-point analysis: kinesics, proxemics, and paralanguage. Various theories of nonverbal communication can also be classified in these three categories. According to them, there are two
anthropological approaches that have become most prominent in the field:

Birdwhistell's (1952) kinesics theory and Hall's (1977) theory of proxemics.

Trager's (1958) work on para language completes the representation of theories in this context.

Kinesics is the study of body movement, sometimes also called body language.

Birdwhistell (1952) is considered the founder of this field of study. Although he considered communication a multi-channel phenomenon, he focused on the visual channel and used linguistics as a model for his kinesics work:

"The original study of gestures gave the first indication that kinetic structure is parallel to language structure. By the study of gestures in context, it became clear that the kinetic system has forms which are astonishingly like words in language. By the study of gestures in context, it became clear that there are body behaviors which function like significant sounds, that combine into sentences or relatively complex units like words, which are combined into much longer stretches of structured behavior like sentences or even paragraphs." (Birdwhistell 1952, 80)

It is interesting to note that kinesics approaches 'the other', the nonverbal, by using the structure of the verbal. Such is the overwhelming influence of the bias for verbal dimensions in Western culture:

"The West has conceived the study of nonverbal communication in recent years, but the approach has so far been hampered by the desire to fit it conceptually into a language system. Gestures are described and labeled as if they function as verbal symbols in a language. Again the emphasis is on the cognitive representation of nonverbal behavior as 'symbolic'" (Kincaid 1987, 338)

Edward T. Hall conceived the study of proxemics, the study of body position and spatial relationships, based on the idea that just as language varies from culture to culture, so do the other interacting media. Although proxemics has been defined broadly as 'the study of how man unconsciously structures microspace', it has been most applied to the area of intersensory space (Littlejohn 1978, 108).

Hall (1977; 1983) recognized the cultural variability in sensory modalities in that, for example, the American culture is preoccupied by sight and hearing,
but smell is also important in the Arabic culture, in which there is a need for
sensory intimacy: if lacking close, intimate contact, Arabs typically feel a strong
sense of 'sensory deprivation'. On the other hand, Latin American cultures tend
to engage in more frequent tactile behavior than people in the United States.

Paralinguage refers to the study of the use of the voice and vocalization, and
represents the border line between verbal and nonverbal aspects of
communication. Trager (1958) divided paralinguistic cues into four types: voice
cualities (such as pitch range, quality of articulation, and rhythm), vocal
characteristics (noises such as laughing, crying, sneezing, yawning, spitting,
belching), vocal qualifiers (the manner in which words and phrases are uttered),
and vocal segregates (the rhythm factors that contribute to the flow of speech:
'uh', 'um', pauses, and other interruptions of rhythm).

Dimensions of High and Low Context Communication

The thought of Edward T. Hall (1914-1990) was influenced by the studies of
Benjamin Lee Whorf (1897-1941) and Sigmund Freud (1856-1939). Through
Whorf and Hall was exposed to the concept of linguistic relativity, the process
through which language influences human thought and meaning, and Freud's
idea of the unconscious level of communication had a strong influence on his
work on conceptions of nonverbal communication.

Hall (1974) developed a conceptual model of the role of context in
communication. In defining this model, he refers to the conscious and
unconscious selection of messages. He also recognizes the importance of
nonverbal communication, yet he perceives the contextuality of communication
as a continuum between low-context and high-context messages:

"... high-context messages are placed at one end of the continuum, and low-context messages at
the other end of the continuum. High-context (HC) communication or
message is one in which most of the information or message is either in
the physical context, internalized in the person, or understood from the
context, explicit, transmitted part of the message. Low-context (LC)
communication is just the opposite; i.e., the mass of the information is
vested in the explicit code. Verbal and nonverbal messages together can and
Many researchers have interpreted Hall’s model to focus on differences in verbal communication, and as to distinguishing cultures by their degree of reliance on direct verbal language. Nonverbal communication is considered to provide a background in which verbal messages can be meaningfully encoded and decoded (Gudykunst and Ting-Toomey 1988, 117). High context refers to communication the meaning of which derives more from previous mental knowledge and/or contextual cues than from verbal messages. In Japanese speech, unlike in English, personal pronouns (I, you) are generally avoided (although not totally); this encourages a collectivistic sentiment. The omission of sentence subjects also requires greater use of contextual cues.

Low-context communication predominates in individualistic cultures, while high-context communication does so in collectivistic cultures (Gudykunst and Ting-Toomey 1988). Cultures have been located on a continuum between high-context and low-context communication: Japan and other East-Asian cultures are considered to be on the high-context side, whereas Swiss and German cultures, and Northern Europe and North America in general are placed on the low-context side. Hall (1977, 91) suggested that complex, multi-institutional cultures (those that are technologically advanced) might be thought of as inevitably LC, but this is not always true, as the case of Japan suggests. So China, the possessor of a great and complex culture, is on the high-context end of the scale. There may also be differences in subcultures within national cultures: Hall (1977) considered black culture much higher on the context scale than white culture in the United States.
The Two-dimensional Model of the Contextuality of Communication

We could reconsider Hall’s idea of high-context and low-context communication by distinguishing between explicit and implicit (tacit?) knowledge. According to Hall, the high-context message contains little explicit information (knowledge) but a high amount of tacit information (knowledge). Low-context communication, on the other hand, mostly consists of explicit knowledge and has little tacit knowledge involved. Thus, we could consider explicit and tacit messages as different dimensions in communication, and the communication process could be described in terms of the degree to which it involves these dimensions. Instead of two opposing poles, we arrive at four different quadrants that represent four different modes of communication (Figure 8).

COMMUNICATION MODES

Explicit/Verbal Messages

LC

High

Exacting Mode

Succinct Mode

Tacit/Nonverbal Messages

LOW

HC

Elaborate Mode

Telepathic Mode

Figure 8: The Two-dimensional Model of the Contextuality of Communication

Page 117
The succinct mode of communication consists of low degrees of both verbal (explicit) messages and nonverbal (tacit) messages, as in mathematical formulas. As a communication mode between human beings, it can also be seen as a lack of communication.

The number of verbal messages is high in the exacting mode of communication, but tacit knowledge is not necessary to understand the meaning of the messages. Both the succinct and the exacting modes represent low-context (LC) communication in Hall's model.

The elaborate mode of communication involves high degrees of both verbal and nonverbal messages. Words are important and elaborate, but tacit understanding of their meaning and the meaning of the context is also necessary.

When the degree of verbal messages is low, or when verbal knowledge does not constitute part of the message but is rather misleading, and nonverbal messages are used to transfer the meanings, we could talk about a telepathic mode of communication. This may be a very effective way to communicate for those involved, but for outsiders it remains a mystery.

3.7 Internalization: the Capacity to Learn

The internalization process starts when team members begin to internalize the new explicit knowledge that is shared throughout the organization. They use it to broaden, extend, and reframe their own tacit knowledge. It is closely related to the learning organization and its operations. Learning about project management, the production process, and policy implementation. (Nonaka and Takeuchi 1995, 225; 238)

Nonaka and Takeuchi (1995, 239) argue that the most powerful learning comes from bodily experience. They emphasize learning by doing, and consider personal and physical experience just as valuable as indirect, intellectual
Despite the individual and cultural differences in educational systems and the pursuit of literacy, educational systems teach us certain learning styles and promote a certain attitude towards learning.

Internalization is about learning. As Hamel (1990, 92) puts it:

"A firm's inherent capacity to learn from its partner will be constrained by the extremes of affluence and privation, arrogance and helplessness, orthodoxy and blind variation, and by its relative standing between pathbreakers and stragglers."

According to Hamel (1990, 91), the capacity to learn is based on intent, which affects both receptivity and transparency. It establishes the desire to learn, and transparency determines the potential for learning. Skills transparency is determined by the extent to which skills are context-specific: those that comprise explicit knowledge held by a few experts are more transparent than those comprising tacit knowledge embedded within social systems. (ibid, 94)

Receptivity concerns the quest for new knowledge, is absorption and application. Learning receptivity is influenced by inherent constraints (arrogance, affluence, helplessness, privation, and one's partner's capacity for skills improvement), and by active determinants (the skills and motivation of agents, exposure position, application facilities, and diffusion mechanisms).

Internalization is greatly affected in the knowledge creation process by the ability to receive signals or knowledge from the environment. Monitoring the environment takes place continuously, but it seems that human beings perceive signals differently and use their senses in culturally accepted ways. These cultural biases in receptivity develop in early infancy, and later become firmly established through the communicative processes in the culture.

McLuhan (1987) suggested that there was a different balance between various modalities in societies and over time: that there is now emphasis on visual modality in the West. Waber (1966) coined the term 'sensotypes' to indicate
differences between cultural groups in the relative importance of one sensory modality over others (Berry et al. 1992, 135).

Cultural differences in receptivity are analyzed in the following as differences in perception and sensing. First, however, some issues related to the transparency of knowledge are discussed.

Transparency of Knowledge in Communication

In his excellent study on learning in international strategic alliances, Hamel (1990) introduces the concept transparency of knowledge. He defines it in terms of learning in the following way: "Transparency delimits the opportunities to internalize key skills. Intent establishes the desire to learn, transparency determines the potential to learn." (1990, 51) Thus, transparency of knowledge indicates the openness and accessibility of the skills of one partner, who succumbs without question to the other partner's intent to learn these skills.

The transfer of skills between partners may be intentional or unintentional, and it is not limited to formal agreements. Varieties of skills and knowledge differ in their transparency. Important aspects in this include the explicit/tacit dimensions, and contextuality of knowledge. Transparency of knowledge is inevitable in partnerships because partners contribute very different types of skills and knowledge. There are complex skills, labeled 'invisible assets' by Itami and Beer (1987), which are based on tacit knowledge and are thus very difficult to acquire and are not easily learned by the partner.

Technical skills are often transferred formally by various modes of technology transfer, such as licensing. Unintentional technology diffusion may also occur as the result of joint operations of one kind or another. As discussed earlier, it's distinctive of technological knowledge that it can be articulated to a certain extent. It's also inherent in contextuality. Consequently, technological know-how is relatively transparent. To a degree, companies may try to manage this transparency by limiting and controlling the flows of information although
active measures to limit transparency may be considered a mark of bad faith by the partner.

Market knowledge, on the other hand, is part of contextual knowledge. The diversity of potential market environments generates very situation-specific market knowledge. Embedded in cultural systems, it varies in the degree of both contextuality and transferability. Culture can act as a natural barrier to transparency, and as such may be far more effective than any active measures to limit it. Hamel (1990, 66) points out that the usage of contractual clauses could be regarded as destroying trust, but the existence of natural barriers adversely maintains the image of openness.

To what degree partner transparency is inherent in the culture is an interesting question. If we observe cultures with regard to their openness, type of communication emerges as a decisive factor. High-context communication is more closed and difficult to translate than low-context communication. It is intrinsic in low-contextual cultures that verbal communication has a central role, which implies that verbal messages can relatively easily be transferred, and also translated into foreign languages. This does not apply to high-contextual cultures, however. Contextuality implies interpretation according to situations, and this very often also involves explicitation of non-verbal messages. The translation of these could be an excessive demanding task.

Thus we could conclude that as symmetry in transparency between cultures does exist, and that this is concurrent with high and low contexuality (Kasulinen-Takada 1994). Generally, market knowledge from Western cultures environments tends to be less context-bound and can be more easily articulated than market knowledge about non-Western environments. There are naturally exceptions to this, and the variation among Western cultures is substantial. Nevertheless, this applies to the relation between Japan and most Western industrialized countries. Thus we could assume that transparency of market knowledge relies on the contextuality and explicitness of the surrounding
culture. We could also claim that Western market knowledge is extremely more transparent than knowledge of Japanese markets, which is well illustrated in the example used by Hamel (1990, 65-66):

"Knowledge of Japanese distribution and marketing practices has been shown to be just as contextual and difficult to absorb as knowledge of Japanese manufacturing practices. Thus partnerships that give the Western partner access to the Japanese market, and the Japanese partner access to technology (...) may be characterized by the same asymmetry in transparency that is thought to characterize technology-for-manufacturing alliances. ...the dilemma for Western partners is that those things which they should most learn from their Japanese partners—may be those which are least transparent."

Barriers to transparency

In addition to exploring natural barriers to transparency (such as language differences as a barrier to access to market knowledge), companies could try to manage the transparency of their knowledge by limiting and controlling the flow of information. However, as Hamel (1990) also notes, this type of active measure may be considered a mark of bad faith by a partner in a joint venture.

Creating an artificial barrier to transparency is practically viable only for low-context knowledge. Knowledge, such as technical know-how, that can be articulated and stored in documents or computer files, can be placed so that it is de facto controlled. In that sense, low-context knowledge is relatively transparent, but it is also relatively easy to protect. Patents and licensing agreements, as well as industrial espionage, are evidence of this kind of protection. It is possible to protect the diffusion of technical knowledge by creating several layers of barriers, for example, so that part of it can be released and part concealed.

It is contradictory that high-context knowledge, although seeming less transparent than low-context knowledge, becomes quite accessible after the first enclosure has been penetrated. The critical task in gaining access to market knowledge is obtaining cultural knowledge, including language skills, after which it becomes common property in a sense, and very few things can be hidden from the outsider even in high-context cultures.
In comparing access to market knowledge across low- and high-context cultures, it should be noted that cultural knowledge is also a necessity for gaining such access in low-context cultures. This, for example, the Japanese have already broken a cultural barrier when they have learned English and studied Western culture. Although it is more common for Japanese to know English than for non-Japanese to know Japanese, it is far from easy for the Japanese to take this step.

Individuals raised in this high-context culture have difficulties in learning to articulate more of their communication process. They certainly make good listeners, but are able to ask fewer questions, not to mention finding it difficult to explain themselves. We should not underestimate the significance of Japanese efforts to understand foreign markets.

The Development of Sensory Perception

Everything we know about the world comes to us through our senses. Thus the activation of the sense organs is the first step in knowledge creation. Let us assume that we are born with an undivided sense. When still located in the womb, the embryo senses or 'feels' surrounding sounds, light, touch, temperature, chemicals entering through the umbilical cord, and so on.

However, these are not sensed through separate sense organs such as the nose for smell, which can be activated only by the first breath, or the ear for hearing, but by the holistic perception of the body.

Traditionally, Western science divides the senses into five: vision, hearing, smell, touch, and taste. Nevertheless, scientists now recognize that we have several additional kinds of sensations, such as pain, pressure, body temperature, joint position, muscle sense, and movement, but these are generally included in 'touch.' It may be that the whole idea of differentiated senses is an invention based on an atomistic worldview, a notion that is supported by findings that we

tend to compensate for any lost senses. Moreover, the fact that it is difficult sometimes to make a distinction between taste and smell speaks for an "undifferentiated" sense.

The Chinese way of understanding is more holistic, less divided, and truer of our nature as a whole. Holistic understanding is achieved not simply with our analytic minds, but with all of our senses as well, and therefore with our natures as a whole. According to Allinson (1989, 21), the Chinese mind is not divorced from the senses; our aesthetic rapport is the unity of the senses with the mind, while in the West, aesthetics is normally constructed as a theory which refers to a special sphere of experience as a reservoir for the corridors of museum walking.

Wu (1989, 236) presents aesthetics as a special way of viewing the entire universe:

"For the Chinese, beauty is the constitutive interplay of many into one, and one into many, and each becomes both concrete-particular and cosmic-universal, both in scale and substance. As a result, beauty is a subject to be aesthetically discussed than a per se attitude and atmosphere in which one moves and has one's being."

Wu (1989) also includes culinary arts in Chinese aesthetics.

Allinson (1989, 21) suggests that in order to understand the Chinese notion of aesthetics

"We must expand our initial notion of what constitutes the field of aesthetics in the first place. One example stands out strongly in our mind since it offers so marked a contrast to Kant's influential concept of...

18 The case of Helen Keller is a perfect example. At the age of 19 months she lost both her vision and hearing as a result of an acute illness. However, she was able to compensate for this loss by the sense of touch. She wrote an autobiography, The Story of My Life.

19 Our taste buds produce only five distinct sensations: sweet, salty, sour, and bitter. Other
flavors come from smell, and when the nose is blocked by a cold, most foods seem bland or tasteless. Both taste and taste require us to incorporate—to breathe in or swallow—chemical substances that actually attach themselves to receptors on our sensor cells. Ear lier in evolution, the two senses had the same precursor, a common chemical sense that enabled bacteria and other single-celled organisms to locate food or be aware of harmful substances. "Howard Hughes Medical Institute, http://www.hhmi.org/senses/ July 27, 2003"
'disinterested pleasure' that has demarcated the proper realm of aesthetics for Western philosophers, and that is the example of the culinary arts. What is required for us, as Western thinkers, to include the culinary arts, as a valid aesthetic domain? First of all, it requires a cancellation of the traditional separation between the fine arts and practical arts. It requires an integration of beauty as part of earthly and self-interested enjoyment…there is no perfect division between these forms of enjoyment for Chinese aesthetics. Part of the satisfaction of eating lies in the aesthetics of preparation and presentation; there is an aesthetic dimension which is integral to a self-interested activity."

It is suggested here that sensing itself is holistic in nature, but when a baby is born and is put in direct contact with the environment, it starts developing the use of different sense organs, in other words coordination between the brain and the senses. For example, eye and brain coordination is a learned activity. There was a case of a six-year-old boy who was born with one eye but no medical explanation could be found: the eye was perfect yet the boy could not see with it. It came out that when he was less than one year old, his eye was treated for a minor infection by bandaging it. This happened during the critical time when the eye would normally have been establishing connection with the brain, and to do that it had to be stimulated. (Greenfield 2001)

It seems that there are cultural differences in the use of the sense organs. Explanations for cross-cultural differences in reaction to simple sensory stimuli have been classified by Berry et al. (1998, 133-134) as 1) conditions in the physical environment that affect the sensory apparatus directly; (2) environmental conditions that affect the sensory apparatus indirectly; (3) genetic factors; and (4) cultural differences in interaction with the environment.

A physical environment such as the desert can stimulate the use of the auditory apparatus (ear) and increase the ability to perceive sounds (in the higher frequency ranges, up to 8000 Hz for Kalahari Bushmen) (Berry et al. 1998, 134). The environment may also have an indirect effect, as is the case with nutrition. For example, the efficiency of vitamin A in the diet has been found to lead to impaired vision in the dark. Genetic factors have also been shown to influence
sensing. Ackerman (1991) suggests that pigment may have something to do with the number of sensory cells in the nose. It seems, however, that socialization and enculturation practices are the main antecedents of differences in sensory sensitivity and discrimination. Children learn to pay attention to certain stimuli and to acquire certain preferences, and these in turn lead to the development of more complex abilities (Berry et al. 1992, 135). As a result we may observe cultural differences in matters such as taste (for example, Chinese subjects rated lower concentrations of sucrose as more pleasant than white Americans) and to erence of certain sources and smells.

Western scientists still tend to believe that Western practices are universal and common to all humans, as is clear from the following:

"Being civilized and human means, for one thing, that our lives are not ruled by smells. The social behavior of most animals is controlled by smells and other chemical signals. Dogs and mice rely on odors to locate food, recognize trails and territory, identify kin, find a receptive mate. Social insects such as ants send and receive intricate chemical signals that tell them precisely where to go and what to be at all times of day. But humans 'see' the world largely through eyes and ears. We neglect the sense of smell — and often suppress our awareness of what our nose tells us. Many of us have been taught that there's something shameful about odors."\(^{20}\)

This is not so far from the language used by early anthropologists, who labeled cultures different from their own primitive.

**The Somatic markers hypothesis**

Recent studies in neuroscience suggest that experience and the environment (culture) affect the way we perceive stimuli. Damasio (2001) cerebrated the 'Somatic Marker hypothesis', according to which the external circumstances, including the physical environment and events that dictate how the individual must act, influence the development of a psychological system that is based on immediate and later punishments and rewards associated with certain alternatives:

At the early development stage punishments and rewards do not come solely from things themselves but also from parents, other agents, and peers, in which the social customs and ethics of the organism usually personalize. Acquisition of somatically marked stimuli is an ongoing learning process, which continues until death. (Damasio 2001, 173)

According to Damasio (2001, 167-168), the somatic marker is a feeling created by thought of a (positive or negative) outcome connected with a certain alternative. It focuses interest on the possible negative (or positive) outcome of a certain activity and functions like an automatic marker (sign) that says: beware, if you select this alternative. This message may lead you to discard the negative option immediate and to select other alternatives. It automatically protects you from future losses without more hassle, and later you can select from a smaller number of alternatives.

Somatic markers probably increase the precision and efficiency of decision-making, and are a special case of feelings started by secondary emotions. These emotions and feelings have been associated with descriptions of certain future outcomes through learning. When the negative somatic marker emerges along with a certain future result, the combination works like an alarm. When the positive somatic marker appears together with the future result, it commands us to act. Somatic markers do not think for us, they assist in inference by highlighting some (dangerous or favorable) alternatives. (Damasio 2001, 168)

There are likely to be important areas of difference in emotional response in people in one culture when compared to those in another. Such differences are not easily subject to conscious control and, largely out of awareness, they accent and color human behavior. (Caird and Weinstein 1974, 265).

Contextual Sensitivity

Gell (1998, 109) refers to the contextual sensitivity of totemic:

"For a totem a person 'knows' about the totem because not only on what he has internalized and what so to speak, is in his permanent possession, but also on the context in which 'a person to a totemic totem is to be elicited, and by what means."
All our sense-experiences are limited and definite, and the intellect based on them is also limited and definable. They all belong in the world of subject and object, seeing and seen, thinking and thought, in other words, in the world of dualities. Here reality is a world subjected to separation; it is never grasped in its suchness or isness, or in its totality. From the Japanese point of view it seems that logicians and scientists deal with reality as a separated and therefore limited aspect; there is always something left over after the studies and measurements. They are not conscious of this something, in fact they insist that there is nothing left behind, that they have everything they want to study. They even go so far as to declare that if there is anything left they will have nothing to do with it, for it can never be scooped up with their logical shovel. (Miyamoto 1987; see also Suzuki 1987; Yabava 1987)

Communication with All Senses

I suggested earlier that we are born with an undivided sense, later conceptualized by Western science as five different senses: vision, hearing, smell, touch, and taste. Any sensory perception not falling into one of these categories has been dubbed the 'sixth sense.' Even though this view could be considered quite limited even in the light of recent scientific research (which has found additional sensations), it is useful to analyze the communication process from this perspective.

The senses act as a channel through which external information reaches the individual (perception), but they can also be used to emanate information from the individual to the environment, including other human beings. Our ability both to send messages and to interpret messages sent through these channels (the senses) is a skill that is trained differently in different cultures. In the West we have mostly trained our hearing and vision, which explains the existing focus in communication theories on audiovisual elements. Spatial orientation has been analyzed as nonverbal communication (Hall's proxemics), mainly concerning vision and touch but also noting the existence of auditory (hearing) and olfactory space (smell).
If we consider the Saville-Troike (1982) model of codes and channels in verbal and nonverbal communication in the context of sensual perception, we can see how limited is the view it gives us (Table 9).

Dittmann (1972) developed a theory of emotional communication, which deals with emotional information, signs, and channels for communicating emotions. He explains emotional expressions as deviations from baseline behavior, regardless of whether oneself or others perceive them. This model classifies channels of emotional communication as audible (language, paralanguage), visual (facial expressions, body movement, and others), and psychophysiological (cues emanating from bodily functions such as breathing and blinking).

<table>
<thead>
<tr>
<th>CHANNELS</th>
<th>Auditory</th>
<th>Nonauditory</th>
</tr>
</thead>
<tbody>
<tr>
<td>CODES</td>
<td></td>
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<tr>
<td>Verbal</td>
<td>speech</td>
<td>written</td>
</tr>
<tr>
<td>Nonverbal</td>
<td>paralanguage</td>
<td>paralanguage</td>
</tr>
<tr>
<td>Tactile</td>
<td>face</td>
<td>vision</td>
</tr>
<tr>
<td>Taste</td>
<td></td>
<td>audition</td>
</tr>
</tbody>
</table>

Based on Saville-Troike 1982

Nolan (1975) integrated channels (e.g., speaking, voice, face: eyes, clothing, space), coding (concrete to abstract), and propositional (conscious-unconscious) in a three-dimensional model of communication (Figure 9).

Although this model concerns the relationship between verbal and nonverbal communication, it could be modified to represent sensorymotor communication. The different sensorymotor channels form the first dimension. The second dimension, coding, could be simply represented by the presence-absence continuum. This,
for example, a sign mediated through the auditory channel (hearing) could be present (sound) or absent (silence), and the difference between these two opposites would create the volume. In the same way, vision can be present or absent, and both of these codes convey a message. (Empty space in Japanese paintings has more meaning than the space filled in; void is also considered more important than previously thought in modern physics.)

The third dimension, propositionality, concerns awareness of the sign. Consciousness of a sign mediated through the presence or absence of sensory perception would make it explicit to the receiver even if it were unconsciously sent. Conversely, unconsciousness of a sign leaves it tacit for the receiver.

![Diagram of sensory communication model](image-url)

Based on Nolan 1975

Figure 9: A three-dimensional model of sensory communication. This three-dimensional model of sensory communication draws attention to the limitations of the division into verbal and nonverbal communication, which could be compared to the 'Communication Theory of Dogs' that classifies communication along two dimensions, olfactory and non-olfactory. However, as long as international business knows edge (and largely a scientific knowledge) rests on verbal know edge, it is useful to base a knowledge-transfer model on the dimensions of verbal and nonverbal communication. In the cross-cultural context this is important because it brings into the picture the differences between languages and the challenge of translation and interpretation. It should nevertheless be remembered that we have a lot to learn.
about using the variety of senses and the knowledge gained and transmitted through them. Again there exists asymmetry between cultures, thus we can learn from each other.

Receptivity in Perception

Receptivity in perception is greatly influenced by the childhood environment and experiences. There is thus no surprise that communication habits also originate in early childhood. Caudill and Weinstein (1974, 119) compared maternal care and infant behavior in Japan and the US, and came to the conclusion that:

"... in normal life in Japan there is an emphasis on interdependence and reliance on others, while in America the emphasis is on independence and self-assertion. The conception of the infant group seems to be somewhat different in the two cultures. In Japan, the infant is seen more as a separate biological organism and, from the beginning, in order to develop, needs to be drawn into increasingly interdependent relations with others. In America, the infant is seen more as a dependent biological organism and, in order to develop, needs to be made increasingly interdependent of others."

By three-to-four months of age Japanese and American infants have already learned in some ways to behave differently in response to the culturally patterned behavior of their mothers. Beyond the direct awareness of mother or child, the precursors of certain ways of behaving, thinking, and feeling that are characteristic of a given culture have become part of an infant's approach to its environment well before the development of language, and hence are not easily accessible to consciousness or to change. (Caudill and Weinstein (1974, 230)

Caudill and Weinstein (1974) discovered differences in styles of care in the two cultures: the American mother seemed to have a more lively and stimulating approach to her baby (caretaker positioning the infant's body more, and looking at and chatting to the infant more), whereas the Japanese mother was present more with the baby, in general, and seemed to have a more soothing and calming approach (greater sitting, more carrying in her arms, and rocking).
It seems that infants express their biological needs in the same way in different cultures, and their mothers also take care of these needs in a similar way. However, the infant's behavior and the mother's style of care-taking varies. As Caudill and Weinstein (1974, 248-249) noted:

"The Japanese baby seems passive, and lies quietly with occasional unhappy vocalizations. His mother, in her care, does more singing, carrying, and rocking of her baby. She seems to try to soothe the baby, and to communicate via non-verbal means rather than verbally. On the other hand, the American infant is more active, happily vocal, and exploring of his environment, and his mother in her care does more looking at and chatting to her baby. She seems to stimulate the baby to activity and vocal response. It is as if the American mother wanted to have a vocal, active baby, and the Japanese mother wanted to have a quiet, contented baby. In terms of the styles of care-taking of the mothers in the two cultures, they seem to get what they apparently want."

Doi (1974b, 20) refers to the study conducted by Caudill and Weinstein and concludes

"...Americans are conditioned from the very beginning of life to associate human contact with verbal communication whereas Japanese more with non-verbal and passive communication."

One of the differences between the American and Japanese caretakers was that the Japanese mother stayed passively present in the room with the infant even when it was sleeping, whereas the American infant was alone when asleep (Caudill and Weinstein 1974, 253). This may explain why the Japanese style of nonverbal communication differs from what Barnard (1974) calls tactile or touching communication. According to Doi (1974b, 21), Japanese nonverbal communication does not mean this 'skin sensitivity': "Empathic communications are more important to Japanese. We can feel without touching."

It may also be that silence sharpens other senses. It is well known that even in smell-eliminating cultures mothers can recognize their babies by their smell, and newborns recognize their mothers in the same way. The sense of smell could be stimulated to a greater extent in the absence of vocal stimuli.
If the Japanese style of communication sometimes seems almost 'telepathic' to many Westerners, the Western emphasis on verbal communication is similarly foreign to the Japanese: to one well-known Japanese psychiatrist Americans who "love to talk incessantly" even during meals sounded "a most hypermanic" (Doi 1974b, 21).
4 LANGUAGE AND COGNITIVE CAPACITIES

4.1 The Development of Thought Processes

The underlying assumption in this study is that we live in multiple objective worlds. The development of these different realities is discussed from a historical perspective in this chapter with a view to finding the origin of different thinking traditions. The chapter begins with an introduction of theories that explain how language and culture affect meaning and thinking. Language is seen to affect cognitive skills both directly and through cognitive capacities. It is discussed here first as a vocal system, and characteristics of the Finnish and Japanese languages are analyzed.

Nisbett (2003) has suggested that differences between Eastern and Western ways of thinking could be explained in terms of differences in the structure of language. It is argued here that, in this respect, Finnish has Eastern characteristics in its oral language form, despite the fact that it is written in the phonetic alphabet used in most Western cultures. On the other hand, the Japanese language has a structure that is very different from Chinese, and yet these two languages share a script using Chinese characters. This gives support to the idea that the writing system is influential in the way in which we process our thoughts.

I will discuss the emergence of writing in human history, and go on to introduce different directions and types of scripts. Since history starts with written records, it is important to note how the invention of writing itself has shaped the way we think. It seems that different writing systems have emphasized alternative ways of thinking, and have thus resulted in the development of different systems of logic and communication modes. This is considered in terms of the
achievement of literacy and its influence on knowledge-processing styles such as categorization.

The level of literacy achievement as a cultural product is important in considering the literary tradition as collective memory. Tacit knowledge is based on this collective memory in cultures with a long literary tradition, while in those in which literacy is relatively new, shared tacit knowledge remains shallow. The literary tradition is passed on through formal education, which further shapes the learning styles. Japan and Finland are given as case examples for demonstrating how different languages, scripts, methods of learning to read, and societal-level literacy achievements are preconditions for the acquisition of different types of cognitive skills.

According to the Sapir-Whorf hypothesis, a person's language shapes her or his perception and view of the world. The hypothesis was named after two linguists, Edward Sapir and Benjamin Lee Whorf, who helped to create the notion of 'cultural relativism' in the 1950's. The idea behind the notion is that there is a close relationship between the structure of a language and the culture that uses it. There are several interpretations of the Sapir-Whorf hypothesis, which differ in terms of how strong the relationship is thought to be between language and culture, and of what 'Sapir-Whorf effects' might be seen in a culture derived from a particular language.

One proposition of the Sapir-Whorf hypothesis is that since the Inuit have several (approximately twenty) words for the semantic category of 'snow', they also perceive more varieties of snow than speakers of other languages (Berry et al. 1992, 103). One of the leading modern linguists, Alexandra Aikhenvald, notes in an interview about this dispute:

"The story about many words for snow is completely wrong. That language group uses an affix system, so you can derive not 50, but 150 words for snow. But the Yanina do have a lot of terms for ants. It's important to know that some are edible, for instance." (Barnett 2004)"
Whorf (1956, 212; Berry et al. 1991, 102) suggested originally that language was not only a means for communicating ideas and thoughts, but that it was also essential to their formation:

"The background linguistic system (in other words, the grammar) of each language is itself a shaper of ideas, the program and the guide for the individual's mental activity, for his analysis of impressions, for his synthesis of his mental stock-of-trade."

The Sapir-Whorfian view is not in line with the thoughts of Jean Piaget, who is the most acclaimed representative of the cognitive-structuralist school. Although he focused on cognitive development rather than language acquisition, he made important observations about language based on his study of egocentric speech by children. He claimed that:

- language reflects thought - it does not shape it;
- our cognitive structures limit and define what we are able to say;
- development is social - egocentricity shows that a child is imperfectly adapted socially. The child must come into being a mature social being from an immature one by considering the role of the hearer.

Vygotsky disagreed with Piaget and claimed that egocentric speech was "speech on its way in," and would go underground to become inner speech. He was convinced that the acquisition of language played a decisive role in the cognitive development of higher psychological processes. He considered language and thought to have independent origins, but that thought development was determined by language, i.e. by the linguistic tools of thought and by the socio-cultural context of the child. (Luria 1979, 55)

Does language precede thought or does thought precede language? According to Piaget, thought drives language: concepts are learned/discovered/created, which allows language to grow. On the other hand, according to Vygotsky,

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21 The Swiss scholar whose first book on child psychology was published in 1923: The Language and Thought of the Child - he started by studying his own three children!

22 www.ling.lancs.ac.uk/chimp/langac/LECTURE3/3piaget.htm 25.06.03

23 (1895-1934) a well-known Soviet psychologist
thought and language have different roots: language guides and drives thought on.

Another well-known challenge to Whorf's ideas came from Chomsky (1980), who suggested that there was a universal grammar to which any human language conforms. This grammar corresponds with the nature and scope of human cognitive functioning. Chomsky believes that there is an innate organization that determines the potential for language in the human being. The mind is equipped at birth with a mental representation of the universal grammar, and all languages have a universal common core (Berr et al. 1992, 106-107).

This is contrary to Luria’s (1979) belief that language is a tool that man uses to master his environment, and that his own behavior did not spring fully creset from the head of God, but was invented and perfected in the long course of man’s social history:

"From the moment of birth, children are in constant interaction with adults who actively seek to incorporate them into the culture and its historically accumulated store of meanings and ways of doing things. At the beginning, children’s responses to the world are dominated by natural processes, namely those provided by the biological heritage. But through the constant intercession of adults, more complex, instrumental psychological processes begin to take shape." (Luria 1979, 45)

These processes are first interspsychic, in other words they are shared between people (act as mediating agents), but later become intrapsychic. Through the internalization of historical determinative and culturally organized ways of operating on information, the social nature of people comes to be their psychological nature as well.

Recent developments in neuroscience support Luria’s view. The organism is born with automatic survival mechanisms, and the rest is learned through experience. At birth and at the beginning of human development there are instincts in the brain, which contains both the physiological toolbox for regulating the metabolism and the basic equipment for social cognition and
behavior, it receives additional layers of survival strategies during childhood development. (Damasio 2001)

Alexander Romanovich Luria was a member of psychology’s second generation. He worked with Vygotsky, having scrutinized Piaget’s “Language and Thought of the Child”, disagreed fundamentally with the interpretation of the relation between language and thought. The core of their thinking was based on a belief that the origins of higher forms of conscious behavior were to be found in the individual’s social relations with the external world. Man is not only a product of his environment, however; he is also an active agent in creating that environment. Vygotsky placed special emphasis on the role of language in the organization and development of thought processes. (Luria 1979, 42-44)

According to Luria (ibid, 45), language carries within it the generalized concepts that are the storehouse of human knowledge. Writing and arithmetic (which are considered explicit knowledge by Moraba and Tarnoshch 1995) are special cultural instruments. He reasoned that if we could study the manner in which the various thought operations are structured among people whose cultural history has not supplied them with a tool such as writing, we would find a different organization of higher cognitive processes but a similar structuring of elementary processes.

McQuail (1975, 67) argued that there were differences in the degree to which various peoples use language in the same situations or for the same things. Some focus more on language more than others, and thus its role in communication also influences how it acquires and the view. Language is the primary means of human communication, and the linguistic form may be complex or simple, the vocabulary written or spoken. There is evidence that writing restructures the consciousness. Studies on illiterate and half-literate people (Luria 1976) show that abstract thinking is a product of education, i.e. of

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45 His father was a physician who was interested in psychosomatic medicine.
literacy to start with. Even just the direction of writing seems to make us focus more with one eye or the other, and this to emphasize one side of the brain or the other. It appears that linear logic, so much part of our Western scientific tradition, has been supported by our linear writing: it flows from left to right, thus making us focus on right-eye sight and use the left side of the brain more. It is not only writing literacy and the direction of our writing that matter: the script that we use is itself a very powerful medium. Whether we like it or not, we are in interaction with written text: not only do we shape it, but it also shapes us! The Greek alphabet represented a breakthrough in writing systems by introducing an alphabet consisting of not only consonants but also vowels. Thus far, Semitic writing, using only consonants, had had to draw on non-textual as well as textual data. Vowels had to be added given thorough knowledge of the context and language. The Greek alphabet was the first in which words from unknown languages could be written and read. Ong (1990, 90) refers to this as follows:

"The Greek alphabet was democratizing in the sense that it was easy for everyone to learn. It was also internationalizing in that it provided a way of processing even foreign tongues. (...) by abstractly analyzing the ease of sound into visual elements (not perfectly, of course, but in effect fully) both presaged and implemented their further analytic exploits."

The impact of writing on the way we think is discussed in the following. For those familiar with only one writing system or only the phonetic script, it may be thought-provoking to learn that our Western alphabet is just one of many. People around the world are familiar not only with the Latin alphabet, but also with indigenous writing systems, which they use quite flexibly on a daily basis. Further pondering may also reveal how little we know of other cultures, not even the direction of their writing. This inquiry will teach us not only facts but also something about the way people think and learn. If you grow up in a culture in which writing is a combination of pictograms and phonetic script, in which books can be opened from either front or back cover, and in which text flows both from left to right and right to left, horizontally or vertically, you will
certainly develop a flexible attitude to learning. There is no single correct answer, but there are different ways of looking at things. For anyone doubting this, studying the Japanese writing system just for fun can be recommended. Learning is fun!

Literacy and Cognition

Several scholars (Luria 1976; Goody 1989; 1991; Havelock 1976; Ong 1990) have argued that literacy is linked to abstract and logical reasoning. These studies have been interpreted to claim that the alphabetic script promotes abstract concepts, analytic reasoning, new ways of categorizing, and a logical approach to language (Taylor and Taylor 1995, 100). The claim that the phonetic alphabet is superior to other scripts dates back to McLuhan (1962, 47):

"Cultures can rise far above civilization artistically but without the phonetic alphabet they remain tribal, as do the Chinese and Japanese."

It is understandable that, in response to such arrogant statements claiming the superiority of Western culture, Asian researchers reject the idea that a script could be held responsible for shaping mental activities. Although the evidence from recent decades has proven McLuhan’s prophecy mistaken, the idea of China (or any other non-Western country for that matter) lagging behind Europe and North America in certain respects is deeply rooted. Japan has been a member of the G7 forum since its creation in 1975, and this has been considered a sort of "honorary Westerner".

Scribner and Cole (1981) claim that it is schooling, and not the type of script or literacy, that contributes to the development of logical thinking. Along the same lines, Taylor and Taylor (1995, 99) consider the differences in the performing of mental activities by East Asians and Westerners a result of differences in educational traditions rather than in writing systems. How, then, can we distinguish the effects of writing and education when formal education takes place through written language? I propose in this study that what is claimed to be the effect of the educational tradition in schools in East Asia, i.e. an emphasis..."
on rote memorization, is in fact the necessary skill to master the written language.

Luria (1979, p. 71) studied conceptualization among illiterate, half-literate and literate people in central Russia, and found that uneducated and illiterate subjects tended to classify objects based on practical life, whereas literate subjects employed categorical (abstract) classification.

Scribner and Cole's (1981, p. 7) study comparing the Vai of Liberia, Africa with English and Arabic people did not support Luria's findings. They noted: "It is striking that the scholars who offer these claims for specific changes in psychological processes present no direct evidence that individuals in literate societies do, in fact, process information about the world differently from those in societies without literacy."

Goody (1991, p. 219-220) later commented on Scribner and Cole's (1981) study, arguing that writing has both unmediated and mediated implications. The use of writing systems and the context of the written tradition among the Vai generate different implications in terms of using the maternal script for private correspondence, Arabic for reading the Qur'an, and English as the national language in schooling. This has required the development of different cognitive processes.

What Goody means, as he explains, is that procedures constituting the Greek study of 'logic', procedures of inductive or deductive reasoning such as syllogism, were dependent on the prior existence of writing. He does not claim that the 'oral mind' is incapable of reasoning or perceiving contradiction (logical reasoning), but he does suggest that the oral society lacks certain tools of intellectual operation that defined the Greek notion of 'logic'.

Writing not only promotes the kind of critical attention to a text that is read that would be impossible to apply to an utterance that is heard, it also permits the accumulation of skeptical knowledge and of logical procedures (Goody 1991, p. 220). In claiming that writing facilitates or makes possible certain tasks, Goody
is not suggesting that mastery of writing in itself produces an immediate change in the intellectual operations of individuals.

The relation of writing systems to thought processes is analyzed in the following on the basis of a modification of Goody’s Culture-cognition Model (1991).

The Culture-Cognition Model

Goody (1991) developed a model explaining how language influences thought, especially through its writing system (Figure 10). He divides cultural influence into four different processes: sound factors are a description of the oral system, the writing system is a cultural invention, the level of literacy constitutes cultural capacity, and the level of literacy achievement could be considered a cultural product. These are in interaction with cognitive capacities, which in turn are based on cognitive abilities. Cognitive capacities and cultural products precondition related cognitive skills.

Source: Goody 1991, 248

Figure 10: Goody’s Culture-Cognition Model (1991)
Goody's model is modified here and used as a starting point for analyzing the impact of language on the thinking process (Figure 11). The Finnish and Japanese languages are used throughout as cases. These two languages have both similarities and differences, and thus serve to highlight the important aspects of language in regard to thinking. I will begin by discussing language as a vocal system, and propose that Finnish is an Eastern language. Since the relation between sound factors and the writing system is qualitatively different in Finnish and Japanese, the scripts used in both will need to be analyzed. Moreover, sound factors are not only a precondition for the writing system, but are also influenced by it. It could also be argued that language as a vocal system directly influences cognitive capacities (Asbert 2003). Cognitive capacities can also shape the vocal system, such as when certain sounds drop out of it in historical development. 

Moreover, sound factors are not only a precondition for the writing system, but are also influenced by it. It could also be argued that language as a vocal system directly influences cognitive capacities (Asbert 2003). Cognitive capacities can also shape the vocal system, such as when certain sounds drop out of it in historical development.

Source: modified from Goody 1991, 248

Figure 11: Language and Cognitive Capacities in this Study

Writing systems consist of symbolic systems (script), and the direction of the script also influences cognition. This is significant in comparing Finnish and Japanese. The scripts used in the two languages do not represent two opposite types since Japanese writing also includes phonetic writing, but some of the elements are considerably different from the Western phonetic system. 

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46 For example, the syllables  ted (te) and  ted (te) are disappearing from Japanese.
the writing system is a precondition for literacy. For one thing, the challenge of achieving literacy is bound by the type(s) of script involved.

Learning to read and write (achieving literacy) is also a method of learning and it shapes or establishes the learner's attitude towards learning. The type of literacy has its effects, too: simplified Chinese characters used in China are one example of a low level of literacy leading to changes in the writing system.

The literacy tradition shows the level of literacy achievement in a culture and gives substantial insight into the timescale and the types of literature that cultures have been exposed to. Again, Japan and Finland represent contrasting cases: Finland with its history of literacy for barely a century and Japan with a tradition going back to the Heian Era, one thousand years ago. The interface between orality and literacy is also discussed. Goody (1991) suggests that predominantly oral cultures have a different logic than literate societies.

I will analyze this chapter as related cognitive skills in terms of their dependence on cultural factors. In my view, Piaget's cognitive-development model is ethnocentric. Taking studies conducted by Vygotsky and Luria as my starting point, and comparing Finnish and Japanese scripts, I suggest that conceptualization is different in languages using phonetic and logographic scripts. In other words, I claim not only that language shapes the way we think and that literacy has an effect on our logic, but also that different scripts enhance different types of logic. We develop culturally different cognitive skills that underlie all knowledge creation.

Language as a Vocal System

Vygotsky's theory emphasizes language as a key tool, unique to human beings, for mediating their interactions with the world. He refers to argumentation with reference to "V. N. Trubetskov".

*V.S. Trubetskov* 1939 "Graasage cer Faaoaloe" as explained in Luria (1979, 166)
"Language processing depends critically not only on the physical features of sound, such as pitch, but also on the value of sounds as a means of distinguishing word meaning." (Luria 1979, 166)

Trubetskoy emphasized this phonemic aspect of speech instead of its phonological aspect because the organization of sounds into different phonemes is what distinguishes different languages, not the physical or phonological aspects of sounds alone.

As early as in 1897, Svedelius divided all forms of verbal communication into two basic classes: the communication of events, the contents of which can be expressed in images, and the communication of relations, such as 'Socrates is a man' or 'Kathy is prettier than Mary', in which special linguistic devices such as prepositions or variations in word order are necessary to express the 'caes being communicable. Human speech is organized into a phonemic system of language, which uses sounds of a special type, and sharpness of hearing alone is not enough to distinguish between them. The sounds of speech constitute a system in which certain characteristics are essential to the differentiation of the meaning of words, while others do not possess this role. (Luria 1973, 132-134)

The phonemic systems of different languages differ considerably, and features found in some languages do not exist in others: certain Caucasian languages (Georgian, for example) contain elements of aspiration, which are imperceptible in Indo-European languages but alter the meaning of words (Luria 1973). Moreover, the phonetic characteristics of the so-called tonal languages (Chinese, Vietnamese) make them completely different from Western languages.

Luria (1973, 134) concludes:

"All these facts show that the sounds of speech or phonemes are organized into a particular sequence in each language and that in order to distinguish these sounds of speech it is necessary to code them in accordance with this system, to pick out the useful, phonemic (or meaning-distinguishing) features and to..."
separate them for the unimportant features which play no part in the differentiation of word meaning and which are known as 'variants'.

Quar tiered speech hearing requires the analysis and synthesis of the sounds of speech, and the temporal cortex of the dominant (left) hemisphere is specially adapted to this. Luria 1973 (134) talks about "acoustic agnosia" or "sensory agnosia", which means an inability to distinguish clearly between the sounds of speech. It could be said that we have 'acoustic agnosia' with regard to some foreign languages.

The sound factors related to oral language underlie the phonetic written system: there is a difference in the physiological level between spoken and written language. Laterality studies of the brain show generally that the left hemisphere is superior in processing oral materials (Gooch 1991, 248). However, some Japanese researchers have claimed that the Japanese use a different brain hemisphere than Westerners to process certain sounds.

Tsunoda (1985) observed that the Japanese process a wider variety of sounds in the left hemisphere than other nationalities. It seems that they (and Polynesians) process all vowels in the left hemisphere, whereas the right hemisphere is used by right-handed Westerners (and also by Chinese and Koreans) for processing single vowels. Basically, what Tsunoda (1985) discovered was that the Japanese processed sound made by four-legged animals, birds and insects, and emotional sounds, together with Japanese instrument sounds, vowels, consonants and speech in the left hemisphere of the brain, and European instrument sounds and music, sounds of machinery, and noise in the right hemisphere (Tsunoda 1985).

Westerners, on the other hand, seem to process logical thinking, consonants, syllables, and speech in the left hemisphere, and all the other sounds in the right hemisphere. One might suspect that the Indo-European languages and Japanese (and perhaps also Finnish) have different neurophysiological qualifications related to speech.
Finnish has eight vowels: a, e, i, o, ø, y, ä, ö. To compensate for the lack of opposition such as voiced/unvoiced consonants, Finnish uses length as a distinctive feature. This means that all eight vowels and most of the consonants can appear long, i.e. marked in writing with two letters, or short marked with one letter (taa 'flower' /tata 'who'). Japanese has five vowels: a, i, u, e, o, and it also uses vowel and consonant length in the same way as Finnish does (tata 'person' /tata 'bought').

Since the sound systems in Finnish and Japanese are similar, it is relatively easy for the Japanese and the Finns to learn to vocalise each other's language. This has created an impression that the two languages (which also share some grammatical structures) are related. However, there is no linguistic evidence of this.

Both of these languages have been considered very difficult for non-native speakers to learn. The following sentence is attributed to Francis Xavier (1506–1552), a Spanish Jesuit missionary in Japan: "The complex Japanese language and its writing system are inventions of the devil, designed to prevent the spread of Gospel" (Taylor and Taylor 1995, 279). Later, foreign companies continued along the same lines: the complex writing system in Japan was considered a decisive non-tariff barrier, even though (or because) foreign businessmen located in Japan even today seldom speak and more rarely write Japanese (Karppinen-Takada 1991, empirical study).

isolation languages

There is also a similarity between Finnish and Japanese based on the relative isolation of the languages in their geographical surroundings. This does not refer to the term 'isolating language' used in linguistics: both Japanese and Finnish are agglutinating languages in that respect (Chrystal 1987). Japanese, although sharing the use of Chinese characters as one of its scripts, has no relation to
Chinese or Korean, and the Finnish language has no relation to neighboring Swedish and Russian, which are Indo-European languages.

This isolation has taken the form of self-segregation: one's native language has provided a safe nest to which one can return after exploring the world outside.

For a long time only oral Japanese, or writing the indigenous kana script, was considered to be 'real Japanese' carrying the spirit of Japan, since the foreign language was represented by borrowed Chinese characters and loan words. The modern use of scripts in Japanese continues this strategy: writing all new loan words, mostly from English, in katakana, keeps them apart, distinguished from 'real Japanese'.

Finns learned to be silent after the rise of the Swedes. Swedish was the official language in Finland until 1809, when Sweden was defeated by Russia in the Finnish War and Finland became an autonomous Grand Duchy of Russia. It was on 14 June 1863 that Emperor Alexander II decreed that Finnish was to have equal status with Swedish as a language of administration. The decree was to have the force of law within 20 years (Virtual Finland 2003). It has been reported, too, that during Russian rule, Karelian serfs (part of the Finnish population) singing the long accounts of the Kajamets heros were whipped by their Russian masters, who suspected that the poems, sung in a language that they did not understand, were subversive (Karttunen 1994).

Although only one seventh of the Finnish population spoke Swedish as their first language, Swedish retained its dominant position until the beginning of the 20th century (Virtual Finland 2003). Before the rise of nationalism among Finns and the independence of Finland in 1917, lower-class Finns hesitated to speak in front of the 'better folk', the masters, the Swedish-speaking society, because they...

69 There is a new situation today: following the collapse of the Soviet Union a nearby neighbor, Estonia, 'opened' its borders and access to Estonian (which is one of the Finno-Ugric languages) was gained. However, linguistic interaction has long been one-way in that even during Soviet times the Estonians could watch Finnish television, and thus became used to hearing Finnish, whereas no such exposure was possible to Finns.

30 The Finnish national epic...
did not properly know their language. Meanwhile, the Finnish oral culture flourished. It was very late when the Finnish language started to be written down, and this has influenced not only its structure, but also attitudes toward the written language.

Similarities between Finnish and Japanese
Finnish expresses ideas differently than the more commonly studied European languages. It has been suggested that Finnish is a "fuzzy" language (Varis 1998), in much the same way as Japanese is considered ambiguous in its expressions.

Students who have studied Finnish methodologically admit that it is a very logical language ("it is own logic"). It is also considered a very synthetic language. Consonant gradation and vowel changes make the task of learning the vocabulary more difficult. In addition, both nouns and verbs have a large number of inflectional forms, some of which occur more frequently than others (Branch 2003).

The Finno-Ugrian languages (including Finnish, Hungarian, Estonian, and Sami) share common lexical and grammatical features that include (Branch 2003):

1) the absence of gender (the same Finnish pronoun 'hän' denotes both he and she),
2) the absence of articles (a and the in English),
3) long words due to the structure of the language,
4) numerous grammatical cases,
5) personal possession expressed with suffixes,
6) postpositions in addition to prepositions, and
7) no equivalent of the verb to have.

A feature of Finnish that often amazes the foreigner is the length of words. Finnish is typologically an agglutinative language in which grammatical markers and endings are joined to a word stem. This is also a feature of Japanese, but does not stand out because of its different writing system.

Finnish sometimes resembles mathematics and many students enjoy it as a similar challenge. Most of the vocabulary does not involve complications of this
Despite the fact that it is normally recognized that it is one of the hardest things for the learner to grasp, partly due to the fact that he or she can only very rarely resort to forms in other languages as a means of memorizing (Branch 2003).

Finnish requires a feeling for the divisible and the indivisible: in the case of the complement, the opposition is between the nominative and the partitive forms. Maito on pahaa 'The milk is bad'. The complement pahaa is in the partitive case because the subject maito 'milk' is a divisible word. In the sentence Tyttö on kaunis 'The girl is beautiful', the complement kaunis 'beautiful' is in the nominative because the subject tyttö 'girl' is indivisible. (Branch 2003)

English manages to talk about different aspects of 'who' by using three case forms. Finnish needs twenty-four forms for the same purpose. In English, 'who' is both a singular and a plural form. Finnish has to indicate the plurality with plural markers. Thus the pronoun in Finnish often has to be in a specific case and form.

The subject prominence in Western languages is absent in Finnish. The passive voice is often used, especially in bureaucratic and academic writing. Japanese frequently omits the subject (also a non-logical trait), and anacoluthon is common. Anacoluthon was frequent in the literary works of the Heian period (794-1186), and also appeared in annotations to Chinese Buddhist texts:

"That the Japanese can dispense with the subject in their linguistic expression is due to the fact that intuitive understanding of the scene referred to in their discourse is usually attained beforehand by their close bonds and nexus with other" (Nakamura 1987, 186).

In fact, a logically correct assertion of the 'obvious' sounds harsh to the Japanese.

Finding the correct form of the subject, the direct object and the complement in Finnish causes many headaches for learners because of the duality in their marking. The subject can be either in the nominative or the partitive case, and the direct object in the accusative or the partitive. The action can affect the whole object or lead to a result, i.e. be resultative. In the case of the
The verb is a very powerful actor in Finnish sentences, since the forms of other items in the sentence depend on it. Just as to wait requires the preposition for in English, in Finnish the verb odottaa 'to wait' requires the partitive case; the accusative cannot be used. As Finnish has no verb 'to have', forms of olla 'to be' are used with the past participle of the main verb. Branch (2003) considers the verb to be the most powerful item in a Finnish sentence. Its dynamic or static nature may also require different forms for the expression of time.

There is no fully established method of composing abstract nouns in the Japanese language. It does not have the infinitive form of the verb, the specific character of which is to express an indefinite situation, a relation itself rather than a thing. (Nakamura 1987, 184) Japanese intellectuals today have come to acc the Chinese character 生 to form any abstract noun in order to compensate for the original lack of such an ending.

Word order is not random in Finnish, but it is true that, given the amount of inflectional grammar, a certain freedom of word order exists that is lacking in English. This, again, is a similarity between the Japanese and Finnish languages.

The relationship between sound factors and writing systems is not one-way, as Goody's (1991) original model suggests. When a language starts to be written, previous existing dialects and pronunciation tend to be fixed into one 'normal' language. For example, the morpheme 'c' does not exist in Finnish dialects, in fact it is quite difficult even to-day for some elderly people to pronounce it at all (easier becoming either 'r' or 't': for example, in the pronunciation of 'äiti' - mother, into the genitive 'äicin' - mother's, the spoken version is 'äit' or 'äiü'; or in the case of the written word 'mahdoton' - impossible, which is pronounced in everyday speech as 'mahoton'). One might suspect that when Finnish started to be written, the mode came from the Swedish language.
Finland was part of the Swedish kingdom at that time, and even Finnish-speaking educated people used Swedish. However, since Swedish is not related to Finnish (it belongs to the Germanic languages), it so altered some aspects of Finnish by 'fitting' a system not exactly tailored to it (of course the same can be said of many other languages).

It could also be argued that the notoriously difficult Finnish grammar is an outcome of similar 'forced fitting'. If the Finnish language represents a totally different thinking system than Swedish or German, how could we model its grammar based on these two languages? The same could be said of Japanese grammar, which was composed by foreign missionaries: linguistic terms were taken in structurally different languages were applied to describe the Japanese way of using the language.

Naturally, the close contact between the Swedish and Finnish languages in Sweden has influenced both. Dixon (1997, 15) notes:

"If two languages are in contact - some of the speakers of each having a degree of competence in the other - they are likely to borrow lexemes, grammatical categories, and some grammatical forms (in at least one direction, often in both directions) and gradually become more similar."

This close contact is also observable in the Swedish language spoken by the six percent minority of Finns.

The differences in word order and character in Japanese and Chinese caused many problems when the Japanese language was first written down (in Chinese characters). At first, the Chinese word order was used and a reader of Japanese simply had to remember to reverse the order. In some cases 'markers' of order were added to the text, indicating where to read first, for example. The complexity involved in reading and writing Japanese text in this way, combined with the unsuitability of the logographic script to an agglutinative language, probably gave the impetus to create a native syllabary. Had this close contact not taken place, the Chinese language would certainly have
influenced the Japanese language, not only in the form of loan words but also by changing its structure.

Nakamura (1987, 185) claims that the Japanese language manifests its non-logical character early in the system since it lacks the relative pronoun 'which', which helps cere one of the process of thought:

"Japanese presents difficulties for logical expression, which has to be exact, and, as is generally pointed out, its non-logical character naturally handicaps the development of ability in logical thinking among Japanese people, and has actually brought about grave inconveniences in their practical lives."

It should be noted that this non-logical is with regard to Western logic. As will be discussed later, there is logic of different type behind the Japanese language.

4.2 Cognitive Capacities and Writing Systems

McQuail (1975, 66) argued that, in order to maintain social stability and their place in it, elite literary groups had a strong tendency to maintain a writing system of a particular kind: 'pictographic and logographic systems are alike in their tendency to register, record, make permanent the existing social order and ideological picture'. By contrast, 'phonetic writing, by imitating human discourse, is a fact symbolizing not the objects of the social and natural order but the very process of human interaction in speech'. For this reason, the invention and diffusion of this form of writing is much more likely to be responsive to social change, more accessible to outsiders, and also more reflective of group and cultural differences.

Some of the effects of the emergence of writing are discussed in the following. Attention is given to the directionality of the script, which has varied historically, and which also directs our focus in non-linguistic tasks. Differences in phonographic and logographic scripts are examined, with special emphasis on the cognitive aspects within them.
Emergence of Writing

It has been estimated that human language originated approximately 100,000 years ago (Dixon 1997; Aitchison 1996). Writing systems began to emerge five or ten thousand years ago. About two-thirds of the world's languages have no writing system, and new systems are being introduced every year. (Muter 1986)

Hall (1977, 87) describes the differences between spoken and written language as follows:

"...the spoken language is an abstraction of an event that happened, might have happened, or is being planned. As any writer knows, an event is usually infinitely more complex and rich than the language used to describe it. Moreover, the writing system is an abstraction of the spoken system and is in effect a reminder system of what somebody said or could have said. In the process of abstracting, as contrasted with measuring, people take in some things and unconsciously ignore others. The linear quality of language inevitably results in accentuating some things at the expense of others."

Naturally, Hall is talking about a language (English) written in the phonetic alphabet. The written language is said to be more decontextualized, or autonomous, than the spoken language. It is less context-dependent on the spatial and temporal situation in which it is produced. Simons and Murphy (1986) use the terms 'situation-dependent' to refer to language that relies on situation-related cues, and the term 'text-dependent' to refer to language that can be interpreted without reference to the immediate situational context.

Goody (1989, 49) expressed the firm belief that writing was originally used primarily for the conduct of economic affairs; early writing in Mesopotamia around 3300 BC was used for bookkeeping and the administration of temples and palaces, as well as for commercial exchange and interpersonal transfers, rather than for recording myths and rituals. It has even been argued that Mesopotamian cuneiform script was an incidental by-product of a strong sense of private property.
In late Proto-literate times knowledge of the application of writing may have strengthened the 'managerial functions' of temples, as well as encouraged 'a sense of detachment from and superiority to the day-to-day concerns of secular life'. Goody (1989, 50) thus concludes that writing represents not only a method of communication, but also a means of distancing oneself from communication.

Akkadian, written in cuneiform script, was the diplomatic language employed even by the charmers of the Egyptian Pharaohs. The use of the same script meant that not only the form but also the norms became similar, for the regulations that governed Sumerian 'international' trade were accepted by many other states. Thus it could be said that writing governed the form and language of the discourse:

"Once again the uses of writing affected not only the forms of interaction but also led to change the nature of its rules, substituting the fixed text for the variable utterance." (Goody 1989, 99)

Chinese characters are believed to originate in signs used in farming communities of the Yangshao culture in Neolithic times, around 5000-3000 BC. A large set of Chinese characters used in text appeared about 3,400 years ago in the late Shang dynasty. There have been changes in script styles, but Chinese characters have been used continuously since then. (Taylor and Taylor 1995, 43-46)

Varley (2000, 37) claims that, in contrast to the Indians, who have a ways been absorbed with metaphysical and religious speculation and scarce of history, the Chinese are among the world's greatest record-keepers. Their reverence for the written word was also transmitted to the Japanese.

There's a fundamental difference between Chinese characters and phonemic writing. Written language using the alphabet is merely the recording of spoken language. As a result, Western theories generalize about languages with phonemic writing systems, inflectional sentence system, clear structural distinctions between descriptive and prescriptive forms, and a regular subject-predicate structure (Hansen 1989, 16).
Hansen (1989, 78) suggests that we could treat language using Chinese characters as a written system that is spoken, rather than a spoken system that is written. "The written [Chinese] language is clearly independent from any particular spoken language. We would reasonably regard it as a more universal medium of communication than any spoken language." Chinese theories of language account for what was taken to be a pictographic written language with a grammar that relies almost exclusively on word order for grammatical marking.

The Invention of Printing

Hirst and Woolley (1982, 38) argue that the effect of printing has on forms of language use include definite tendencies towards stabilization and conservation:

"The printed page makes possible the uniform and standardized presentation of language. Rationalized typefaces and page layout, standardized punctuation, the organization of a book by a contents page, index, and so on, all impose new forms of order on language. We should note the immense effort that went into this process in the first century of print. It was anything but 'automatic'."

When printing emerged in Europe, two powerful social forces accelerated its stabilization (Hirst and Woolley 1982). The Reformation generated a demand for mass literacy in order that the people might read the Bible (a demand that printing could meet by reproducing both Bibles and grammars and first readers to educate the populace): the success of Protestantism is difficult to imagine without the power of the press. Second, new 'national' states and absolutist monarchies generated a demand to constrain and subordinate local powers and cultures. Printing reinforced the tendency toward scholar, literary, and administrative use of the 'vernacular' language, because it contributed to their stabilization and definition: it stabilized one form from amidst a variety of dialects.

Hirst and Woolley continue to explain the stabilizing influence of printing on language:

"The stabilization and uniformity imposed by print made possible the entire idea of a proper or 'official' language use. The mass production of
Educational materials made possible the placing of models of this "proper" language before everyone who learned to read and write. Language was therefore taken out of the hands of the unlettered common people—although one should be careful not to be too romantic here, for maybe as many as half of the people in urban centers in Protestant countries could read. Slang, illiterate and common speech were discarded against cultural and official printed language. Such a process would have been much more difficult before print when the written culture was necessarily dominated by oral culture. Education and linguistic homogenization could, after printing, be based on stable models and these made available on a large scale." (Hirst and Woolley (1982, 39)

Since the Finnish language started to be written relatively late in European history, printing was already in common use at the time. Thus from the beginning the Finnish written language was fixed in a certain form selected by early writers such as Micael Agricola (who produced the Finnish translation of the New Testament in 1548) and Elias Lönnrot (Kalevala in 1883).

Script Directionality

We tend to take for granted in Finnish that any script is horizontal from left to right, top to bottom. On a rare instance in children's books or in neon lights, we see Finnish written vertically. For children under school age it is not uncommon to start writing from any side of the paper and to proceed up or down, from left to right and right to left, alternating writing in all these directions and using mirror images of letters. In a way, one can see the whole history and variety of script directionality in pre-literate children's writing style.

Scripts can be, and have been, written in many directions. Basically the alternatives are horizontal and vertical, left to right and right to left. Mirror-image letters can be used (as in ancient Egyptian hieroglyphics and Etruscan...
writing), or even alternation of direction in the same text (called *prostrophecoa* and the reading of letters from top to bottom on alternating lines (the rare case of the Rongo-Rongo script of Easter Island) (Nakanishi 1989). The different script directions in use today (see Figure 12) are horizontal from left to right (Finnish and English, for example), horizontal from right to left (Arabic, for example), and vertical from right to left, top to bottom (as often in Chinese characters). A rare case in modern writing is that of Mongolian and Manchu, which are written from top to bottom on vertical lines shifting from left to right in mirror-image letters.

<table>
<thead>
<tr>
<th>Direction</th>
<th>Sample 1</th>
<th>Sample 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal</td>
<td>ABCDGH</td>
<td>ABCDHE</td>
</tr>
<tr>
<td></td>
<td>MNOPQRST</td>
<td>MNOPQRST</td>
</tr>
<tr>
<td></td>
<td>QPONMT</td>
<td>QPONMT</td>
</tr>
<tr>
<td></td>
<td>STUVWX</td>
<td>STUVWX</td>
</tr>
<tr>
<td></td>
<td>LKJIHG</td>
<td>LKJIHG</td>
</tr>
<tr>
<td>Vertical</td>
<td>PQMNO</td>
<td>PQMNO</td>
</tr>
<tr>
<td></td>
<td>LKJIHG</td>
<td>LKJIHG</td>
</tr>
<tr>
<td></td>
<td>STUVWX</td>
<td>STUVWX</td>
</tr>
</tbody>
</table>

*Note: should be mirror-image letters*

![Figure 12: Script Directions in Use Today](image)

**Scanning biases**

The textbook example of the medicine advertisement in an Arabic-speaking country shows how used we are to thinking that "our way is the only way". Since many people in that country are illiterate, the advertisers decided to use drawings. A cartoon in three boxes starting from the left shows: 1. A man in pain, 2. The man taking the medicine, 3. The man being happy. The Western company only forgot that Arabic is written and read from right to left, thus the message became: "Happy man taking this medicine becomes ill".
It is a well-documented fact that users of scripts with different directionalities acquire differential directional scanning biases (Vaid 1995, 295-296). It seems that we do have an innate directional tendency in muscular movement (a smoother execution of movements directed away from the body than towards it). This means that, depending on whether we use our left or right hand to perform a task, we favor an outward-directed movement. Thus a right-handed person drawing a horizontal line should favor a left-to-right direction while left-handers should favor a right-to-left direction. However, by the age we establish reading/writing skills (i.e., use different kinds of scripts) we either reinforce this tendency, as with left-to-right scripts, or shift our directional preference (as in right-to-left scripts). (ibid, 297)

It was suggested by Vaid (ibid, 308) that reading habits appear to be more influential in ostensibly nonlinguistic tasks than in verbal laterality tasks. Thus researchers in the field of cognitive studies should include readers with different directional scanning biases as comparison groups when studying laterality.

The natural tendency to produce left-to-right movements with the right hand (together with the dominance of right-handed individuals) may be one reason why the Latin/Roman alphabet settled down in left-to-right writing. This may also have coincided with the common manner of writing tools. It has been argued that left-to-right writing works better for right-handed writers because the writer can see better what he or she has written so far, and avoid smearing the part already written (Vay or and Vay or 1995, 102-106). This does not apply to the tracitional writing of Chinese characters on a scroll with a brush in an upright position in one’s hand. It is therefore no wonder that the Chinese scroll was unrolled with the left hand while the right hand filled in the paper vertically from right-to-left with brush strokes. With modern printing technology, even the Chinese have shifted from vertical to horizontal writing, producing only occasional vertical items.
Directional Scanning Bias in Nonlinguistic Tasks

Script direction also seems to establish a directional scanning bias in nonlinguistic tasks. The study conducted by Vaid (1995, 307) comparing users of the Hindi script and the Urdu script, which represent more or less the same spoken language on the Indian continent, supports this view. She found that Hindi (horizontal, left-to-right direction) readers began their drawings at the top left of the page and proceeded in a left-to-right order, whereas Urdu (horizontal, right-to-left direction) readers tended to start at the top right and to proceed in a right-to-left order.

Hemispheric lateralization in the perception of facial emotion may also be influenced by the directionality of the script one learns. Vaid and Singh (1989) found a significant left visual-field preference only in their Hindi subjects (left-to-right readers), suggesting that the acquisition and directionality of an orthography influences the hemispheric substrates of facial-emotion perception. Blonder (1999, 281) produces evidence that hemispheric lateration in the perception of facial emotion may be influenced by the directionality of the script one learns. In particular, the acquisition of a right-to-left script may attenuate an intrinsic right-hemisphere specialization.

The Greek alphabet was originally written in the old Semitic right-to-left direction. This was also the case when, during the 8th century BC, Greek settlers brought the alphabet to Italy where the Etruscans adopted it. Of the various Etruscan alphabets, the Roman (or Latin) one, documented from the 7th/6th century BC onwards, evolved and in due course became the script of the western half of the Roman Empire. (Gaur 1995, 26) By that time the direction of the alphabetic script had changed to run from left to right. If it is possible to draw any conclusions from this and from studies on the influence of the directionality of writing on brain-hemisphere specialization, we might say that the scientific revolution started when the Greek alphabet began to be written from left to right, thus emphasizing the use of the right eye and consequently
stimulating the left hemispher e of the brain - that is, the part that is associated with conceptual thinking.

Luria's (1976; 1979) studies of illiterates could also be interpreted as supporting the idea that script direction influences our thought, although he himself did not consider this aspect. However, he studied the influence of a practice of an alphabetical script running from left to right. Thus we might conclude that the script direction emphasized the use of the left hemisphere and consequently the logical thinking that Luria found in literate subjects.

Reading Speed and Direction of Writing

In terms of how quickly one reads, habit and not the direction of the writing seems to make a difference. Chinese and Korean are not exposed to vertical writing to the same extent as the Japanese are, so they have been reported to read horizontally more quickly than vertically (Taylor & Taylor 1995, 105-106). However, Japanese readers are used to both vertical and horizontal directions from early on; even at primary school, first graders have textbooks containing both vertical and horizontal writing.

According to a study conducted by Satō (1958), both middle- and high-school Japanese students read vertically more quickly than horizontally, but as they progress through school, the difference becomes smaller and smaller. This has been attributed to becoming more practiced in horizontal reading (Taylor & Taylor 1995, 105). Since the study was based on recording the patterns of eye movements, the result could also be attributed to more fluency in reading the Chinese characters, which involves less movement of the eye but a more holistic focus on the visual image. This explanation is supported by the fact that university students in Japan read texts in which the ratio of kanji, Chinese characters, to phonetic syllables is higher than at lower levels of education. Instead of shifting from the vertical to the horizontal, the Japanese reduce movements of the eye and focus on the kanji.
The Direction of Writing in Finland and Japan

The implications of script directionality are summarized in Table 10. Written Finnish is formally and predominantly mono-directional: horizontal from left-to-right. Exceptions include some playful experiments by artists or children, and signposts, for example, may have vertical text. Finnish books always open at the left-hand cover, in the light of the findings of earlier studies, it is to be expected that Finns develop a left-to-right scanning bias, and that this is carried over to non-linguistic tasks. Finns are thus asymmetrical with a left visual field bias in their non-linguistic perceptual tasks processing; they can be expected to start looking (or problem solving) from the top left-hand side of the page. This also indicates a bias for using the left side of the brain when processing written material (left-brain bias), which suggests rational processing.

Since there is only one correct direction of writing, experimentation with writing or reading habits in other directions is not encouraged. The attitude to problem solving learned from this is rule-orientation, according to which one tries to discover the rule in order to find the right solution.

<table>
<thead>
<tr>
<th></th>
<th>Information seeking</th>
<th>Knowledge processing</th>
<th>Problem solving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finland</td>
<td>Mono-directional</td>
<td>Left-right asymmetrical</td>
<td>Learn by rule</td>
</tr>
<tr>
<td>Japan</td>
<td>Multi-directional</td>
<td>Symmetrical</td>
<td>Learn by experience</td>
</tr>
</tbody>
</table>

Table 10: Implications of Script Directionality for Knowledge Creation

The Japanese are a rare case in terms of writing direction even in East Asia. Instead of dropping the old direction when adopting the new one, they combined both horizontal (left-to-right) and vertical (top-to-bottom, columns from right-to-left) directions. For a short time the horizontal right-to-left direction was also used. Thus the Japanese could be called bi-directional, to distinguish them further from English-Hebrew readers, for example, who are considered bi-directional (Vaid 1995, 198). Books and magazines in Japanese accordingly open at either the right-hand or the left-hand cover.
Vertical direction is considered formal, both directions are sometimes used in the same text, such as in newspapers. Primary-school textbooks use vertical text and open at the right-hand cover when the subject is something traditionally Japanese (such as 国語 - the national language, or history), and horizontal text opening at the left-hand cover for something Western (such as Mathematics and Music). From the very beginning of their education, the Japanese learn a multidirectional approach to things. This encourages experimentation: only by taking up and glancing at a book can one tell in which direction it runs. Some bilingual English-Japanese books have even been written both ways, starting from the left-hand cover for the English text and from the right-hand cover for the Japanese: both are 'correct'!

In terms of scanning bias, the Japanese can be expected to have no strong visual bias for either side based on script directionality, and could thus be considered symmetrical in both visual processing and problem solving. This trait is probably also supported by their habit of writing 仏 in a square in a balanced locus. The Japanese have been considered more symmetrical in using the two parts of the brain (symmetrical brain) (Hatta 1977).

Types of Script
Sampson (1985) divides writing systems into semasiographic and glottographic, the former being independent of the spoken language and including pictures, mathematical notation, and international road signs. The latter group, glottographics, is further divided into logographic and phonographic (phonetic) writing systems (Figure 13), which have been used to classify scripts on the basis of the ways in which they represent language:

" logographic (logo = word; graph = written sign) represents primarily the meaning of a word or morpheme and secondarily its sound. A sign of a phonetic script represents primarily a sound unit, either a syllable or morpheme, and through a sequence of sounds and signs, the meaning of a word or morpheme." (Tay and Olson 1995, 1)
Ancient writing systems were generated in Egypt and Mesopotamia around 3500 BC, in the Indus River valley around 2800 BC, and two millennia later in Mesoamerica. It was thought earlier that Chinese characters evolved around 2000 BC, but recent findings suggest that they emerged much earlier, perhaps as early as 6500 BC (Heft 2003). These early scripts used pictographs, word signs, syllable signs, determinatives, and combinations of two or more Chinese signs (Taylor and Olson 1995, 1; Sampson 1985). Of these early scripts, only the Chinese characters are still used, and they remain basically logographic. Most other scripts evolved from the Phoenician script (16th Century BC) and are primarily sound-based (phonetic).

It was assumed earlier that writing systems were evolutionary in their progression from logographic to syllabic systems, culminating in the alphabet (McCarthy 1995, 62). It was also believed that the alphabet, as the abstract and most modern type of writing, must be best suited to mass literacy and modernization, the goal of a democratic society. However, several arguments...
based on the Japanese writing system and cuneiform (a type of syllabic writing) have been put forward against this evolutionary interpretation.

McCarthy (ibid, 71) argues against classifying the syllabic system along with an alphabet as a phonographic system. She suggests a new paradigm for writing-system classification, in which the alphabetic system is called analytic and is distinguished from the wholistic, i.e. syllabic system (See Table 11). There are several reasons why native speakers (such as the Cree) have identified syllabic systems as wholistic. All in all, it seems that such systems may foster a close relationship between the writing system and the language and culture of the people.

<table>
<thead>
<tr>
<th>Wholistic</th>
<th>Phonographic</th>
<th>Logographic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syllabic</td>
<td>Phonemic</td>
<td>Logographic</td>
</tr>
<tr>
<td>Analytic</td>
<td>Phonographic</td>
<td>Morphosyllabic</td>
</tr>
</tbody>
</table>

Source: McCarthy 1995, 71

Table 11: The New Paradigm for Writing System Classification

The types of script used in Finland and Japan are analyzed further in the following. A sound-based system of phonemic Latin/Roman letters is the sole type of script used in Finnish and local Japanese writing consists of a combination of meaning-based logographic (morphosyllabic) script (kanji, Chinese characters) and two sound-based syllabic systems (katakana and hiragana). The Roman alphabet and Arabic numerals are also known to and used by the Japanese.

In the phonographic script, one graph, which may be either a syllable or a phoneme, represents one unit of sound of a language. Some scripts could be described as alphabetic with syllabic features (Tar or arc Olson 1995, 3). The Finnish use of the Latin alphabet seems to have this type of characteristic: words
are divided into syllables when a word is continued on the next line, for example.

A syllabic writing system is generally used only for languages that have a certain type of sound structure. It best suits those with a fairly simple syllable structure and few consonant clusters. It's also recognized that the initial learning process is much easier with syllabic writing than with an alphabet (McCarthy 1995, 61).

The Latin Alphabet in Finnish

The Latin/Roman alphabet used in most contemporary European scripts is based on the Greek alphabet, which is considered a successful mutation of the Phoenician consonant script. The original 22 Phoenician consonant signs were not suited as such to Greek, which is an Indo-European language and in which vowels are important. The Greeks thus made a far-reaching modification by using some Phoenician consonant signs (for which the Greek language had no corresponding sounds) to represent vowels (a, e, i, o) (Gaur 1995, 24-26). This introduction of vowels into the Greek alphabet represented a breakthrough in writing systems. Thus far, Semitic writing, using only consonants, had to draw on non-textual as well as textual data. Vowels had to be added on the basis of thorough knowledge of the context and the language. It was first through the Greek alphabet that words from unknown languages could be written and read. Ong (1990, 90) refers to this as follows:

"The Greek alphabet was democratizing in the sense that it was easy for everyone to learn. It was also internationalizing in that it provided a way of processing even foreign tongues. (...) in abstractly analyzing the elusive world of sound into visual elements (not perfectly, of course, but "effectively") both presaged and implemented their further analytic exploits."

The Finnish language, like most European languages, uses the Latin/Roman alphabet. However, Finnish is a Finno-Ugric language, related to Hungarian, and not a relative of the Indo-European languages or even part of the Indo-European group. Finnish was originally written in Gothic script, but later the
Latin script became prevalent. Unlike Diamond (1998, 226) claims, we have not crossed certain consonants from our alphabet, but we have included the ones that are used only for loan words. Thus the alphabet in use in Finland has a total of 29 letters: in addition to the 26 letters of the Latin script used in English, for example, are three additional vowels (ä and ö used in vernacular Finnish, and å, which is used in Swedish). There are capital (majuscule) and small (minuscule) letters, and print styles may differ somewhat (for example in the italic style).

Handwriting differs to some extent from the printed text, but the recent reforms of the writing style taught in elementary schools have brought the two closer together.

Since the Latin alphabet is written horizontally from left to right, it has been suggested that this focus on the left side of the brain may perhaps offer an additional advantage:

"Kerckhove (1981) has suggested that, more than other writing systems, the completely phonetic alphabet favors left-hemispheric activity in the brain, and thus on neurophysiological grounds fosters abstract, analytic thought." (Ong 1990, 91)

Written Finnish (like Turkish but unlike English), is a highly regular alphabetic system, in which reading can be learned as a set of simple writing-to-sound rules. Every grapheme (letter in writing) corresponds to one phoneme; i.e. every letter is always pronounced in the same way. (Branch 2003) It is apparently difficult in English (and perhaps also in French, for example) to learn to understand the grapheme-to-phoneme code (Lee et al. 1995, 261). The initial acquisition of decoding skills (= reading) is faster with a highly regular alphabetic system. This may partly explain why Finnish pupils achieved the highest scores in the PISA Literacy study (OECD 2002), being placed well ahead of pupils in many English-speaking countries. Although the study also measured understanding of the contents of a text (functional literacy), it could be that early acquisition of the ability to read fluently gives 'a head start' in allowing concentration on the meaning of words as well. Moreover, there is very little room for interpretation of written words in Finnish; with the exception of some
homonyms, they have quite transparent meanings. This could be attributed to
the fact that Finnish started to be written relatively late in history.

The Japanese Writing System

Professor Neustupný (1978, 182), a well-known expert in Japanese and many
other languages, comments on the Japanese writing system:

"Only man could have designed a system as illogical and complicated as
the Japanese system of writing. Even today, after series of post war
reforms, the Japanese script remains the most difficult of writing systems
of all languages and historical periods."

The view of the Japanese writing system as illogical persists among most
researchers. This conclusion is drawn when Japanese writing is compared to the
Latin alphabetic script, and the fact that it does not follow the same logic.
However, a different logic does not mean the absence of logic: it is just another
type. The Japanese script is complex in the sense that, in the same text, it
combines Chinese characters and two types of syllabaries, in addition to using
the Roman alphabet and Arabic numerals. Achieving literacy in Japan takes
many years, and everyday use of the writing system requires interpretation and
tolerance of ambiguity. Since this forms the basis of the Japanese way of
processing knowledge, the different scripts used in Japanese are analyzed in
more detail in the following.

The Japanese katakana and hiragana syllabaries

In Japanese syllabaries, one sign represents one mora: a syllable (an inseparable
consonant and vowel) or a single vowel. Only the consonant "n" has a sign of its
own separate from the vowel part. There are 46 basic signs for moras or
syllables, and additional secondary and compound signs add up to a little over
100 signs each for both the katakana and the hiragana syllabaries (Figure 14).
This makes up a rather simple sound system in comparison to other languages:
Chinese, for example, has 400 syllables (or 1,300 with the tones), Korean 2,000,
and English several thousand. It is possible to write Japanese only in these
phonetic scripts, or even in the Roman alphabet.
The **Hiragana** script is used in written Japanese, together with Chinese characters, to inflect the words (such as 食べました, 'ate'), whereas the **Katakana** script is used to transcribe foreign words (foreign names and loan words other than from Chinese) into Japanese. The basis for the transcription is the pronunciation; for example, the closest pronunciation in Japanese syllabary to the English word 'coffee' is コーヒー kōhi, which explains why the English pronounced by the Japanese may sometimes be difficult for native English speakers to understand. Miller (1977, 10) is very critical of the fact that the Japanese even consider Chinese loan words as ことだま totocawa, or having the spirit of the Japanese language. He also notes that, although 和歌 waka (a poem) is not supposed to use foreign loan words, even Prince Mihasa used the English word ベルトコンベア belt-conveyor in the poem that he contributed to the January 1965 ceremony that celebrated the beginning of a new year of court poetry.
However, the word “belt-conveyer” itself is new in Japanese society (or was in the 1960’s), and it became “Japanese” through adoption to katakana as ベルトコンベヤー bentotokonbeya. In the same way, a variety of katakana words are Japanese in spirit. Would you consider the following words English: パソコン‘pasokon’ orファミコン ‘famicon’? It may be difficult for a native English speaker to understand the ‘emotional sound’ of words in foreign languages. Finnish has several loanwords that have become uniquely Finnish in spirit. A recent example is the word ‘six-pack’, in Finnish ‘siskpäki’. There are many other loanwords, such as ‘aaltt’ (bank), which have origins in foreign languages but feel very Finnish now.

In the Latin alphabet the order of the letters (a, b, c, d, e ...) is used to arrange words in dictionaries and encyclopedias. Letters can also be used instead of ordinal numbers to indicate sequential order. For the Japanese, the native ‘alphabet’, the katakana syllabary, represents an ordinal system. Thus あいうえお, ‘a, i, u, e, o’, is used as the ordinal indication in texts. Sometimes the old syllabic order, which was in the form of a poem and started with いろはにほへと, ‘i, ro, ha, ni, ho…’, is also visible. This is the logic of starting with ‘ABC’ and ‘throwing something to the file’ does not quite apply to Japanese logic.

The Logographic Script of Chinese Characters

A logograph represents primarily the meaning of a morpheme and secondarily its sound (Yariv and Osor 1995, 2). The same logograph may have different sounds in different languages or contexts. Although Chinese characters are

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31 Derived from the English word ‘personal computer’
32 Derived from the English word ‘family computer’
33 Used by the Koff company for Karhu beer
34 I have used this ordinal indication when referring to interviews conducted for this study.
35 This poem can be found at the beginning of this study.
frequently considered ideograms, there is debate over whether the Chinese script can be called logographic in the true sense. There are cases in both Chinese and Japanese in which characters are used merely for their phonetic value, without regard to the conventional "meaning" associated with them. According to some researchers, the Chinese character could more correctly be termed a morphosyllabic system, since it represents not only a morpheme but also a syllable. However, others point out that a sound is assigned to it—usually one tone syllable in Chinese, one syllable without a tone in Korean, and one-to-five syllables in Japanese (Taylor and Taylor 1995, 89).

The oldest undisputed Chinese writing is a set of 5000 characters used during the Shang dynasty, which began about 1700 BC. However, recent archaeological findings suggest that some written characters had much earlier origins in China. More than 50 painted characters have been found on pottery dating from the Longshan period between 3000 and 2000 BC. Somewhat less complex signs appear on pottery fragments from the Yangshao period between 5000 and 4000 BC. The Jiahu discoveries push the oldest traces of writing back even further: symbols that resemble Chinese characters appear on tortoise shells in graves dating back to 6500 BC at a site called Jiahu in Henan Province. (Heft 2003)

About 85% of the Chinese characters in present-day Chinese are phonetic compounds containing a phonetic component that may give information about the pronunciation. However, only 38% of the phonetic compounds are helpful in the pronunciation of whole characters.

Chinese characters are used as script for different dialects in China and Taiwan, as well as for the Korean and Japanese languages, which are not related to Chinese. Therefore there is variation in the way in which they are used and sounded. For example, the Chinese character 朋 that represents the morpheme

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36 Chinese characters were used by the Vietnamese until the 15th century, and by Central Asian people such as the Q'iangs or Khitans whose kingdom existed between the 10th and 12th centuries AD (Taylor and Taylor 1995, 14).
'ten' is pronounced shi in Mandarin; saa in Cantonese; si in Korean; and tō, to, jū, jitt-, jutt- in Japanese (Taylor and Olson 1995, 2). The case is analogous to the Arabic numeral 10 being read ten in English, dix in French, and kymmenen in Finnish.

Given the long history of Chinese characters and the fact that each logograph represents a morpheme, nobody can tell how many characters there are altogether. The Chinese Character Analysis Group in Taiwan collected and coded some 74,000 characters in the 1980's. The number is increasing as more and more variants of standard characters appear, and new concepts emerge necessitating new characters. However, there are many that are not in practical use: knowledge of roughly 3,500 is enough for common use and functional literacy in Chinese, but 6,000 are needed for high-level, scholarly literacy.

The simple Chinese characters resemble pictures (they are pictographic). Figure 15 shows how the first four Chinese characters are taught to primary-school children in Japan. The characters for mountain 山, sun 日, moon 月, and tree 木 resemble their physical shape in reality.

Source: 新版こくご 1 上 (1993)

Figure 15: The First Kanji Taught at Primary School First Grade Shōgakukan
There is logic in combining the characters: for example a 'tree' is 木 but two trees 林 form a 'wood', whereas three trees 森 is a 'forest'. A 'man' 人 beside a tree 亻 means 'resting'. However, this logic of associating Chinese characters with the visual images does not work with more complicated characters.

漢字 Kanji in Japan

The Japanese language is unrelated to Chinese, but because of the geographic proximity, it has borrowed many thousands of words and characters from it. Chinese characters were first brought to Japan around the third or fourth century AD by migrating Chinese and Koreans, and became established during the following four centuries. The Japanese call Chinese Characters 漢字'kanji', meaning literally 'symbols of Han China' (the Han period in China extended from 206 BC to 220 AD). At that time Japanese existed only in oral form, and Chinese characters were used to express Japanese words as well as Chinese pronunciation. This resulted in several readings of the kanji used in Japan.

Let us imagine using Chinese characters to express English: 母 would be the character for 'mother' in English, but we would at the same time pronounce it in Chinese as 'BO' in some compounds, such as 母親 BOSH (motherhood). We would further agree that the word 'mom', 'mommy' and 'mama' would also be written with the same character (originally a pictograph of a woman with breasts). This is how indigenous Japanese words and Chinese loan words are combined in present-day Japanese. Even in the same compound word, such as 母国 'mother country', BO represents the Chinese reading (the On reading) and KOKU the Japanese reading (the Kun reading).

Over the centuries the Chinese characters brought to Japan in different periods (reflecting the style and custom of using the characters in China in each period) evolved in their own particular way, and acquired nuances and connotations.
not necessarily found in Chinese. There were also phonetic modifications for most characters. Many characters were borrowed on the basis of their sound to express entirely different meanings, and in many cases discovering a sound led to the acquisition of new meanings. As a result, the kanji used in Japan may have a variety of readings and meanings: a typical kanji today has two or three On readings and two or three Kun readings, while some may have as many as ten fundamentally different readings. For example, the simple kanji 日 (meaning sun, car) can be pronounced as ＲＩ or ＪＩ（On readings）and as ｖｉ, ｏｉ, ｔａ（Kun readings）. The appropriate reading will depend on the context in which the kanji is presented, in other words on what the other characters are in the compound or which syllables will follow it. The meaning of a kanji can be understood even when it is not known how it should be pronounced.

Different Types of Kanji

Chinese characters have been traditionally (since the publication of the first Chinese dictionary in the second century AD) put into categories based on different criteria relating to character composition (Henshall 1992):

1. The Pictogram (象形文字 Shōkei moji): essentially a picture of a physical object, and usually quite simple;

2. The Sign or Symbol （指事文字 Saji moji): essentially a symbol expressing an abstract concept, and usually quite simple;

3. The Ideograph (会意文字 Kaiti moji): essentially a meaningful combination of two or more pictographs or symbols, and usually quite simple;

4. The Phonetic-Ideograph or Semasiophonic (形声文字 Seisei moji): essentially a combination of a semantic element with a phonetic element, the former usually indicating the general nature of the item to be presented and the latter giving more specific information by lending its sound to express the pronunciation. About 85% of the Chinese characters used in Japan fall into this category.

The Japanese define two additional, rather vague categories based on character usage:
5. Characters of borrowed meaning and pronunciation (転注文字 Tenchū moji);

6. Phonetically borrowed characters (仮借文字 Kasa moji or Kasado moji). (Henshall 1992)

It has been argued that there is a direct visual form-to-meaning process in Japanese (Perfetti 2003). Unlike Chinese, which generally assigns only one reading to each character, Japanese with its variety of readings focuses naturally on the visual image of the kanji. I am suggesting a so that categorization by radicals further increases this tendency. Thus the association would spring from the character or radical to other characters visually related to it. I will also suggest later on in this study the idea that kanji form a conceptual network.

Stroke numbers and radicals

Chinese characters must always be written in the same predetermined order in balance within a square (Figure 16), and thus the number of strokes needed to write one character serves as one basis for their classification. The average number of strokes for a kanji is ten (Taylor and Taylor 1995, 325). In Japanese dictionaries, character classification usually follows the order of radicals' arranged by the number of strokes. Radicals are the basic elements in Chinese characters: for example, the character for 'dark' consists of two parts, 'day' 日 and 'sound' 音. The first one is the basic radical under which the character will be found in a dictionary.

Figure 16: Examples of Stroke order in Chinese Characters

<table>
<thead>
<tr>
<th>Character</th>
<th>Strokes</th>
<th>Readings</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>日</td>
<td>4</td>
<td>6</td>
<td>'sun'</td>
</tr>
<tr>
<td>読</td>
<td>14</td>
<td>2</td>
<td>'to read'</td>
</tr>
</tbody>
</table>
There is a fundamental difference between monosyllabic Chinese and polysyllabic, highly inflected Japanese, and thus writing Japanese solely in Chinese characters became impractical. By about the ninth century, the standardized characters used thus far as phonetics were simplified into kana syllabaries (hiragana and katakana), which were discussed earlier in this chapter. Thus the Japanese writing system consists of the combination of kana, Chinese characters with several phonetic readings, and two types of syllabaries, in addition to the Roman alphabet. All these scripts may be used in the same text, and the script direction may vary on the same page from horizontal left-to-right to vertical right-to-left.

Since logographs disambiguate homophones, it is possible that homophones have continued to exist (and perhaps even increased) historically in Japan because of kana. As a result, it would be difficult to manage without kana in modern Japanese due to the vast number of homophones. There have been suggestions in the past that Japan should move into using solely phonetic syllabaries, or perhaps even the Latin alphabet (the same has been seriously considered in China). Those in opposition have stressed the importance of Chinese characters as a link to history. Diamond (1998, 333) claims that there is a prestige value in Chinese culture and this is why Chinese characters are used in Japanese writing. However, evidently the Japanese have seen practical benefits in using combination of kana and phonetic writing, and since the development of computer programs with Chinese characters, using them has become so unproblematic that there will be no pressure to abolish them. Furthermore, I am suggesting that the unusual Japanese writing system has an important role in the Japanese knowledge-creation process.

A Comparison of the Finnish and Japanese Writing Systems

According to McLuhan (1987, 83-84), the world of meaning and perception secured in the hieroglyph and the Chinese ideogram was lost in the phonetic script. He suggests that the many centuries of use of the ideographic script cict
not threaten the seamless web of family and tribal subtleties in Chinese society, but that a single generation of alphabetic literacy suffices in Africa today, as in Gaul two thousand years ago, to release the individual initially at least, from the tribal web. He considered this the result of a sudden breach between the aural and the visual experience of man, as in the sudden transfer from the magically discontinuous and traditional world of the tribal word into the cool and uniform visual medium.

I suggest that the Latin alphabet and Chinese characters represent two very different tools for processing knowledge. They are not only different ways of writing phonetic sounds, and the ‘kana’ in Japan could be considered to have the character of semasiographic writing in that it also has a meaning independent of the spoken word. In fact, it is possible to understand the meaning of a text written in ‘kana’ without being able to ‘read’ it, as in vocalizing the words. The concept of literacy is thus complex in Japanese.

The phonetic alphabet is an abstract and analytic system of signs corresponding to phonemes in speech. The Finnish alphabet is highly regular and has a close correspondence between sound and letter. The special characteristics of the Finnish language could make the use of the phonetic script perhaps more holistic, as in syllabic scripts. These characteristics make the Finnish writing system highly transparent.

Japanese writing combines phonetic syllabaries, which are more holistic than letters, with the logographic ‘kana’ used in a more visual sense than the characters in Chinese. Thus Japanese writing is based on concrete images and interpretation according to the context in which the characters are presented. To someone from a phonetic-script environment, the Japanese writing system presents itself as opaque. Even for native speakers it takes more than nine years to achieve full literacy in Japanese. However, due to the visual character of ‘kana’, the meaning of written concepts is more transparent than in phonetic writing.
systems. The basic meanings of Chinese characters can be understood across East Asian countries, thus it represents regionally a transparent writing system.

There is tentative evidence that sound-based words yield a right-visual-field advantage, whereas logographs yield a left-visual-field advantage, and that lesions in different areas of the brain tend to affect the use of sound-based and logographic systems differently (Hatta 1977).

In the following section, aspects of script and literacy are discussed in relation to knowledge-processing patterns.

4.3 Literacy and Knowledge Processing

Literacy rates are considered indicators of the health of a society and a barometer of the social climate. Both Finland and Japan are reported to have full literacy. The two countries also achieved the highest scores in the Pisa study of literacy in OECD countries (OECD 2000), although the task of achieving literacy is completely different, both quantitatively (in terms of time and effort needed) and qualitatively (in terms of the skills involved).

Cook-Gumperz (1986) argued that literacy provides not just a technical skill, but also a set of prescriptions about using knowledge. It is not simply a matter of being able to read and write, but processing and exercising these skills we come or socially accepted and acceptable talents. In other words, literacy is a socially constructed phenomenon. Writing systems based on a phonetic alphabet teach very different knowledge-processing skills than logographic writing systems.

From a psychological perspective, literacy is a multifaceted set of instrumental skills involving cognitive processes, which operate in the production and comprehension of texts. Such cognitive processing also underlies the linguistic knowledge needed to decontextualise oral performance and present coherent
written or spoken language (Cook-Gumperz 1986). However, the relationship between performance and spoken and written language is constructed in a different manner in phonographic and logographic scripts.

In the following I will consider language as a way of knowing, and analyse the role in the knowledge-conversion process. Conversion between tacit and explicit knowledge involves both oral and written language, although the script used in writing influences the processing style.

Differences in categorisation are considered here as a result of learning different knowledge-processing styles when using different scripts. The model of cognitive development suggested by Piaget is not considered valid in a culture in which the script is logographic.

I will conclude this discussion with an evaluation and a comparison of how literacy is achieved in Japan and Finland. There are different skills, learning styles and attitudes towards learning, which are associated here with learning to read and write in different languages and scripts. The role of schools and education is also considered.

Language and Ways of Knowing
To what extent do we use language for knowing something? Our sensory system receives information, which is then processed by using language as a tool. We organise the knowledge by comparing it to existing concepts. Since concepts are described in language, our ways of knowing are also limited by it. Thus the structure of language constrains the thought patterns of participants in the culture associated with that language.

Aikhenvald (in Barnett 2004) introduces the concept of 'evidentiality', which means that in some languages, such as Tarana, one has to express not only that one knows something, but also how one knows it, otherwise it is not considered.
reliable. For example, if you talked with someone on the telephone, this would be referred to as 'talking non-visually'. Japanese expressions are also abundant in aesthetic and emotional feelings (Nakamura 1987, 188). Many verbal expressions refer to sensory sources: for example, one 'listens' to fragrances or describes color combinations as 'fragrances' (as in Heian era いろめのかさね).

The Western view of language differs radically from that in the East, and treats it as more parasitic on an *actio ria*, the rational process of abstraction from experience. The core of language is private: "Conventional languages work by translating an inner, subjective, and inherently private mental code" (Hansen 1989, 94-95).

According to Hansen (1989, 94), Chinese thinkers have a unique view of language, some of it motivated by the unique features of (written) Chinese. They treat the mind as an action guide that operates through language. Different theories of language and the mind, in turn, motivate different ethical theories. The Chinese philosophy of language concentrates on the different ways in which it deals with classification, and on permissibility rather than 'truth' (ibid., 106; 119).

Consequently, what are essential in Western theories of language are philosophical concepts such as truth, belief, meaning, and propositional knowledge, which have no adequate counterparts in the Chinese theory. Western theory considers the function of language to be descriptive or representative, whereas Chinese theory considers it in terms of socializing, regulating, and co-coordinating behavior. (ibid., 96-97)

According to Hansen (ibid, 89), the Chinese thinker Mozi (Mo Tzu) believed that general utility was an appropriate gauge of linguistic revision: linguistic reform would result in a psychological change, which would result in an ethical advance. We should make constant the system of word contrasts that best promotes human co-operation in our common interests and spirit. The North-
Korean experiments with deliberate changes in language may be an attempt of this sort.

Allinson (1989, 8) argues that a culture that could learn to function with an alphabet language would be both more theoretically inclined and ex post facto more conditioned to think abstractly than a culture that was inclined, and accustomed, to thinking in terms of concrete images.

The Western mind operates through the indirect, depending on intermediate action and abstract means of words. Aristotelian logic is based on strings of words and sentences. Syllogisms are one example of this type of logic, as Luria (1976, 74) defines it:

"One specific device that arises in the course of cultural development is syllogistic reasoning, in which a set of abstract judgments give rise to objectively necessary conclusions. Two sentences, the first of which makes the general proposition and the second of which gives a specific proposition, comprise the major and minor premises of the syllogism."

An example of a syllogism is: 'Precious metals do not rust. Gold is a precious metal.' The conclusion 'Gold does not rust' seems so obvious that many psychologists were inclined to regard the drawing of such a conclusion as a basic property of human consciousness.

Luria (1976) conducted a study in central Russia in the 1930's and discovered that the process of reasoning and deduction were different among literate and illiterate people. Literate and educated subjects drew the correct conclusions from each of the syllogisms presented, regardless of the factual correctness of the premises or their application to the subject's immediate experience. However, the illiterate subjects made judgments associated with their immediate practical experience, but were limited in capability when they had to change to a system of theoretical thinking. They mistrusted the initial premises that did not arise out of their personal experience, and they failed to accept such premises as universals. This made it impossible for them to accept them as a point of departure. Rather, they treated them as a particular statement reflecting..."
a particular phenomenon. As a result of this, the syllogism dissipated into three isolated, particular propositions, and the subjects had to solve the problems by guessing or by referring to their own experience. Although they could use logical relations objectively if they could rely on their own experience, they had not acquired the syllogism as a device for making logical inferences. (ibid, 79-80)

The system of abstract, theoretical thinking is alien not only to illiterate people but also to cultures using the logographic writing system. Nisbett (2003, 168-70) reports differences between Easterners and Westerners in the evaluation of syllogisms: Compared to Korean students, American students were more in the habit of applying logical rules to ordinary events and thus more capable of ignoring the plausibility of the conclusions. Essential differences between Eastern and Western thought may well be traced to the differences between phonetic and ideographic languages. According to Cheng (1989),

"The non-pictorial quality of the Greek language lent itself naturally to the development of abstract thought more than the picture image quality of the Chinese language".

The syntactic sentence is not focal in the Chinese language. The Chinese character operates directly and immediately as a source of dispositions and skills (Allinson 1989, 6-7). The character for 'heart' (心) contains the meanings of both heart and mind, and it does not have the mental counterpart of words and sentences. It resembles a biological heart, not the brain in ancient Chinese pictographic symbols. Hansen (1989) decided to translate it as 'heart/mind', thus incorporating both connotations. According to Allinson (1989, 7), this reflects an act of philosophical interpretation, which to a considerable extent bridges linguistic and cultural barriers:

"This act, in and of itself, so as a modification of the Western way of understanding, in its effort to understand its Chinese counterpart and in turn may expand the Western concept of understanding."

'Conceptual scheme' has been used as a rough synonym for language. Hansen (1989, 90) uses the term 'conceptual perspective' to mean the practice of
guiding that is enshrined in a language as defined by its pattern of word contrasts and distinctions.

When using language orally or literally, we are not usually aware of any conceptualisation, but when encountering new concepts we are also forced to re-evaluate the existing conceptual system. Concepts in Buddhism offer a place for such reflection. No adequate conception of non-being has ever been conceived or accepted in Western philosophy. Cheng (1989, 203) remarks:

"In the Idealistic metaphysics of Fichte and Hegel, non-being becomes an abstraction as revealed by negation and hence is contradictory to being so that it needs to be 'corrected' out of itself. Hence the negation of negation or the non-being of non-being, which still confirms to the Parmenidean dictum: 'What is, is, what is not, is not.'"

Cheng (1989) raises the question of how the Parmenidean split and deviation took place in the West, and why such a turn was not made in the Chinese metaphysical tradition. He suggests that this was because the Greek language, being a phonetic language, produced an abstraction of thinking more easily than the visual Chinese language.

"This tendency to make abstractions is conducive to transcendent thinking in extensive abstractions and hence to the crystallization of both thinking and the object of thinking in an enclosure of concepts." (206)

However, with its logographic script, the Chinese language is rooted in the concrete representation of the reality of experience both visually and auditorily, and thus a way brings the 'image of the world to metaphysical contemplation.

Language in the Knowledge-conversion Process

Knowledge Conversion, or the SECI model, is at the heart of Nonaka's Knowledge-creation theory. It has been suggested earlier in this study that tacit knowledge could be considered non-verbal and explicit knowledge verbal. Let us thus analyse the role of language in the knowledge-conversion process.
If explicit knowledge is seen in terms of language, tacit knowledge would then represent the idea, experience, or image that resides in our minds. Converting images (tacit knowledge) into words (explicit knowledge) forms the externalization process, which Nonaka and Takeuchi (1995) consider the most critical stage in knowledge creation. If we look upon written words as explicit knowledge, we can see how the externalization process differs across cultures with different writing systems. Externalization means writing and the opposite is reading, which represents the internalization process here.

The combination process involves the conversion of language (explicit knowledge), as in composing a text based on different concepts. Conversion or transfer within tacit knowledge is called the socialization process. If tacit knowledge is understood as nonverbal and thus based on something other than language, it seems to be related to inner images before their conversion into spoken and written words. However, given the fact that the logographic script uses symbols to represent these images, we could think of Chinese characters as concrete images (tacit knowledge) that do not have to be converted into an explicit form. Moraka and Takeuchi (1995) argue that the Japanese are especially skillful in transferring tacit knowledge. Although this may be partly due to management practices and different communication styles, and to the concept of the interdependent self, the processing of knowledge in kanji clearly enhances the transfer of tacit knowledge. Metaphors and analogies are cited as being typical of the socialization process: this is exactly what kanji is about.

The Externalization Process as Writing
All activity is initially rooted in graphic, practical operations. In an oral culture, experience is intellectualized mnemonically (Ong 1990, 36): an image will be linked with a spoken word in a situation-specific way (Luria 1979) (C in Figure 17).
The development of conceptual thinking involving taxonomic forms of abstraction and generalization occurs on literate and formal schooling (Luria 1979, 68). Thus deduction and inference (as in syllogisms) are not part of natural development, but they are learned alongside a specific writing system.

In a culture using the phonetic alphabet, images are first processed into sounds and then into letters. There is an indirect link between the morpheme and the letter-sound relation (Tatst and Tatst 1995, 96). For example, in English, a picture of a bird links with the spoken word [bɔːd] and is written down as BIRD (see A in Figure 17). The process of writing involves analysing the phonetic composition of the spoken word, and starts with the breaking down of the sound stream of living speech into its individual phonemes (Luria 1979, 141).
The Finnish alphabetic script shows close correspondence between sound and graph, and thus may require less analysis of the phonetic composition: the spoken word is the same as the written word (Figure 18).

![Figure 18: Processing images into oral and written words in Finnish](image)

The areas of the brain responsible for the analysis of acoustic-verbal information play a decisive role in the analysis of normal speech into stable phonemes. When these parts of the cortex are injured and the isolation of stable phonemes from the flow of speech becomes impossible, as is often the case in sensory aphasia, writing is disturbed. (Luria 1979, 141)

This process of phonetic analysis and synthesis is unnecessary in languages using ideographic transcription, which represent concepts directly by means of symbols. The graphic shape of a logograph gives its direct meaning (see Figure 17). In Chinese, a phonetic component never maps onto a sub-syllabic phonological representation in the way that a letter maps onto a segment of a word's phonological form in an alphabetic system. Therefore, Chinese writing does not allow the true segmental analysis that is fundamental to alphabetic systems, and quasi-regular letter-sound conversion rules that exist in all alphabetic languages are impossible. Nevertheless, Chinese characters possess a number of strokes that are packed into a square shape; they map onto morphemes, and their meaning is often suggested by visual configurations. (Tan et al. 2003, 159)
Taylor and Taylor (1995, 96) suggest that, in Japanese writing, as more kanji are learned, the more they become used as phonetic symbols and not only as images.

During the first years in primary school, the kun reading (Japanese reading) is taught for most of the kanji, although the on reading (Chinese reading) is used in compound words. The kanji taught at school gradually become more abstract in the sense that, in addition to a concrete visual meaning (one radical), there is also a component indicating the phonetic meaning. Thus, cognitive development implies higher degrees of abstraction but without losing the concrete images.

However, it could be argued that the kanji retain and create a visual image. The Japanese kanji differ from the Chinese characters used in China and Korea in that there are several readings for each one. This places more focus on the visual image of the character even in the case of abstract compounds.

Regardless of whether the connection is real or imagined, the Japanese tend to relate the etymology and original meaning of a word or concept to the pictographic elements of the kanji that is used in writing it. I have observed the Japanese engage in this kind of mapping process on several occasions. Since there are many homophones in Japanese, one has to rely on the visual image in selecting the appropriate kanji.

Reading as an internalization process

A Finnish written word can be easily articulated and associated with meaning (as in Figure 19). Even English spelling, which is notorious for its irregularity, gives some clue to the sounds of unfamiliar words and nonsense words. Thus, explicit knowledge (the written word) is converted into tacit knowledge (meaning) in the internalization process. However, a Chinese character can be sounded out easily in Chinese if it is familiar, but not so easily or not at all if it is unfamiliar. (Taylor and Taylor 1995, 90)
The case is even more complicated in Japanese. Any word written in kana syllabary can be easily articulated, but due to the many homophones it may be associated with several meanings (B in Figure 19). In contrast, kanji cannot be articulated at all if it is unfamiliar, but it will reveal the meaning directly. If it is familiar but in an unknown context (a different combination with other kanji or the kana script) it may defy articulation. However, a reader can understand the meaning of a kanji word even if he or she cannot pronounce it.
Acquiring a spoken-word vocabulary involves learning mappings between phonology and semantics (C in Figure 19), whereas skilled reading of the alphabetic script often involves computation from orthography to phonology to semantics. It has been suggested that the age at which children learn phonology-to-semantics mappings (oral language) could have a residual impact on orthography-to-phonology-to-semantics computation (reading) (Zevin and Seidenberg 2002). Thus there is a relationship between the development of cognitive processing for oral and written languages.

In phonetic writing, phonological awareness and text dependence require that language be treated as an object of attention rather than as a vehicle of communication. Simons and Murphy (1986, 195) showed in their study that children who exhibited phonological awareness were better readers (in the phonetic writing system), and worse use situation-specific language, whereas children who used situation-dependent language would exhibit poor reading skills. Earlier studies have demonstrated that lower-class children adopt different verbal styles and perform less effectively than middle-class children. The fit between verbal style at home and the one used at school seems to be an important predictor of school performance, at least in the phonetic-script environment.

The Combination Process as Abstraction

Luria (1979) studied patients with sensory aphasia who could speak but did not understand spoken language, and those with semantic aphasia, who could understand isolated words but were at loss when presented with relational terms such as 'brother's father' or 'the circle under the triangle'. The latter were able to understand other genitive forms, such as 'piece of bread', which made Luria realize that

"in the attributive genitive constructions there was a conflict between the two words that required the person to make a mental transformation in order to overcome the conflict and to understand the phrase. One had to abstract the immediate, concrete meaning of the word 'brother's' and convert the semantic content of the noun into the semantic content of an adjective; mentally, the sequence had to be reversed." (ibid., 167)
Luria (1979) discovered that, in fact, this kind of attributive genitive developed relatively late in the Russian, German, and English languages. I suspect that it may have developed along with the writing system, which allows abstraction and the rearrangement of words. In Finnish, which has a short written history, we have specific words for this kind of relation between relatives: one's father's brother is 'setä', one's mother's brother is 'eno', son-in-law is 'täv', caugther-in-law is 'määlä', sister-in-law is 'läh' and brother-in-law is 'lauto' on the wife's side, and 'lauto' and 'läh' respectively on the husband's side; mother-in-law is 'äänppä' and father-in-law is 'appi'. Some of these words have become less common in urbanized (and literate) society.

The logographic script does not require this kind of linguistic abstraction process: on the contrary, Chinese characters allow expression of the nuances of concepts. Even the abstract appearing form of language functions differently in the Chinese mind, and thus reveals a different type of mental functioning (Hansen 1989; Allinson 1989, 8). Thus in Japanese too, the combination process is a matter of connecting knowledge by association, which does not require abstraction.

The Socialization Process as Categorization

A category refers to a set of objects that go together, i.e. that can be accessed, processed, or simply regarded as a whole. The objects that constitute a given category are members, or instances, of it. Categorization is the process by which human beings create their categories, the mental representations of which are called concepts. The prototype is the most salient member of a given category. (Gurina 1999) Basic categorization does not presuppose language and it is not innate to human beings: even cogs can categorize people and animals they know, or accept or reject. Types of categories that humans use vary at different ages, and it is argued here that they are so influenced by language.

When the development of cognitive skills is considered from the viewpoint that language, including written language, is a tool for processing knowledge, we
could argue that there are three different types of categorization. The first takes place prior to the acquisition of language, and it is called *Non-Verbal Categorization* here. It is part of the socialization process in knowledge creation. The other two are labeled Concrete and Abstract Categorization (part of the combination process); it is suggested that different writing systems enhance these two latter types. In the following I will compare Piaget’s theory of the cognitive development of the child (Atherton 2002; Dasen 1977; Piaget 1959) with Vygotsky and Luria’s (Luria 1979) ideas about the role of language in cognitive development. The essential difference in these two approaches is that Piaget considered the development of abstract cognitive skills a natural age-related process, whereas Vygotsky and Luria maintain that literacy enhances the development of abstraction and generalization skills. It is my view that abstract conceptualization is linked with literacy in phonetic scripts, whereas concrete conceptualization is typical of oral cultures and literate in logographic scripts. Thus abstract categorization is not the highest form of development in cognitive skills, as Piaget maintains, but it is rather one type of conceptualization.

1) **Non-verbal Categorization**

Luria (1979) notes that, during the early stages of a child’s development, words are not an organizing factor in the way that the child categorizes his or her experience. The small child perceives each object in isolation since he or she has no logical principle for grouping them.

According to Piaget, this is Stage 1: the Sensorimotor stage (before the age of two) when language is not a concept and the child’s body is with its immediate environment. At the beginning of this stage the child starts differentiating one object from objects, recognizing oneself as an agent of action, and acting intentionally (for example, it puts a string to set a mobile in motion or shakes a rattle to make a noise). Piaget maintains that the child is capable of classifying processes at all at this stage. (Atherton 2002; Dasen 1977; Piaget 1959)
Given the fact that psychological development is an outcome of interactions between a biological organism and environmental influences, there are cultural differences even at this stage of cognitive development. There are several cross-cultural studies comparing child-rearing practices and the behavior of newborn babies. The conclusions point out that, although child-rearing differs from one culture to another, there are also some common dimensions (Berry et al., 1992). Caudill and Weinstein (1974) maintain that infants have learned by three-to-four months of age to respond in culturally appropriate ways. It is evident that the way of experiencing the world will be different when the infant is isolated in a baby carriage than when it is carried on the mother’s back, for example. Hoffer (1981) suggested that the invention of the baby carrier could have influenced the relatively slow infant motor development among humans.

Arai et al. (1958) used Gesell norms (established on American children) to measure the development of Japanese children from one month to 36 months. The Japanese infants were found to match the American norms in the areas of motor, cognitive, and language development in the age period from four to 16 weeks. After that, there was a steady decline from the norms for both motor and language development, from four to 36 months of age. Children with a cognitive quotient between 90-119 showed a language aptitude (the weakest behavior) that was 66.0 percent of the norms. The point here is not that the Japanese children were somehow less capable because they could not match the American norm, but that such differences showed cultural adjustment. Caudill and Weinstein (1974) also came to this conclusion.

It seems that non-verbal categorization is based on the culturally different ways of experiencing the world. This even before language starts to influence categorization; tacit knowledge is influenced by culture.

2) Concrete Categorization

during the next stage of categorization, the child begins to compare objects on the basis of a single physical attribute, such as color, form, or size. However, in
making these comparisons, it quickly loses sight of the attribute it originally singled out as the basis for selecting objects, and shifts to another attribute. As a result, it often assembles a group or chain of objects that reflects no unified concept. The logical structure of such groupings, in fact, often suggests a family in which one individual is included as the 'son' of a central figure, a second as the 'wife', and so on. This type of group structure can be detected when objects are incorporated into a general situation in which each participates on an individual basis. An example of such a grouping would be a 'meal' in which the chair is used to sit on at the table, a cloth is used to cover the table, a knife to cut the bread, and plate to put the bread on, and so on. (Luria 1979, 67)

Radicals of kanji link different, even unrelated concepts together in the same manner. This is discussed later in this study in relation to the conceptual network created by kanji.

According to Piaget, this type of categorization marks Stage 2: the Pre-operational stage (ages three to six approximately). The child learns to use language and to represent objects with images and words. He or she orders events into series and classifies objects by a single feature (for example groups together all the red blocks regardless of shape or all the square blocks regardless of color). Thinking is still egocentric: the child has difficulty taking the viewpoint of others. (Atherton 2002; Dasey 1977; Piaget 1959)

Luria (1976) discovered later that this kind of concrete categorization was not limited to a certain age, but that literacy and education had an impact on it. He studied illiterate and half-literate people in the remote regions of Uzbekistan and Kirghizia in 1931-32, during the Soviet Union's radical restructuring aimed at the elimination of illiteracy. The illiterate subjects in Luria's study created concrete groups on the basis of 'situational' thinking that was extremely resistant to change. They made generalizations on the basis of concrete experience.

37 Originally called "Pre-operational stage."
Concrete categorization seems to be typical of oral societies, and it could be argued to be fundamental in the logographic writing system. A question that has become classic among linguistic anthropologists was also raised by Luria (1979, 66):

"Man can perceive three million different hues, but there are only sixteen to twenty names for colors. Does that mean that the perception and classification of hues vary with the names of different colors themselves? Or does language and practical attitudes toward colors evoke any changes in how people perceive and classify them?"

The uneducated subjects in Luria's (1979) study labeled the colored pieces of wool with the names of similarly colored objects in their environment. For example, they called various hues of green by the names of different plants: 'the color of grass in the spring', 'the color of mulberry leaves in the summer', 'the color of young peas'. There is a striking parallel in this to how the Japanese name colors: a Japanese person shown some shade of 'gray' would describe it as 'gray'; 'mouse'; or perhaps as 'shūgōyū', all translated as 'gray' in English, although the visual image of the character and the Japanese word refer to these as 'ash color', 'mouse color', and 'pigeon wing color' respectively. No general word for gray exists in Japanese, although the English word can be written in a Japanese katakana syllabary _workflow
The same applies to basic colors in Japanese. Although red, blue/green, black, white, yellow and so on are used as general categories, the 深い (Chinese character) that are used to write them are also associated with some visual images. This abstract concept of color does not exist in Japanese. Although the Japanese (or Chinese) may not always be conscious of the visual connotation, the logographic writing system creates an alternative tool for organizing knowledge with the phonetic script.38

NOTE: It is probably possible to describe colors in this way in all languages, but it is striking that in 深い, one can actually 'write down' an image of, say, ageha-yotani (鰭色). The written language allows the continuation of this kind of concrete thinking.
3) Abstract Categorization

The concrete categorization of colors disappeared in Luria's literate subjects, whose responses were dominated by the categorical color names, and who readily classified similar colors together. He discovered (1979, 68) that categorical thinking was not just a reflection of individual experience, but was also a shared experience that a society could convey through its linguistic system:

"The reliance on society-wide criteria transforms functional-grap tic thinking processes to a scheme of semantic and logical operations in which words become the principal tool for abstraction and generalization."

In other words, language, and especially achieving literacy, enhances taxonomic and abstract thinking.

In Piaget's theory, Stage 3: the Concrete Operational stage (ages 7-11) denotes the gradual movement toward abstract categorization. The child can think logically about objects and events, and learns not only to recognize series of events, but also to coordinate one series with another. He or she can classify objects according to several features and order them in series along a single dimension such as size, and also achieves conservation of number, mass, and weight. (Atherton 2002; Daser 1977; Piaget 1959) Finally, at stage 4: the Formal Operational stage (around the age of 12), the child is able to think logically about abstract propositions and test hypotheses systematically. He or she becomes concerned with the hypothetical, the future, and with ideological problems.

Vygotsky and Luria (1979) also suggested that by the time children reached adolescence they no longer generalized on the basis of their immediate impression, but rather categorized by isolating certain distinct attributes of objects:

"Each object is assigned to a specific category of relating it to an abstract concept. After establishing a system for including diverse objects in a single category, adolescents develop a hierarchical conceptual scheme.

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39 Originally called "Pre-operatory stage."
40 Originally called "Operatory stage."
that expresses increasingly greater degrees of community. For example, a rose is a flower, a flower is a plant, and a plant is a part of the organic whole. Once a person has made the transition to this mode of thought, he focuses primarily on the 'categorical' relations between objects, not on the concrete way in which they interact in real situations." (Luria 1979, 67-68)

Piaget's theory of conceptual development has been widely accepted, and a great deal of further research on cognitive science and pedagogy has been based upon it (Dasen 1979). Considered in terms of literacy and education influencing cognitive development, his stages seem to match neatly with the age at which exposure to the written text is introduced (pre-school at the age of four), and when abstract logic based on the phonetic alphabet and Western scientific thinking becomes internalized after several years at school.

Piaget's work has also been criticized over the years. There have been doubts about the premises of his method, and rival theories of cognitive development have been introduced (for example, the Prototype View revised by Rosch 1978) (Gurova 1999). Gell (1992, 105-106) pointed out that the pedagogical milieu of the Maison des Enfantes in Geneva imposed itself in forming the background assumptions to Piaget's research, and is incidentally the primary reason for their being of little cross-cultural applicability. Piaget did not raise the problem of the contextual sensitivity of knowledge. What Gell (1992, 109) means by contextual sensitivity is that how much a person 'knows' about the world depends not only on what he or she has internalized and what, so to speak, is in his or her permanent possession, but also on the context within which this knowledge is to be elicited, and by what means.

"A basic premise of Piaget's method is that it is feasible, under experimental conditions, to identify cognitive abilities in isolation from any specific context of application, to drive a wedge between 'thinking ability' and the everyday contexts in which thinking is practiced." (ibid., 110)

Gurova (1999) suggested that Piaget's theory of intelligence did not so much represent the classical view of categorization, as had been thought. Piaget considered mature thinking to be logical thinking, which presupposes the
existence of well-defined concepts with clear-cut boundaries. However, one can recognize the elements of the challenging theories in his model of cognitive stages with its different mechanisms of categorization. For example, the Prototype View corresponds well with the Pre-operational stage in Piaget's model, and the Classical View describes the categorization at the last, Formal Operational stage. Gurova (1999) proposed that human beings preserved their ability to thinking prototypes during their whole life. She also poses questions for future research: Is it really true that scientific thinking requires classical clear-cut categories? How would science be different if it were reformed on a different categorical basis?

It is proposed in this study that categorization by prototypes is inherent in cultures using the logographic script. Chinese characters or Kanji create a conceptual system of their own, which allows associative logic.

According to Vygotsky, in this type of concrete categorization the determining factor in classifying objects into situations comes from a functional-logographic perception, or on remembering real-life relations among objects, rather than on a word that allows one to single out a common attribute and denote a category that logically subsumes all objects (Luria 1979, 67). This is typical of older preschoolers and elementary-school children.

**Kanji as a Conceptual Network**

It was mentioned earlier that the Chinese philosophy of language is focused on how language treats classification (Hansen 1989, 106). This is natural in a language that uses Chinese characters. I am suggesting that Kanji characters are not just script: they are concepts, which represent categories. Before written

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41 According to the Prototype View of categorization, every category processes one or more salient members, which are called prototypes. Category membership is determined by the similarity of an object's attributes to the category's prototype.

42 The Classical View of categorization represents the conventional way of thinking about categories and concepts in modern science. It is based on well-defined concepts with clearly defined attributes, which are the only scientifically acceptable concepts.
Chinese was standardized, the Chinese characters were relatively more varied and more pictographic. They were more intuitively recognizable as pictures, as is the case now in Japanese. Historically the han characters, which constitute most of the Japanese kanji, are relatively more pictographic than the simplified characters promoted in modern China.

The system of classifying Chinese characters according to 214 basic elements or radicals evolved some three centuries ago, and is still used in Chinese and Japanese character dictionaries. Radicals could be considered prototypes, which are the most salient members of categories. In the Japanese writing system, kanji characters using the same radical may constitute categories. Moreover, since many concepts are represented by kanji compounds, these comprise families in which even contradictory concepts may belong to the same group.

Radicals tend to be used as semantic categories even in constructing otherwise phonemic characters - the most frequent composite character type in Chinese. For example, the phonetic ma with the 'earth' radical means dust, with a 'hand' radical means touch, and with a 'stone' radical means grind. In phonemic characters, one of the units contributes a hint as well as some meaning. It is a hint because the characters work for all Chinese spoken languages over time. This means that it may be a perfect match for any specific language (modern or ancient), and the barest hint for another. It is assumed that this was true of the characters when they were created. The phonemic element in modern simplified characters is usually more pure phonemic. (Hansen 1989, 77; 120)

Ancient written Chinese specified more than homophones in the spoken language: Hansen (1989) suggests that some characters were invented so as to capture theoretically important distinctions that spoken language did not mark. As an example he gives pian 'distinction', which has the same structure as pian 'choice'. They differ in that, between the two vertical units being divided, the former has a pian 'language' radical while the latter has a cao 'knife' radical. It
is presumed that this marks an awareness of the distinction-making character of language.

From the knowledge-management perspective we cannot ignore the key role of Japanese *kanji* as a conceptual system. Although *kanji* are part of the script used to write Japanese, I think that they are actually *zippered concepts*. The hours spent in Japanese schools learning the *kanji* are not hours spent in memorizing script in the same way as with an alphabet. The Japanese do not repeat 'a' and 'b' and 'c' in order to learn how to read and write. By the end of their first year at primary school children have already learned hiragana, the phonetic syllabary that can be used to write any Japanese word. After the first term reading and writing are devoted to learning concepts signified by *kanji*. (See Appendix 1)

The *kanji* conceptual system is based on visual images and association (Figure 20). Learning a *kanji* means learning not only a word, but also a concept. For example, when primary-school first graders learn the *kanji* 青, written with eight strokes in the same order, they learn the concept of 'blue/green' and 'pale' color, and also the metaphorical meaning 'young, unripe, inexperienced'. This *kanji* is a combination of two radicals: a simplified version of a growing plant (*life*) 生, and a simplified version of a character, which originally indicated 'well' 井. This the visual and etymological meaning of this *kanji*'s 'growth around a full well, which is fresh and green'. (Henshall 1992, 13) Green overlaps conceptually with blue in Japanese, and also has a figurative association with immature and young, as in English.
Figure 20: Association of Concepts '青' (‘Yu’)

This relatively simple kanji can be pronounced in three different ways (SEI, SHū, ao-), depending on the context, i.e. the kanji or word compounds that it is part of. It has the Japanese pronunciation (Kun-reading) 'ao' in the color 青い (aoi) green/blue, or in compounds such as 青空 (aomori) blue sky, 青物 (aomono), greens, vegetables. It has two Chinese pronunciations (On-reading), SHū and SHō when combined with 青 when 青 is 青空 (aomori) a youth, and SHō as in 青空 (rotasado) verdigris, copper
The concept of 'blue green - young' is there in all compounds although the phonetic value is different. Thus the kanji carries conceptual meaning. A primary-school first grader may not be able to pronounce the compound 青玉 (seigyo), but he or she may well understand that it's a green blue jewel (sapphire). Compare this to asking a first grader what a 'sapphire' is - although able to read the word, he or she does not know it without having been exposed to it earlier.

Kanji concepts are linked to each other in compounds, and also by radicals, parts of characters. This creates a wide network of associations between multiple kanji. The kanji presented above, 青, is itself a radical and, together with 争 (sō), meaning conflict and quarrel, forms 静 (earned in the fourth grade), which can be pronounced sei, jō, or saō, and means 'quiet', 'calm'. Scholars do not agree on the etymology of the character: some say the latter part acts phonetically to express 'beautiful', thus 'beautiful green', while others claim that the first part, partly phonetically and partly within, carries the meaning of 'clear' and thus the meaning of the character would be 'clear of conflict'. (Henshall 1992, 160)

Debate on the origin of individual kanji mainly interests linguists, and ordinary Japanese use them in different compounds unaware of these disputes. When learning the kanji 静, Japanese children also learn the latter part of it, 争 (sō, arasō), in its meaning of conflict and quarrel, and the compounds 戦争 seiso (war) and 競争者 kyōsōsha (competitor).

This associative way of combining kanji and their radicals results in some surprising concept connections: 'green' connects through 'quiet' to 'war', which does not follow any rational logic.
Learning by Analogy and Metaphor

Nonaka and Takeuchi (1995) underscore the role of metaphors and analogies in the knowledge-creation process. Analogies may be used as explanatory tools to introduce new concepts. It seems that human beings are predisposed to think analogically, and they will use analogies, consciously and unconsciously, during explanation (Glynn et al. 1998, 195).

Meaningful learning means constructing knowledge actively; it is the process of integrating new knowledge with existing knowledge. It has been suggested that, in order to learn complex concepts meaningfully, students should learn them relationally, not by rote. Concepts are to be learned as information networks rather than as lists of facts. Glynn et al. (1998) suggest that when learning becomes relational rather than rote, it becomes meaningful and also interesting: "Like playing with an erector set, the process of joining new knowledge to existing knowledge intrinsically motivates students." (196)

It seems that experts are experts, not just because they know more facts than novices, but because their knowledge exists in the form of interrelated networks:

"The construction of conceptual relationships enhances an expert's working memory and long-term memory performance. Because the expert's knowledge is relational, it is easily stored, easily retrieved, and successfully applied." (Glynn et al. 1998, 196)

Kanji as a conceptual network operates exactly in this way. It has been thought, mistakenly, that learning to read and write in Japanese is learning by rote. However, learning kanji is not the same activity as learning the phonetic alphabet or even words written in it. Each kanji is a concept described within a square with a decisive stroke order. Learning to write a kanji develops understanding of the concept, it is not automatic repetition. It builds on previous, learned concepts (radicals), which makes learning meaningful. Learning and using kanji facilitates concept mapping (Novak 1990, in Glynn et al. 1998, 196), and it also constructs relationships among different, but in some ways similar, conceptual networks.
Glynn et al. (1998, 1996; 204) maintain that carefully crafted analogies can serve as initial mental models that function as explanatory tools. These analogies may help in building bridges between existing and new knowledge. Chinese characters form such analogies, which have been carefully crafted over the millennia.

Chinese Characters as Tacit Knowledge

There are several characteristics of Chinese characters as they are used in the Japanese language that suggest their role in the socialization process. As I have maintained earlier, they could be considered not only script, but also 'zipped' knowledge, which contains certain nuances and associative meanings as described below.

1) *Kanji* differentiates homophones. This is probably the reason why so many homonyms continue to exist in Japanese. The effect is a stronger focus on the visual image of *kanji* than on the sound.

2) *Kanji* may give the direct meaning of words: *geshi* 'summer depart' is more immediate and understandable than 'summer solstice' (ibid, 325).

3) *Kanji* express subtle or not subtle differences in meaning that can be expressed in the native word. For example, the Japanese verb *toru* can be written in five different official *kanji*, one each for 'take', 'pick', 'catch', 'execute (a duty)', and 'take (pictures)' (Taylor and Taylor 1995, 325).

Taylor and Taylor (1995) continue with another example: the verb *naku* ('cry') is used indiscriminately in Japanese for the cry of all kinds of animals. It is written with two official *kanji*: 唱く (for 'a bird chirps or sings') and 嘆く (for 'a person...
cries'). In addition there are several unofficial kanji (meaning 'kani' that are not 'official' use in present-day Japan), for example one each for 'a chick cries', 'a cat meows', and a 'lamb bleats'.

(4) Kanji promotes 'zipped' knowledge: reading the characters is a holistic process, which gives understanding of the meaning in a flash. They stand out in the mixed-text script ('ibid', 330). As one native learner put it: "When I look at print in Japanese, characters sink into my brain in meaning units with little effort, whereas this immediacy is often lacking in English." (Kubota 2001, 106)

(5) Kanji is embodied knowledge. It involves much rote memorizing, it takes time and effort, and is second perfect (Taylor and Taylor 1995, 335). However, this rote memorizing is not so much a mental activity as kinesletic learning. Since the stroke order is determined, the kanji may become part of the 'physical memory'. When they are talking, the Japanese sometimes 'draw' the kanji on their palm or in the air with their hand if there is uncertainty or ambiguity about its meaning.

(6) Kanji is complex: there are readings in two very different systems (Old Chinese pronunciation and KUN Japanese pronunciation), and the shapes are complex (the average stroke number is 10). It takes more effort and time to write kanji than to write the phonetic script. However, studies have shown that the complexity does not affect memory. In fact, more complex kanji are memorized better than some simple ones.

(7) Kanji are numerous (even just the common characters plus those for personal names amount to 229). This knowing and using them is an ambiguous task, and one cannot be perfect in that. People often make errors when writing kanji.

(8) Kanji is an image. Readers can retain the meaning of logographic characters even if they forget how they sound. Taylor and Taylor (1995, 334-335) remark
that one of the disadvantages is the lack of systematic relations. Even the mnemonic values and cues do not amount to a tight system, which makes mastering a large number of complex kanji difficult. There is logic in the system, but it is based on association.

The special character of the logographic writing system promotes the consideration of concepts such as network, and develops associative logic. The phonetic alphabet, in contrast, promotes abstract thinking based on linear logic. The fact that the Japanese writing system combines both logographic script and phonetic syllabaries suggests an interesting combination of knowledge processing. However, since learning the minimum number of required kanji takes over ten years, whereas the phonetic script can be learned within months, the cumulative effect of logic and learning style associated with kanji could be expected to prevail.

Achieving Literacy as a Learning Process

Language plays a major role in formal education: most of what is taught at school is transmitted either by oral language (the teacher’s oral presentations) or through written language (textbooks and reference works). In order to succeed in school a pupil must have an adequate command of the linguistic skills of listening, speaking, reading, and writing. In addition, the interactive nature of linguistic communication affects the learning. (Wells 1986, 69) Formal education is based on language, especially oral and written language. The beginning of education consists of learning reading and writing skills, i.e. achieving literacy.

According to Simons and Murphy (1986, 186-187), entry into school marks a major social, linguistic, and cognitive transition for children. Children, who must learn to communicate and operate outside their home network with adults and peers who do not share their communicative background, they must develop new language-use skills in order to participate in classroom activities,
to gain access to learning opportunities, and to demonstrate what they have earned.

The major focus of schooling is on teaching literacy. This requires that the child has to learn to shift from his or her home-based conversational discourse strategies, which depend on multi-level linguistic inference, to the more discursive strategies preparatory to written expository prose. It is this transition between speech and writing that makes the achievement of literacy more difficult. Recent research has suggested that distinctions between spoken and written language are to be found at the level of discourse (Collins and Michaels 1986, 207-208).

When learning to read, children must be conscious of their primary linguistic activities - listening and speaking. This awareness has been called metalinguistic awareness. It is the ability to focus on the language itself as an object rather than on the meaning or intention of the communication. (ibid, 193)

Metalinguistic awareness may be critical for learning to read in phonetic writing systems: it allows the segmentation of spoken sentences into words and of words into phonemes, and the focusing of attention on the phonological, lexical, syntactic, semantic, and practical levels of language. This type of metalinguistic awareness is not necessary for reading in a logographic writing system. It has been suggested that metalinguistic awareness could also develop as a consequence of learning to read in a phonetic script (Simons and Murphy 1986, 194).

Cook-Gumperz (1986, 3) claims that learning to read and write is not equivalent to learning other instrumental skills, for literacy is a metacognitive process that makes other cognitive and social development possible. The acquisition of metalinguistic skills in school requires that children focus on the form of the language, particularly on the phonological level, rather than on the content or
meaning (Simons and Murphy 1986, 194-195). This phonological awareness is not necessary in learning Kanji.

Hansen (1989) stresses the supra-linguistic role that the Chinese written language (Chinese characters) plays among the numerous oral languages. This is a role that is occupied by ideas or concepts in Western theories. Learning to read and write in Japanese means learning concepts and ideas, not merely practicing a writing system. The conceptual system carried by Kanji is analyzed later in this section.

Luria (1979, 142-143) describes the process of learning to write in the phonetic alphabet as follows:

"In the first stages of learning to write, saying a word often helps the writer to write it correctly. By pronouncing the word, he has analyzed its articulation. (...) Once the speech stream has been correctly analyzed, the writer must translate the isolated phonemic unit into its proper visual or graphic unit. He must choose the necessary visual sign from the large number available, matching it to its spatially organized strokes to the auditory stream. (...) In the next stage, visual images of letters are transformed into motor acts. In the early stages of learning to write, the motor process of writing consists of an extended series of steps, and the changes from one step to another occur as discrete acts. As the process of writing becomes more automatized, the motor acts increase in size, and the person begins to write whole letters at once, or sometimes firmly established combinations of whole letters. (...) When writing has become an automatic act, some words, particularly those that are familiar, come to be processed by a single, coherent movement and lose their syllable-sequential nature. (...) Writing, like any activity, requires the maintenance of a constant purpose or plan and continuous feedback concerning the results of the action."

Writing may become so automatic that some people with brain damage continue to write even if they no longer understand what the words mean (Luria 1979).
The Sign-reading Challenge

Recent findings of the OECD PISA study rank Finland, Japan and Korea as the top three in reading literacy. This is surprising if one compares the sign-reading challenge for the Finns and the Japanese (Table 12). Achieving literacy in Japan and Finland are very different types of tasks.

<table>
<thead>
<tr>
<th>Language</th>
<th>Characters</th>
<th>Pronunciations</th>
<th>Total Signs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japanese</td>
<td>about 8,000</td>
<td>26</td>
<td>10</td>
</tr>
<tr>
<td>Chinese</td>
<td>Kana</td>
<td>Arabic</td>
<td>2,000</td>
</tr>
<tr>
<td>- with different pronunciations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- complex, need interpretation in different contexts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- takes years to master, minimum 9 years of compulsory education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finnish</td>
<td>29</td>
<td>Arabic</td>
<td>39</td>
</tr>
<tr>
<td>- simple, easy to sound out, always carry the same meaning (sound)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- can be earned during the first school year</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

"Older generations of Finns also learned Latin numerals (I, II, III, IV, V, VI, VII, VIII, IX, X, L, C, D, M...), but they are less common now: children see them in history books but cannot normally use them."

Table 12: The Sign-reading Challenge for the Japanese and the Finns

It is easy to learn the hiragana syllabary, much easier than learning to read and write in English (Tobin et al. 1989 57). Reading the Finnish alphabet is also similarly easy because of the close correspondence between the phonemes and the letters. Although reading literacy comprises more than just the ability to read and write the vernacular script, it is possible that, since the Finnish, Japanese, and Korean phonetic scripts have a close correspondence with the phonetic sounds, and consequently are easy to learn, more time and effort is

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44 Reading literacy is understanding, using, and reflecting on written texts, in order to achieve one's goals, to develop one's knowledge and potential, and to participate in society." OECD PISA Study, 2000

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available for understanding and using the written text. For the Japanese, 'learning
Kanji' actually means learning new concepts, not just new 'letters'.

Many, perhaps most, Japanese children learn to read the hiragana syllabaries at
home (Tobin et al. 1989, 57). Japanese parents feel that many crucial skills, such
as playing, sharing and empathizing with other children, cannot be taught at
home. Parents can teach reading, but not how to be a member of a group or to
socialize to the role of a student.

The large quantity and complexity of the characters affect the way people learn
and use them. This way of learning and associative use of knowledge also
graces their later knowledge processing. Table 13 compares in number and
complexity the logographic characters to the letters in the English and Finnish
alphabets and to the signs in the two forms of Japanese syllabary.

<table>
<thead>
<tr>
<th>Chinese Characters</th>
<th>Japanese Hiragana</th>
<th>Japanese Katakana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>3,500 in Chinese</td>
<td>1,800 in Japanese</td>
</tr>
<tr>
<td></td>
<td>2,000 in Japanese</td>
<td>1,100 in Hiragana</td>
</tr>
<tr>
<td></td>
<td>Large and open</td>
<td>Small and closed</td>
</tr>
<tr>
<td></td>
<td>Complexity</td>
<td>Complexity</td>
</tr>
<tr>
<td></td>
<td>1-64 strokes</td>
<td>1-6 strokes</td>
</tr>
<tr>
<td></td>
<td>(smaller set)</td>
<td>1-6 strokes</td>
</tr>
<tr>
<td></td>
<td>1-64 strokes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(full set)</td>
<td></td>
</tr>
</tbody>
</table>

Table 13: The Complexity and Number of Graphs in Logography vs. the Phonetic Script

It seems that the complexity (i.e. the number of strokes) of Chinese characters
does not affect the memorizing of them. Both Chinese and Japanese studies
show that, since readers perceive the characters as a whole, the complexity has
no effect. The more frequent (in occurrence) and familiar the characters are, the
more quickly they are learned, regardless of their complexity (Taylor and Taylor
1995, 59). It may be that kanji are also easier to learn because they are symbols. Gardner (1984, 266) suggests:

"Because human beings are meaning-seeking and meaning-creating entities, symbol systems are the preferred mechanisms for the development and cultivation of intelligences."

Mechanical exercises such as copying stories or poems from textbooks are commonly used as homework assignments in elementary and sometimes in secondary schools in Japan. The National Curriculum Guidelines (Course of Study) for elementary school include 'sight copying' and 'dictation' as one of the activities for first-, second- and third-grade Japanese language instruction. Japanese teachers believe that copying allows the practicing of kanji in contexts rather than in isolation, and it helps pupils to become aware of effective expressions and text organization. The approach is based on the idea that repeated practice of established forms builds a foundation for self-expression.

(Kubota 2001, 100)

However, repeating kanji also means learning the concepts they represent. Kubota (ibid, 101) recalls how she engaged in interaction:

"As I was in junior high school (from the seventh to the ninth grade), writing increasingly became a support skill for learning the content of subject matter such as social studies and science. My social studies notebooks are filled with definitions of terms, summaries of historical events, and so on. (...) Writing was not only for academic but also for social purposes."

Rather than being a specific writing assignment in the Japanese language class, writing kanji is an important aspect in essay tests on world history, ethics and philosophy, for example, and writing has become an increasingly important part of socialization. Kubota (ibid, 102) recalls how she exchanged with her peers what was called 'exchange diary', which was written casually in a notebook and circulated among a specific group of friends.
The Capacity to Learn and Learning Intent

Earlier discussed earlier (Chapter 3.1), Hamel's (1990, 91) idea that the capacity to learn is based on learning intent. It is claimed in this study that achieving literacy as the primary tool for organizing knowledge has a twofold influence on learning capacity: (1) types of scripts in the native language determine the individual's potential (transparency) to learn; and (2) the desire to learn (latent) reflects the general attitude toward learning assumed in the process of learning to read and write.

March and Olsen (1979, 60) pointed out that learning was a form of attitude formation. Cultural mores (understanding of the world) influence attitudes towards learning. Ogbu (1992, 535) refers to a study of Black American high-school students according to which many behaviors associated with academic achievement (speaking standard English, studying long hours, striving to get good grades) are regarded as "acting white", which produces a negative attitude toward learning.

In the West, we seem to prefer easy learning and fast memorization. "Complex and difficult" have negative connotations, although one might think that the bigger the challenge the more one can earn. For some reason we build our muscles in gyms, but select the easy way for our brain (by using calculators, the memory function in mobile phones, and so on). We seem to value:

- Learning more quickly: Jean Piaget complained that Americans nearly always asked him the same question (what he called the American question) about his work: "How can children be accelerated through your stages of cognitive development?" (Tobin et al., 1989, 173).
  American parents are very keen to know if their children have been taught to read at preschool.

- Selecting the easy way: Duke (1986, xv) compares Japanese schools with American schools and quotes in his preface a social studies teacher in one of the leading high schools in southern California saying that her
students read very little and only few make an effort to prepare for the SATs (the Scholastic Aptitude Test used as a critical measure when selecting students for university entrance).

Comments by experts on Asia about the Chinese and Japanese writing systems reveal more about the Western attitude than about the writing system itself.

Varley (2000, 37) notes:

"...the Chinese are among the world's greatest record-keepers. They revere the written word, no doubt even more so because of the evocative nature of their ideographic script, and they transmitted this reverence for writing to the Japanese at an early date."

Thus he is suggesting that there is something weird about respecting a conceptual system represented by Chinese characters.

One of the leading Western experts on Japanese culture and history, Edwin O. Reischauer (1989, 28-29), wrote:

"Had Japan been the neighbor of some Western or South Asian country using a phonetic script such as our own alphabet, the Japanese would have quickly learned to write their native tongue with efficiency and ease. Unfortunately, geographic accident decreed otherwise, and the Japanese were burdened with the most cumbersome of writing systems. Like the youth of China, the young people of Japan were sentenced generation after generation to years of mentally numbing memory work simply to earn the recitations of writing."

Certain Western experts on Japanese literature consider the Japanese writing system 'cumbersome'. Indeed the West has suggested several times that the Japanese should start using a more simple system:

"After the end of the Second World War a mission consisting of twenty-seven American educationalists recommended to General MacArthur a drastic overhauling of the Japanese education system. They called especially for the abolition of the 'Chinese-derived ideograms', since otherwise Japan could never hope to achieve technological parity with the West!" (Gaur 1995, 24).
If we agree that Japanese is the most complex written language in the world today, we might like to know why the Japanese insist on keeping such a system. There is certainly the historical link (discussed in the next section) and the aesthetic dimension, but even just as a learning exercise, achieving literacy in Japanese extends one's capacity to learn. While learning the concepts one also learns how to process new knowledge in a very special way.

4.4 The Literary Tradition as Collective Memory

The effects of literacy are both direct and mediated. Literacy was discussed earlier as an activity on the individual level. However, the literary achievements of a society also have an impact on cognitive capacity and skills.

The development of writing and increased literacy in a society shifts the focus from the auditory sense to the visual, which is a slow process. Foster (1965, 167) remarks:

"Usually the desire to read and write comes late in the development of peasant society. Villagers do not look upon literacy as an abstract thing that is good in itself. It is something that takes time and hard work, and even if it is achieved it has no meaning for most people."

Medieval readers in Europe, even highly 'literate' ones, read aloud or inwardly recited the text. Because the written word was dominated by the spoken word, forms of recognition and retention were auditory; language was fixed and operative through acoustic images. (Hirst and Woolley 1982, 38)

Although literacy may initially be part of the life for only the privileged few, native literature accumulates over years and builds on the nation's literary tradition. Chinese characters form an uninterrupted history dating back perhaps even to 6500 BC (Heft 2003). The prehistoric symbols on tortoise shells found in Jiahu are still recognizable by modern Chinese or Japanese readers. Thus the Chinese characters can be said to carry the collective memory across generations in China, Japan, and Korea.
Comparing themselves with the Chinese in their long historical traditions, the Japanese often consider their own literary culture relatively new. However, for over a thousand years the Japanese have been building their own literary traditions, which have influenced the ways in which modern Japanese conceive of the world.

The history of Japanese writing started in the 4th and 5th centuries, when Chinese characters were introduced to Japan through Korea. Religion (Buddhism) also had an important role in promoting literacy. Initially, it was only a small circle of Koreans, Chinese immigrants, imperial family members, and aristocrats who were literate. However, they were soon joined by Buddhist monks and priests, who started teaching reading in temples. Chinese-style centralized bureaucracy during the Taika Reform (645-649) required many literate bureaucrats, and an institute called Daigakuryô ('the University') was consequently set up in Nara. This was where about 430 sons of the nobility were educated in Confucian literature. Each province also had totaga ('national learning'), through which the sons of the provincial nobility were educated. (Taylor & Taylor 1995, 364-365)

The earliest Japanese writings were two history books (Nihon Shoki, Record of Ancient matters, AD 720; Nihon Shoki, Chronicle of Japan, AD 720) written in Chinese characters. The Japanese oral tradition was chronicled in Manyōshū (Collection of a Myriad Leaves), an anthology of ancient poetry, in ca. 750. It was also written solely in Chinese characters, most of which were used phonetically to represent the Japanese language.

The Tale of Genji (Genji monogatari, 源氏物語) is considered the first mature novel written in Japanese: a woman in the Heian court wrote it in the early 11th century. It is set in the lives of court affairs and life among the nobility and was written almost entirely in hiragana, which had been cursive since the 8th century.
As early as in 828, the renowned monk Kûkai set up a private school in Kyoto for the children of commoners. Although the school was open for only a few years, it represents the role that monks played in spreading education among commoners during the Nara (710-794) and Heian (794-1185) periods in Japan. (Taylor & Taylor 1995, 365)

At the beginning of the Edo/Tokugawa period (1600-1868), literacy was still prevalent only among a small group of special people, such as Buddhist priests, who tutored the children of noble families. Various types of schools were established for various social classes (from samurai to farmers, artisans and merchants) later in the period, and this started the dawn of Japanese literacy. (Taylor & Taylor 1995, 366) The sons of the samurai were first taught basic reading and writing skills at home or in simple schools, and then they entered special-domain schools (hankô). After the mid-Edo terakoya period, the children of commoners were taught reading and writing, and the use of abacuses at private community schools estimated to have been attended by about half of all children in prosperous regions (Taylor & Taylor 1995, 366-367).

Virtually all samurai, most townspeople, and well-off peasants were literate by the end of the Edo/Tokugawa period: 45% of men and 15% of women could read and write by the mid-19th century. The Ministry of Education was established in 1871, in the Meiji era, and the modern national system of education was introduced the following year. Finally, after World War II in 1947, compulsory and free education was extended to nine years, and a survey from 1948 found that complete or partial illiterates comprised only around 2% of the population (Taylor & Taylor 1995, 368).

The Finnish Literary Tradition

Finland has existed as an independent nation only since 1917, and the literary history of the native language spans only about one hundred years. Although the oldest texts in Finnish date back to 1548 (New Testament), it took over 200 years before the first novel was published, and much longer to establish literacy.
The Lutheran Church took care of literacy in Finland (as part of the Swedish kingdom), and the Bible was translated into Finnish in the 1640's. It was reading that was considered meaningful, not writing. The Church received the ability to read as a prerequisite for getting married. In practice, reading meant knowing the alphabet and passing a test of reading a text (or memorizing?) Catechisms.

One of the earliest Finnish novels describes the process of learning to read through the experience of seven brothers. The first professional writer publishing his work in Finnish, Aleksis Kivi, wrote Seven Brothers, which was originally published in 1870. His father, Erik Stenvall, was a literate tailor who had learned Swedish, the language every educated Finn spoke before the Finnish-language culture was fully developed. Kivi also acquired complete mastery of Swedish. However, in the wake of the national awakening he translated his Swedish surname (Stenvall, 'stone-bank') into Finnish ('Kivi', 'stone').

There were even a few ordinary people who could write in the 17th century, although only 12 percent could do so in 1880, and 38.6 percent at the turn of the 20th century. First they had to argue for the benefits of writing, which was evidently not useful in itself. The start of communa bureaucracy, freedom of trade and the Diet institution advanced writing skills. Women entered the world of writing in Finland later than men and it was only with compulsory education that the ability to write became widespread. Emigration created a need to keep contact with those who left the home country. (Makkonen 2003)

The Kalevala is the Finnish national epic, compiled by Elias Lönnrot (1802-1884) from ancient oral poetry. The material, old Finnish ballads and lyrical songs depicting 'the sons of Kalevala', was published in two editions, first in 1835 with 35 cantos, and the enlarged edition with 50 cantos in 1849. Lönnrot's aim was to arrange the mythological and other poems in a single volume, comparable to the Icelandic Edda, and to tell of past heroes as Homer.

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The Kalevala itself is based principally on poems collected from the Finnish-Karelian border zone. Lonnarot made three journeys to Archangel Karelia between 1831 and 1835 to collect materials, which he made into an epic whole. The revised Kalevala was augmented with the new material that Lonnarot and other collectors had amassed since 1835.

It has been noted that the early mid-19th-century writings by ordinary Finns came alive when read aloud. This points to a difference between the oral and the written worlds, which began to merge in Finland only about a hundred years ago, when less than 40% of Finns knew how to write.

Cognitive skills and literary tradition
The Japanese language started to be written as early as in the 8th and 11th centuries. Although the ability to read was not a common skill until the end of the 19th century, over 1,000 years of literary tradition must have shaped the Japanese cognitive strategy. As literacy became more common, the oral literary sources became written and influential. Even the oldest novel, 《源氏物語》(The Tale of Genji), is still alive in present-day Japan, as in the forms of animations. It is still read and understood by the Japanese. The language and literary tradition have for centuries has influenced Japanese literary development.

The cognitive aspect of Japanese thinking has its roots in the early history of Japanese writing. First, the introduction of a foreign script that was quite unsuited to the Japanese language raised certain suspicions about written language itself. Kotodama (‘spirit of language’, which meant oral Japanese or later Japanese written with hiragana) was thought to be the only pure form of the language. Japanese was originally the language of an oral culture: it had a wealth of vocabulary denoting aesthetic and emotional states of mind. The application of a logographic script allowed the preservation of these

rich expressions, because *kanji* was used as a visual pointer or reminder in much the same way as knots or beads can be used.

Using an ambiguous script so created the skill of reading between the lines: in the early stages, reading Chinese characters in Japanese required jumping back and forth in order to create the Japanese sentence order. The meaning and pronunciation of Chinese characters varied, and still does, according to the context, and thus interpretation in the appropriate context is vital.

The Japanese used Chinese technical terms written in *kanji* to adopt the already highly advanced conceptual knowledge of Buddhist and Confucianism. According to Nakamura (1987, 185), "Japanese presents difficulties for logical expression, which has to be exact, and, as is generally pointed out, its non-logical character naturally handicaps the development of ability in logical thinking among Japanese people, and has actually brought about grave inconveniences in their practical lives."

He continues: "Again, in translating the concepts of Western learning, the Japanese used Chinese characters and did not render these concepts into pure, original Japanese directly. It could be argued that there was no need to invent Japanese words for these Chinese terms: *kanji* itself was a concept that could be understood and explained in terms of its components. The modern habit of introducing technical concepts by transcribing them from English into the katakana script works in reverse: it is easy to read the word but the meaning of the concept may remain a mystery.

The value of the forms of Japanese expression lies more in their aesthetic and intuitive aspects than in precise logic. The focus of individual thought and expression is on the immediate, concrete details of life. The Japanese way of thinking avoids summations of separate facts into broad statements about whole categories of things, although such abstraction is a prerequisite of logical and scientific thinking. (Nakamura 1987, 191)"
The fact that primary literature and literary behavior were cultivated among the nobility in the Heian court accentuated a special sophisticated element. Poetry had a courting function: love letters written in beautiful calligraphy, wrapped in a seasonal hue and scent, were written to disclose a beautiful poem and to hide messages of love. This way of communicating officially in the proper way, and yet sending hidden messages, is still alive in the tatemae/honne custom in Japan.

Since literacy was initially a skill of the privileged, the nobility and the samurai, it probably became admirable and desirable. Education is the most important background factor in determining the social class of a person in modern Japan, and about 97% of the population receive 12 years of general education. Achieving literacy in the Japanese writing system is a process that takes a minimum of nine years of compulsory education. The repetition of earlier characters and the adoption of new ones embodies the kanji concepts.

Finland, on the other hand, remained an oral culture until the wake of nationalism in the mid-18th century. For Finns in the 18th century, the written language was Swedish or Latin, neither of which was accessible to the common people. The nobility used Swedish (or French, German or Russian) and focused on relations across the Gulf, there being no privileged group akin to the Japanese court to enhance the development of the Finnish literary tradition.

The brevity of the literary tradition in Finland may explain why the Finns can accept new rules and regulations relatively easily: if there is no heavy tradition of doing things in a certain way, one is more willing to accept new ways. This can be seen in the way Finland has, as a member of the European Union, followed literally all standards and regulations. Even the concept of 'cultivated people' has been under change in the modern Information Society.** The new definition of a 'cultivated person' stresses the use value of education and learning - the necessary knowledge and skills for working life. Classical cultivation (world literature and good manners, for example), growing as a

** See, for example, Development Plan 1999-2004 for Research and Education published by the Finnish Ministry of Education.
human being, and even knowledge itself, are no longer valued to the same extent. Instead, media literacy and the ability to use information and communications technology (paying your bills by computer, using the mobile phone) are considered even more important than formal education.

Finnish written texts were, and still are, more non-fiction than fiction, which emphasizes literal understanding of the written text. Even old texts such as the Bible have been rewritten (retranslated) into modern Finnish to increase transparency and to lessen the need for interpretation.

The similarity between the Japanese and the Finnish history of literacy lies in the fact that both nations acquired a script from a developed literary culture unrelated to their own. This on the societal level, the oral culture was brought into contact with the written culture suddenly. This may have allowed some aspects of the oral culture to exist even as the society transformed into a literate society. Finland has been a literate society only for the past hundred years, and thus the written language does not dominate the thinking process in the same way as in older European civilizations. The Japanese adopted Chinese characters as visual symbols that allowed the oral native language to exist throughout a thousand years of literary tradition. The love of nature shared by the Japanese and the Finns, which is well documented, could be related to this similarity in the role of an oral tradition.
5 KNOWLEDGE CREATION BY ENGINEERS AND POETS

5.1 Finns as Engineers and Japanese as Poets

Cultural differences in language and communication are assumed here to launch different patterns of knowledge creation. These patterns are kaleidoscopic combinations of variability in the nature of language and script, in the concept of the self and receptivity, and in the communication process. I am claiming that each culture has its own unique knowledge-creation style. This study has specifically focused on Finland and Japan, and the knowledge-creation styles considered typical of these cultures are described here as those of Engineer and Poet.

In the previous chapter, I analyzed how language and script, achieving literacy, and the literary tradition influence cognitive capacities and related cognitive skills. I will now combine these findings with the earlier discussion of cross-cultural issues in the SEC Model, and introduce the styles of the Engineer and the Poet to describe how the Finns and the Japanese create knowledge.

I will then analyze the central concepts of knowledge-creation theory. The meaning of tacit and explicit knowledge in Finnish and Japanese reveals the different cultural understandings of these concepts. The resulting knowledge-creation process takes different forms in Finland and Japan.

Empirical data from the Finnish-Japanese business community is presented in the sub-chapters following the processes set out in the SEC Model in terms of the suggested cultural knowledge-creation patterns. Critical issues in Finnish-Japanese knowledge creation in international business are identified. The Engineer and Poet styles are shown to have both strengths and weaknesses that constitute both opportunities and threats in international business operations.
Table 14 summarizes the characteristics of Engineers and Poets that constitute the knowledge-creation patterns in Finland and Japan.

**Engineers: the Finnish Knowledge-creation Pattern**

**Finnish as Engineers in knowledge creation** means that the Finnish knowledge-creation style is linked to the Western scientific tradition and secular Christianity (Protestant, Lutheran). The Finnish language has characteristics that make it similar to Japanese: it is agglutinative, non-agentic and topic-prominent.

The script that is used to write Finnish is based on the Latin alphabet, which is a phonetic writing system. Since sound-to-sign correspondence is very high, the writing could be considered very transparent. This type of phonetic script enhances digital logic. Finnish is written horizontally from left to right, which affects visual focus to the right eye and stimulates the left side of the brain. Since there is mono-direction and only one correct spelling of words, the problem-solving approach learned from the script enhances learning by rote.

Categorization of knowledge in Finnish is abstract. Achieving literacy encompasses mastery of a total of 39 signs and takes less than a year for a primary-school first grader. Since this first learning task is relatively simple, it promotes the thinking that learning should be easy and fast. Thus, earning 'by rule' is relatively low.

Immediately after learning to read the alphabet, a child can start creating its own texts, which reflect the spoken-world experience. Learning in Finnish schools is abstract and theoretical: once literacy has been achieved, all other subjects are taught through written text. Even some practical skills, such as cooking (home-economics) are taught through theory. As Gardner (1983, 269) pointed out about Western education:

"The context in which the knowledge will eventually be used is underplayed, and indeed, there is a heightened emphasis on presenting materials that are abstract and far removed from the usual foci of practice."
<table>
<thead>
<tr>
<th>Concept</th>
<th>Finland</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Underlying Worldviews</strong></td>
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<td>Shinto (animism), Buddhism</td>
</tr>
<tr>
<td><strong>Language and Thought</strong></td>
<td>Finnish (Finno-Ugric)</td>
<td>Japanese</td>
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<tr>
<td>Oral Language</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Transparency</td>
<td>HIGH</td>
<td>LOW</td>
</tr>
<tr>
<td>Logic of Script</td>
<td>Digital (Phonetic)</td>
<td>Analog (Logographic - Kanji)</td>
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<tr>
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<td>Vertical/Right to Left</td>
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<td>Multifaceted</td>
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<tr>
<td>Knowledge processing</td>
<td>Left brain bias</td>
<td>Symmetrical brain</td>
</tr>
<tr>
<td>Problem solving</td>
<td>Learn by rule</td>
<td>Learn by experience</td>
</tr>
<tr>
<td>Categorization</td>
<td>Abstract, Linear</td>
<td>Concrete, Associative</td>
</tr>
<tr>
<td>Achieving Literacy</td>
<td>Total 39 signs, less than one year</td>
<td>Total over 2,256 signs, minimum 9 yrs</td>
</tr>
<tr>
<td><strong>Theoretical Learning (Linear Logic)</strong></td>
<td>LEARNING BY DOING (Kinaesthetic Memory)</td>
<td>LEARNING (Linear Logic)</td>
</tr>
<tr>
<td>Learning Intent</td>
<td>LOW</td>
<td>HIGH</td>
</tr>
<tr>
<td>Literary Tradition</td>
<td>About 130 years (Seitsemän Veljestä 1870)</td>
<td>About 1,000 years (Genji Monogatari c. 1,000)</td>
</tr>
<tr>
<td><strong>Concept of Self</strong></td>
<td>Autonomous self, autonomous other</td>
<td>Negotiated self, autonomous other</td>
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<tr>
<td><strong>Modes of Individualism/Collectivism</strong></td>
<td>Aggregate Mode of Individualism</td>
<td>Relational Mode of Collectivism</td>
</tr>
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<td><strong>Receptivity and Sensory Perception</strong></td>
<td>Verbal, low volume; physical separation</td>
<td>Nonverbal; feeling-based</td>
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<tr>
<td>Independence</td>
<td></td>
<td>Interdependence</td>
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<td><strong>Communicating Knowledge</strong></td>
<td>Communication Orientation</td>
<td>SENDER</td>
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<td>Communication Mode</td>
<td>Succinct Mode (Passive Silence)</td>
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</tr>
<tr>
<td><strong>Knowledge Creation Style</strong></td>
<td>Engineer</td>
<td>Poet</td>
</tr>
</tbody>
</table>

Table 14: Summary of the Knowledge Creation Patterns in Finland and Japan
It is assumed that such 'decontextualization' ensures greater generalization and better 'transfer of learning' than traditional modes of learning can achieve.

For Finns, literacy is the starting point for theoretical learning and enhances linear logic. The Finnish literary tradition is only about 130 years old; although texts in Finnish have existed since 1548 (the New Testament translated into Finnish by Mikael Agricola), indigenous literature emerged only in the 19th century. This indicates that Finnish culture is still closely related to oral culture, and thus the influence of script on knowledge processing may not be as strong as in more traditional cultures.

Finns are extremely 'individualistic and self-centred. Their orientation to the self and the other could be described in terms of autonomy: both the self and the other are considered autonomous entities. Finnish individualism is of the self-contained type, which is typical of the Aggregate mode: abstract principles, rules and norms provide the mechanisms for unrelated individuals to interact with one another. This type of individualism is not keen to share knowledge with others. Child-rearing in Finland fosters physical separation and low use of verbal messages, which may be compensated by direct perception of the natural environment. Finns are space-oriented in their communication, but keep both verbal and nonverbal messages succinct. There are long silent periods, but these are passive breaks. The general communication mode could be described as succinct, which refers to avoidance.

In sum, the Finnish knowledge-creation pattern could be described as the 'engineer style' because it resembles the approach that an engineer has to knowledge: exact abstract knowledge based on digital linear logic is communicated succinctly and clearly, avoiding any ambiguity. What is more, the organization of Finnish society as a whole is based on the engineer's style of accuracy and rationalism. Not only are the contents of higher education focused on an engineering-type of education, technology is also emphasized in teaching methods and research approaches (see, for example, Castells and Himanen...
The Finnish national strategy for education, training and research in the information society 2000-2004 states:

"The Finnish solution to raising the level of knowledge is the wide application of information and communication technologies in education and research. This not only means the integration of technology into traditional modes of operation but also the establishment of an entirely new operational culture. A key factor is the implementation of new, interactive teaching and study methods." (Ministry of Education 2004)

The higher-education system in Finland as a whole offers openings for 68.4% of the relevant age group (universities 31.4%, polytechnics 37%). Polytechnics also arrange programs for mature students. In 2003, 27% of all tertiary-level students in Finland were studying technology and engineering, in addition to other disciplines applying an 'engineering type' of knowledge processing (such as Economics and Accounting in Business Schools). In comparison, humanities were studied at the tertiary level by 9.4% of all tertiary-level students. (Ministry of Education 2004)

The values of one Finnish company that has become multinational also reflect the 'engineer' style of knowledge processing 'in an open and honest spirit at the workplace':

"Nokia is straightforward and open dealing with customers and suppliers... We provide individuals with a platform for personal growth in a challenging environment with a clear vision, goals and shared management principles - the Nokia Way." (Nokia 2004)

Poets: the Japanese Knowledge-creation Pattern

The notion of Japanese as 'Poets in knowledge creation' here arises from the idea that the poetic processing of knowledge is based on visual images and associations. The receiving worldview in Japan is based on animistic views in Shinto, which have integrated with Buddhist concepts stressing the unity of all living. When Buddhism was introduced to Japan, the Japanese replaced the abstract thought it incorporated with indigenous belief systems. For example, there is a concept of paradise in classical Indian Buddhism according to which a person who attains enlightenment through ascetic practices will pass after death into the "Pure Land", located "to the rest of ten trillion Buddha lands".

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When this Buddhist concept entered Japan through China and Korea, the Japanese located the distant paradise in the mountains, which were already the resting place of the spirits of dead according to the Shinto belief. (Yamaori 2003, 45) This reinterpretation of original Buddhist thought began as early as in the Heian period (794–1185). The philosophical tradition in Japan rests on ancient Chinese philosophies such as Confucianism and Taoism, and Western scientific traditions have been adopted in industrial and technological development. (Sugimoto and Swain 1989)

The Japanese writing system is a combination of logographic Kanji (Chinese characters) and two sets of syllabaries, and the phonetic alphabet is used along with Arabic numerals. This complicated writing system is highly ambiguous (low on transparency) and enhances analogic logic and the use of digital logic. Furthermore, the direction of the script is multifaceted: both horizontal and vertical script are often combined in the same text, and books open from either cover. One learns by experience on which part to concentrate.

Kanji comprise a conceptual system allowing concrete categorization and associative logic. The Kanji link the Japanese history of literacy with China, and the indigenous literary tradition dates back over 1,000 years (the first Japanese-language novel, which is also considered the first novel to appear in the world, was 䄟㺞䓸崭, The Tale of Genji, in c. 1,000). Achieving literacy in the Japanese script requires learning over 2,567 signs with a variety of readings and meanings in different combinations, which takes a minimum of nine years of compulsory education.

Achieving literacy in the Japanese writing system (which combines both logographic and phonetic script and uses two script directions) stimulates a high intent to learn and increases receptivity to learning. There is a tradition of an early age of literacy as a legacy of the Tokugawa period (1603–1868), when the scholarly profession was respected often ceased poverty. (Sugimoto and Swain 1989) The Japanese script promotes analogic logic, and the alternating
vertical (right to left) and horizontal (left to right) directions also make information seeking multidirectional. Processing kanji is said to promote a symmetrical brain (as opposed to bias for either side of the brain). Because of the need for constant interpretation according to the context in Japanese writing, problem solving also focuses on learning by experience. Categorization is concrete and associative since kanji have a visual meaning and generate an associative network.

Yamada (1997) notes that, although Japanese children are supposed to be able to read and write the minimal set of 1850 kanji (that has been adopted for standard use by the Ministry of Education), they are not able to do so by the end of compulsory education. In practice, this means that the Japanese must to create ambiguities in their native writing system since they cannot be sure of how to pronounce the characters. They are never able to master it fully, which makes them humble toward learning and fosters high learning initiative. This also makes them good at guessing, in a similar way as some people with reading difficulties in Europe have been reported to have managed in modern life by guessing what written texts have meant (or have become very innovative in finding out the meaning of written texts by other means, for example by claiming poor eyesight, and having others state their opinions first in a meeting and by acting as spokesmen).

The Japanese writing system enhances flexibility in approaching a new problem (or book or page), because there is no fixed idea of where one should start (books open from both sides, text runs in different directions). The Japanese adopt learning by doing, because memorizing kanji happens in the long run only by physical repetition: one could even talk about physical memory (or kinesiologic memory), or the 'memory of the hand'. The fact that even the writing system is mastered through physical practice means that there are more concrete approaches in other subjects as well: mathematics is one example.
When a major mode of learning consists of following a mode (as in writing haiku), it's not surprising that this mode is carried over to other tasks as well. Many westerners consider the Japanese and Chinese habit of 'learning by model' plagiarism, and this is one of the issues causing trade disputes between East and West. The West jealously holds on to the individual creations within a narrow area and takes the teacher's role, whereas the East is an ever-curious child imitating the good and the bad, with a strong desire to learn.

Copying is not as unknown in European history as we might think. The scholars and copyists of the Middle Ages took liberties with the texts of 'authors' (such as Aristotle, Saint Thomas, Galen and Ptolemy) that would be unthinkable today. The 'authors' didn't consider a set of texts as belonging to a particular person's authorial property (Hirst & Woolley 1982, 40).

A recent newspaper article accused the musician Bob Dylan of plagiarism. A Japanese book on yakuza (gangster) by Junichi Saga inspired him to write a song, and some foreign English teacher in Japan had noticed the resemblance of the words in Dylan's songs to what was in the book. The article ends by noting that Saga was flattered by the interest shown by Dylan and he was happy about the fuss, which had increased the sales of his book. Johansson and Nonaka (1996, 100) also note that "...in Japan imitation is clearly the sincerest form of flattery, and perfect imitation is something that seems to come naturally to Japanese from their early education...".

For the Japanese, it's not so important to have 'individual credit for innovation'. A book may be written by a team without the name of any of the team members appearing on the cover, which would carry just the name of the team and of the organization (see, for example, 日本人システム 1992).

The Japanese concept of the self is fluid: the self mirrors the other and is thus negotiated in each context, whereas the other is considered autonomous. The

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68 Helsingin Sanomat 12.7.2003, B2, "Dylanä epäillään plagioinnista".
Japanese relational mode of collectivism indicates a porous boundary between group members that allows thoughts, ideas, and emotions to flow freely, and focuses on the shared relationship. It is well suited for sharing tacit knowledge within a group. The Japanese group is based on 'oneness' rather than 'sameness'. Relationships between people are focused on emotion and presence.

Japanese child rearing emphasizes presence and feeling through all of the senses. Verbal communication is discouraged. As a result, Japanese communication is characterized as telepathic, based on nonverbal messages and active silence. It is receiver-oriented, which stresses listening skills and perceptiveness.

Finnish Engineers and Japanese Poets, the Japanese cannot be compared considering enrollments in different fields of study: the aim of Japanese universities is not to train specialists, but to facilitate networking before students enter working life in companies that offer in-house training. Thus the difference is not only in what is studied but in how it is studied. The major subject of study at university is not an important criterion for recruiting fresh graduates.

Japanese society could be described with good reason as a 'poetic' society in the way ordinary people approach everyday things: even TV commercials often take the form of short poetic stories, such as Suntory Whisky commercials. In Japan's Heian era, writing poetry was the major preoccupation of court members, and poetic forms were used to transfer secret messages between lovers. The poems could be read on two levels: the official level opening as a well-versed seasonal poem, and the unceasing level carrying another meaning that was comprehensible only to those concerned.

Japanese poetry has existed for over a thousand years, and is still read and written both by ordinary citizens (including children) who might follow a course on poem writing at the NHK (Japan Broadcasting Corporation), and by the Emperor and Empress of...
Japan and members of the imperial family on the occasion of the New Year’s Poetry Party at the imperial Court.

Almost every Japanese person has written a haiku or tanka poem at least once in their lives. Japan has been dubbed a nation of 100 million poets (the total population is 127 million). A nationwide contest for 17-syllable haiku and 31-syllable tanka sponsored recently by the NHK had more than 120,000 entries (Asahi Shinbun, 2004).

5.2 Concepts of Tacit and Explicit Knowledge in Finnish and Japanese

Hiljainen and Eksplisiittinen Tieto

Since Polanyi’s books have not been translated into Finnish, there is no historical background in using the terms tacit and explicit knowledge in the Finnish language. Most researchers in international business and related fields write in English, so there has been no need to translate these concepts into Finnish. Even researchers who recognize and discuss the importance of language and concepts in knowledge management neglect the analysis of different meanings of the key concepts in different languages (see, for example, Välimaa, 1999).

What an analysis of dictionary definitions of tacit and explicit brings out is that we understand in Finnish the two concepts not as exact opposites, but as two different related terms. The English word ‘tacit’ is translated into Finnish as ‘hiljainen’ (quiet), ‘äänetön’ (lit. ‘soundless’, silent), ‘sanaton’ (lit. ‘wordless’, nonverbal): all of which seem to refer to a lack of speech (Hurme-Pesonen, 1982). The term ‘hiljainen tieto’ (lit. ‘quiet knowledge’) seems to have become established in Finnish vocabulary, whereas there is no consensus on how ‘explicit knowledge’ should be translated. Although
Creativity and intuition have been the subject of discussion in Finnish for a long time, the term 'hiljainen tieto' is a relatively new concept.⁴⁹

The dictionary defines explicit as 'selvä (clear), tarkka (exact), täsmällinen (precise), ainoamaa (certain), selvään lausuttu (clearly spoken)' in Finnish (Hurme-Pesonen 1982). The word 'täsmällinen' (precise) has been used for explicit knowledge by the Finnish mass media ⁵⁰, but other variations exist. Since most of the researchers in this field in Finland write in English, it is difficult to know what Finnish translations they might prefer. Interestingly, some frontline Finnish researchers have recently decided to use the loan word 'eksplisiittinen' when referring to explicit knowledge.⁵¹ What does the selection of 'hiljainen tieto for tacit knowledge and 'eksplisiittinen tieto' for explicit knowledge in Finnish translations disclose about the meaning of these concepts and the know edge-creation process of the Finns?

The meaning of 'hiljainen tieto' can be understood from the different meanings attached to the adjective 'hiljainen' (Nykysuomen sanakirja 1996). Commonly understood as concerning sound and sounding, 'hiljainen' means äänetön (silent), vaiti oleva (being silent); heikosti kuulua (low voice), meluton (noiseless), and vähääänen (of little sound). Thus the Finnish meaning of tacit draws attention to the auditory sense channel, hearing, and coding is somewhere between auditory and non-auditory, making it low volume. However, 'hiljainen' also has other meanings. It refers to behavior as tyypiltään, vapahtelu, käytäntöön, uskollisy (caution, tradition; trust, still; roost; restraint). These are all favorable characteristics for a Finn and they indicate a low degree of something. Generally, the expression of (joyful) emotions has not been part of acceptable behavior in Finnish culture: "Tee se se oles rätätasataa, ota ei tornaa jaarajasta" (even a snotty-nosed child will become a man, but one who laughs for nothing will never do so).

⁴⁹ Nurminen (2000) also uses 'hiljainen' for tacit in her Finnish treatise.
Hiljainen also refers to communication as sanaton (wordless), sanoin ilmaisematon (not expressed in words). Silence has traditionally been preferred to speech in Finnish communication, as the old proverb "vaikeneminen on kultaa, puhuminen on hopsaa" (silence is gold, speech is silver) suggests. Taciturnity is valued in Finnish culture.

Another major meaning of hiljainen concerns movement and happening: hidas, perittäneen pitäneen, täräneen, täräneen (slow, tardy, sluggish; gradual; minor, circumstantial): "Hiljaa ajoista" (when you work slowly the result is good). In some Finnish dialects hiljainen also refers to myöhäinen, myöhästynyt (late, delayed): "Hiljaista on hiiren haukotella, kun on jo kissan suussa" (It is too late for a mouse to yawn when it is already in the cat's mouth). Again these meanings indicate a low degree of something rather than the absence of anything.

The use of eksplisiittinen tieto for explicit knowledge in Finnish could be considered somewhat typical of Finnish academics. By selecting a loan word we can avoid searching for a meaning in the Finnish language and achieve exact correspondence with the English word. As a loan word the concept becomes very abstract and it is difficult to define it by using Finnish. The dictionary of Modern Finnish explains 'eksplisiittinen' as 'clearly and in (full) detail explained, something of which the whole meaning has been fully explained'. Its antithesis is given as 'implisiittinen' (implicit), 'included in something, something from which something can be derived or which has not been visibly or definitively expressed'.

Since tacit and explicit knowledge are often contrasted, we could get a deeper meaning of eksplisiittinen (explicit) in Finnish by looking at the antithesis of tacit, (hiljainen). Table 15 gives the opposite of hiljainen (tacit, low volume) as

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52 x Becomes 'a' in Finnish, similar as in 'experimental' which is 'eksperimementaalinen'.
53 Nykysuomen sanakirja 1996, 198: "se vääntää, se rasvasti esitetään, se laenea, joka bokko merkitsi on lärcestä 'maista'".
54 'DC, 653: vastahokka: 'ekspliittinen = jokob a säästää, se laenea josta joka jokaan ricaan jokaa tai jota e el o e näätäst tai 'cefa n'it'sest' maka sta"
something auditory (high volume). Also, something as the antithesis for "hiljainen" could also refer to agitated and bold behavior, or something expressed in words, being part of verbal communication. It could also refer to something fast, advanced, major, or critical in happening.

<table>
<thead>
<tr>
<th>Low volume</th>
<th>Auditory (high volume)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calm, modest behavior</td>
<td>Agitated, bold behavior</td>
</tr>
<tr>
<td>Not expressed in words</td>
<td>Expressed in words</td>
</tr>
<tr>
<td>Nonverbal communication</td>
<td>Verbal communication</td>
</tr>
<tr>
<td>Slow, tardy, minor, delayed in happening</td>
<td>Fast, advanced, major, prompt in happening</td>
</tr>
</tbody>
</table>

**Table 15: The meaning of "hiljainen" and its antithesis in Finnish**

"Hiljainen" tieto is linked to Finnish cultural knowledge (oral and literary) through proverbs and it assigns different meanings to the concept of tacit knowledge. The word "silent" has a positive sound in its different meanings in Finnish culture, but it is not actively used as a source of knowledge. Silence provides private space within communication between persons. "Hiljainen" in communication refers to silence as a break in speaking, and the Finns and the Japanese have been considered similar in their tolerance of longer periods of silence. However, for the Japanese the silent breaks are actively used for understanding nonverbal cues, for example for feeling the moods of the other person. I would claim that for Finns silence in communication has the meaning of "hiljainen" as 'restrained and tactful': the silent break gives time to formulate what to say next, or just to be outside of the talk for a while. Silence is not used actively in Finnish communication for nonverbal understanding.

The selection of the word **eksplisiittinen** tieto for explicit knowledge mirrors the Finnish knowledge-processing style: as with the Finnish writing system, it allows a clear and precise translation of the English word and needs no interpretation in Finnish etymology. A loan word further detaches meaning from reality and becomes very abstract. It reflects the abstract and theoretical learning style prevalent in the Finnish educational system and accepted at the higher levels of education.
education and academic life. Finns prefer transparency and it's more transparent to use a loan word, especially an English loan word. At the same time, the usage of loan words preserves the multiple meanings that the English word explicit has in Finnish. In general, 

\textit{eksplisiittinen} is understood as 'clearly verbalized', thus it directs attention to verbal knowledge, both auditory (oral) and nonauditory (written). Since the Finnish communication style encourages silence and brevity of spoken utterances, there's more focus on the written.

In sum, the meaning of tacit knowledge as 

\textit{hiljainen} in Finnish carries the connotation of a low degree of something, whereas explicit knowledge as 

\textit{eksplisiittinen} puts the focus on the verbal, and especially the written (auditory as phonetic script).


明示的知识, 形式的知识 and 暗默的知识

Earlier I discussed the development of concepts in knowledge-creation theory as developed by Nonaka. It is worthwhile noting that Nonaka (野中 1990) was using Japanese translations of Polanyi's books, so he could be expected to have understood the concepts in their Japanese meaning.

**Explicit Knowledge as 明示的知识**

In his Japanese book, Nonaka refers to Polanyi (1966, Japanese translation), for whom explicit knowledge in Japanese is 明示的知识 (arīcī abe know edge). However, Nonaka (野中 1990) conceptualized explicit knowledge as 形式的知识.

The meaning of explicit in Polanyi's Japanese translation can be understood from the first two characters: 明 and 示. 日 and 月 together indicate 'clear, open, bright', whereas the latter 月 is a radical, frequently used with the meaning 'related to gods'. 月 is an extended meaning, from the idea of the outcome of a sacrifice showing the will of the gods. (Henshall 1992)
The first character's use in Meiji Restoration, for example, and in other compounds such as 明快 'clear, explicit'; 明分 'moral duty, justice'; 明記 する 'specify'; 明知 'wisdom, intelligence' 明察 'censure, insight'; and 明鏡 止水 'serene frame of mind' (Weiser 1982).

The meaning of 明 is 'show, indicate, point out, give (an example), signify, censure, empress', and it is for academic compounds such as 明教 'instruction, information'; 明唆 'suggestion'; 明達 'directions, instructions'; 明威 'demonstration (against something)'; and 明示 'censure'.

The combination of these two kanji would thus refer to something 'clearly shown', which seems quite close to the English meaning of explicit, although it focuses on vision ('shown') rather than sound ('emphasized, verbalized').

explicit knowledge

Instead of the kanji used in Polanyi's Japanese translation, Nonaka (野中 1990, 56) selected the characters 形式知 for explicit knowledge, which could be translated as 'formalized knowledge' or 'formal (type of) knowledge':

"If we take the viewpoint that objective knowledge has a proposition that can be verbalized and formalized, we can call this (explicit knowledge) 'formalized knowledge' in Japanese.

55 If we take the viewpoint that objective knowledge has a proposition that can be verbalized and formalized, we can call this (explicit knowledge) 'formalized knowledge' (my translation)"
Earlier he defined tacit knowledge as something that was not substantial, immaterial, which has the meaning of がなない ('without form') in Japanese. He is thus suggesting that tacit knowledge has no form, whereas explicit knowledge has form.

形  means 'shape, form, pattern, appearance', as in 人形 'doll' (human shape), for example, and 式  carries the meanings of 'ceremony, rite, function; method, system; style, form, type, plan; formula, expression (in math); mode; way; standard'. These two kanji are learned in early grades at primary school and together they are used in several compounds with the meaning 'form; formality', such as 形式化 'formalization'; 形式的 'formal'; 形式主義 'formalism, rectlinear'; and 形式美 'beauty of form'. (Henshall 1992; Nelson 1982)

With his preference for 形式の 'instead of 明示的的, Nonaka (野中 1990) shifts the attention from 'clearly visible' to something that has been 'given a form', that is of 'formal' type. This concept also focuses on something visual, but it emphasizes the organization of the knowledge along some logic in order to make it formal.

Nonaka explains 形式的的知, explicit knowledge, as knowledge that is based on 客観的知識, objective knowledge, and that can be given a form in language 言語 (words) (野中 1990). The definition of explicit knowledge as objective is a so repeated in Nonaka and Takeuchi (1995, 61). Although there is no room here for detailed analysis, I would like to point out that the word 'objective' 客観的 'in Japanese has the meaning 'the guest's point of view', whereas subjective is 主観的, 'the master's point of view'. This objective and subjective in Japanese are
not questions of subject and object being separated, but rather of two different ways of looking at something.

Tacit Knowledge as 諷黙的知

Both Polanyi's Japanese translation and Nonaka use 諷 黙的 for tacit. The first character 諷 is a combination of 日 sun and 音 sound. Its meaning as 'dark' is explained to the Japanese as 日が暮れて音だけ聞こえ暗い夜 (the sun is hidden, only sound is heard, night) and 日がかくされて暗くなる (the sun hides itself, it becomes dark). The meaning is given as くらさ (dark) and かくてわ からない (is hidden, cannot be known/seen) (漢字学習辞典 1983). Japanese children learn this character in the third grade of primary school. It is used in compounds such as 諷記 (memorization; a fragrance from somewhere; the fragrance of flowers at night); another (incercurrent).

The second character 黙 ('silence, to keep silent') is not among the Educational Kanji (1006 characters) learned at primary school, neither is it one of the most commonly used 100 Kanji. Thus it is learned at junior high school. It consists of two parts, which are also independent radicals and are learned during the early grades of primary school: 黒 ku-ro-sea, which means black; and 犬 kemono-sea ('tail'), which means a dog.

Thus the meaning of 黙 and the two radicals in 黙, 黒 'black' and 犬 'dog' are quite familiar already to the Japanese primary-school pupil. When he or she later encounters the combination 諷 黙 these images are still bound to be present somewhere in the mind: "darkness, black dog". When the meaning of 黙る as
'to be silent' is also learned, the meaning of "darkness, silence" will then emerge. What is the meaning of black dog in the darkness?

Different kanji compounds using 黙 become familiar to grown-ups and lead the thought from 'keeping silent' toward 'contemplation' and 'pantomime': 黙考 'contemplation, meditation'; 黙約 'secret understanding'; 黙黙 'secret understanding without speaking'; 黙殺 'ignore'; 黙劇 'pantomime'; 黙黙 's'ent, tacit, mute'; and 沈黙 'silence, reticence, taciturnity'.

According to Moraka (野中 1990; Moraka and Takeuchi 1995), tacit knowledge is based on subjective knowledge (which should not be confused with the Japanese meaning of the word as discussed above), and it is troublesome to verbalise.

In sum, the Japanese concept of explicit means something that has been given a 'form', which is 'formal'. This draws the attention of the visual sense (channel) and coding as 'present'. Since Japanese writing is a visual character, the understanding of explicit as something verbalised still carries a visual connotation. Tacit, on the other hand, is defined in Japanese in a challenging way as something non-visual (like a sunken rock), auditory ('only sound can be heard') and ret silence. The key to understanding the meaning of tacit in Japanese is embedded in the 'black dog in the darkness': although non-visual, it's auditory, olfactory, tactile, and with a sense of taste.

Table 16 summarises the meanings of the concepts of tacit and explicit in Finnish and Japanese. This comparison identifies the emergence of distinct knowedge-creation patterns that begin to evolve from different understandings of the key concepts. Understanding explicit as something formal and systematic (Moraka and Takeuchi 1995, 8) is close to the Japanese meaning of explicit as
"can be expressed in words and numbers, and easily communicated and shared in the form of hard data, scientific formulae, codified procedures, or universal principles". The Finnish understanding of *ekspliittinen* also covers this understanding.

<table>
<thead>
<tr>
<th><strong>Finnish</strong></th>
<th><strong>TACIT</strong></th>
<th><strong>EXPLICIT</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Meaning</td>
<td>HILJAINEN</td>
<td>EKSPLIITTINEN</td>
</tr>
<tr>
<td>Sensory channels</td>
<td>AUDITORY</td>
<td>VISUAL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Japanese</strong></th>
<th><strong>TACIT</strong></th>
<th><strong>EXPLICIT</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Meaning</td>
<td>黒暗の</td>
<td>形式的</td>
</tr>
<tr>
<td>Sensory channels</td>
<td>AUDITORY</td>
<td>VISUAL</td>
</tr>
</tbody>
</table>

Table 16: A Comparison of the Concepts of Tacit and Explicit in Finnish and Japanese

The difference between the Finnish and Japanese understandings lies in the concept of tacit. For the Japanese all knowledge is primarily tacit, something "not easily visible or expressible", something that is "deeply rooted in an individual's action and experience, as well as in the ideas, values, or emotions he or she embraces" (Nonaka and Takeuchi 1995, 8). Explicit knowledge is only the tip of an iceberg. For the Finns, knowledge is primarily explicit. Subjective insights and hunches are not considered 'real' knowledge. If you do not know the objective, you had better keep silent (hiljainen), or maintain a low profile.

Distinguishing between 外 (outer) and 内 (inner) is very important in Japanese society. The concepts of 表裏 and 前後, also refer to these outer and inner spheres, and are used in communication as something similar to 'facade' and 'real intention'. The English translation of these terms makes hierarchical oppositions of these dyadic pairs, ultimate was
evil opposed to good, which does not make sense of their Chinese meaning.

Doi (1986; 1985)

The way Moraka (1990) defines tacit and explicit knowl edge fits well into this division. Tacit is the inner knowledge, but unlike in the Western concept of the human psyche, in Japanese understanding it can be shared with other members of the inner group. Explicit knowledge is constructed from these inner feelings (tatei) by giving a form to them. In a similar fashion, explicit knowledge as verbal knowledge in written Japanese is bound with the different pronunciations and interpretations of kanji in different contexts and contents.

For the Japanese, knowledge creation is interplay between the explicit (as visual) and the tacit (as non-visual, but full of other sensory perception). What makes their knowledge-creation style 'poetic' is the way of using 'visual images', metaphors, in the externalization process. A poet strongly experiences his/her environment with all of the senses, and builds up poetry as 'images' with multiple meanings.

The Finns are described as 'engineers' in their attitude to knowledge creation: an engineer is interested in technology, which is verbal (or otherwise codified) in a precise form. Facts and objective truths are knowledge to him or her, but subjective knowledge and emotions are of little interest. Only hard data, scientific formulae, codified procedures, and universal principles matter in knowledge creation.

Moraka and Takeuchi (1995, 11) suggest that "Western managers need to 'unlearn' their old view of knowledge and grasp the importance of the Japanese view". I fully agree with them, but as my analysis of the Finnish and Japanese
concepts of tacit and explicit knowledge shows, the different knowledge-creation patterns are deeply rooted in language and in primary knowledge-creation models acquired at an early age along with the acquisition of literacy. Thus it is difficult to change the acquired pattern, especially if one is not aware of what it is based upon.

Luft's Johari Window in Finland and Japan

I have already applied Luft's (1969) Johari Window to types of organizational knowledge. Tacit knowledge resides on the individual level in individualistic cultures and the individual decides the degree to which he or she wishes to make it explicit. Extremely individualistic Finns want to keep the open area as small as possible (not discussing private matters with their colleagues). For example, religion is part of a very private area and even if colleagues know that you are of some religious sect, it is never discussed. Private space is separated from professional ego. What is not known to the self but is known to others is by mutual (unspoken) agreement not taken into account.

Figure 21 shows the areas of explicit and tacit knowledge in the Finnish knowledge-creation pattern in accordance with the Johari Window. For the Finns, only what is known to the self and to others (OPEN) is part of explicit knowledge. What is not known to the self but is known to others (BLIND) is, by mutual agreement, not considered knowledge: it is thus considered tacit knowledge from the ego's point of view. The HIDDEN area, which is known to the self but not to others, is also tacit knowledge. What is not known to others or to the self is part of the UNRECOGNIZED area, which could correspond to the collective unconscious of Jung that also represents tacit knowledge. Thus the tacit area ('in the Johari Window') is larger than the explicit area for Finns.

However, the focus is on the explicit in the Finnish knowledge-creation pattern: artists are able to tap into tacit knowledge, which might explain the vitality of Finnish design.
 Known to Not known to
the self the self
Known to others
Not known to others
Explicit Tacit
knowledge knowledge
OPEN
BLIND
HIDDEN
UNKNOWN

Figure 21: The areas of explicit and tacit knowledge in the Finnish knowledge-creation pattern in the Johari window.

Since the Japanese are able to merge the self with the other, the areas known to both become explicit knowledge (Figure 22). Only what is not known both to the self and to the other (UNKNOWN) constitutes tacit knowledge in this sense. This is where the 'black cog' resides.

I will now move on to analyze the SECI model in the Finnish-Japanese context. I will discuss the typical ways in which Engineers and Poets convert and transfer knowledge, and also comment on how they see each other in the knowledge-creation process. Empirical material from key-person interviews from the 2003 data is supplemented with 1991 data in order to add the longitudinal dimension.
5.3 Socialization by Engineers and Poets

Socialization is conversion from tacit to tacit knowledge. Nonaka and Takeuchi (1995, 62) define it as "a process of sharing experiences and thereby creating tacit knowledge such as mental models and technical skills". They connect it with theories of group processes and organizational culture. However, when we look at cultural differences in knowledge creation, we must bear in mind that there is plenty of tacit knowledge shared as cultural capital by members of the same culture. This cultural knowledge underlies the way we process later experiences. Even organizational culture is based on the national culture (Hofstede 1984; 1991). We do not arrive 'tabula rasa' at a shared experience with members of an organization, but rather bring along all the tacit knowledge we have accumulated thus far. We react with existing mental models that shape the way we process knowledge.

Tacit Knowledge in Finland and Japan

I have described literary tradition as collective memory. Through literature we can share cultural knowledge and experiences over generations. Although my generation in Finland has not experienced war, I have a feeling of what wartime and the fight for independence were like from listening to the stories told by my grandparents and from reading 'The Unknown Soldier'. The Japanese are familiar with customs going back over thousand years, such as 'wife-visitation marriage', from reading 花の戦争 (花の戦争) (2000), and this shapes their understanding of the modern roles of husband and wife.

Cultural traditions and customs also create a wealth of tacit knowledge. Taking a sauna and swimming naked constitutes a shared cultural experience for Finns, and Finnish men across generations share the experience of army service; this constitutes tacit knowledge that can be understood without words. For the

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Tuntematon soli, a novel by Väinö Linna, was published in 1954 by ValoFirma, a house, essayist, and one of the greatest writers of post-war Finland.
Japanese, who have a much longer cultural history, there are several cultural rituals that generate mental models which are part of their shared tacit knowledge. The more we share in the tacit knowledge, the easier it is to communicate nonverbally.

Since the Finnish educational system requires one to specialize quite early, there are several narrow subcultures with their own tacit knowledge, such as 'engineers' and 'architects'. Specialists tend to focus on their own field. On the other hand, the Japanese educational system produces generalists: the twelve years of school education provide a firm common cultural background. Generalists are interested in many things.

The English word 'socialization' associates with socialism, especially when it's translated as 'sosialisaatio'. Perhaps a better word would be 'seurustelu' (association, entertaining) which means spending time together in some activity (which is not goal-oriented). Working time and off-work time are strictly separated in Finland and people may not want to have anything to do with their colleagues after working hours (Karpinen-Shetia 1996). Private time is for one's friends and family. Small talks and rules of etiquette have always been a painful exercise for work-oriented Finns, thus one could say that socialization as conversion from tacit to tacit knowledge takes place at work or on the individual level.

Nonaka (1990, 61) calls the process of socialization 合同化 in Japanese. 合同可以be translated into English as "combination, union, merger, fusion".

Kenkyusha's Dictionary (1983, 342) defines a verb derived from 合同する as "to unite (in one body, with others); merge (in something greater)". Thus the Japanese concept of socialization implies that the individual level will merge with the group level, and unlike the Finnish knowledge-creation pattern, socialization takes place on both.
In the Japanese context, the transfer of tacit knowledge takes place, between mother and child, or master and pupil, for example, such as in learning origami or the tea ceremony. "Tacit knowledge can only be shared in direct experiences, which go beyond tacit in-ter-views" (Nonaka, Toyama and Konno 2001, 21).

Japan is a relatively homogeneous society with small differences in income. Working time is not strictly separated from off-work time, and in order to avoid commuting in rush-hour trains, some people might select to keep company with their colleagues at the office or in a pub. (Karppinen-Shetia 1996) This gives plenty of time and opportunity for sharing experiences daily.

The Self in the Cross-cultural Perspective

It is vital to understand how the concept of the self varies in different cultures. The idea of clear boundaries of the self, separating the individual from other individuals and the environment, is a prerequisite for objective knowing. By taking distance we can observe the other and learn about its characteristics. Regardless of the theoretical and empirical approach, the fact remains that the observer and the observed are separate entities. This mode of knowing in the West reflects the alphabetical, phonetic writing system, which distances us from reality. Religion based on the Book (the Bible) may have enhanced this orientation.

The alternative way of knowing prevalent in Japan is based on the interdependent self, a concept of the self with fluid boundaries, which can be extended to contain the other in different contexts. Children under school age in Finland also sometimes observe to perceive their environment in this way. After reading a book or seeing a movie or a play, or even just observing a picture with characters (human, animal or inanimate), my daughter has asked 'Which one ARE you?', not which one I liked best. She selected one or two that she herself wanted to be, and said that she WAS so and so (note that there may be several identities). In this way she expanded herself to cover these others,
such as a rowan tree, a cog, or a prince. This metaphorical approach to the environment means understanding it by becoming one with it, and this also gives rise to inanimate objects. In an animistic worldview the human self is the 'integrated' part of the whole universe. This is also how inanimate objects can come alive: when you perceive a coin or a pen as an extension of yourself it becomes a living thing. This animistic way of perceiving the world is common in oral societies and has also been retained in Japan, with its special application of the logographic writing system.

The Japanese philosopher Nishida Kitarō (西田幾多郎 1870-1945) was dissatisfied with the Western philosophical expressions of pure experience because they grasp it from without and not from within. To him, pure experience was direct experience, in other words experience direct to the subject. (西田 2004; Nishida 1990) The ordinary understanding of experience is that first the self or the individual exists, and then this self experiences something as an object (Figure 23). This perspective is based on distinguishing the subject and the object, which forms the basis of Western scientific thinking.

For Nishida (1990; 西田 2004), the self is also experienced. He argues that experience is more fundamental than the individual: "Experience exists because there is an individual."

Source: Abe 1990; Nishida 1990

Figure 23: The Western Understanding of Experience

For Nishida (1990; 西田 2004), the self is also experienced. He argues that experience is more fundamental than the individual: "Experience exists because there is an individual."
because there is experience" (Figure 24). There is direct experience (experience 1 in the figure), which is trans-individual and in which not only things but also the self or the individual is experienced, and then there is indirect experience (experience 2 in the figure), which is experienced by a presupposed self.

Figure 24: The Japanese Understanding of Experience

The Japanese understanding of experience reflects a world view in which man is considered an integral part of his environment. Human intelligence is not an imprisoned spirit from afar but an aspect of the intricately balanced organism of the natural world. Japanese culture has no conception of a God existing abstractly, completely separate from the human world:

"In the ultimate analysis, the Japanese consciousness of the object of religious devotion grows out of direct-contact relations between individuals; it is conceived as an extension of this mediating tie." (Nakane 1984)

Orientation to the self and the other was discussed earlier (in Chapter 2.5.1). Finns could be considered to represent an extreme type of autonomy orientation: a Finn is autonomous to the extent that he does not need other people. He might belong to some groups, but they are not crucial to his identity or existence. The Finnish service industry is full of examples of this autonomous self-concept: service in Fin means self-service. This idea was captured well
in an outdoor advertisement by a self-service gasoline station chain (Kesoil) at the beginning of the 90’s: the slogan was "Muista ystävällinen palvelu. Hymyile tankatessasi." (Remember friendly service. Smile when you fill up).

Communication with others follows this line in that one minimizes what has to be said: for example, on public transportation a Finn buying a ticket would say "vaihto" (change), meaning that he wants to buy a ticket that allows changing to another route, in order not to intrude into the other’s autonomy and space. Since no negotiation is necessary with the other, communication is at a minimum.

Finns also expect independence from others. Japanese managers in Finnish subsidiaries in Japan have had to become very independent: Finnish headquarters expect them to manage on their own. One Japanese informant commented:

"... and I understood what they are saying... but there were no official instructions...' Of course, I treat me as a sort of engineer's colleague so... tell me, let me do... but after all, I can get a feeling in the way of doing things in a Finnish or an American company... but it's not so easy for a Japanese to adapt to that system... the Japanese are not used to taking individual responsibility for decisions... but in a Finnish system we have to make our own decisions and take our own responsibility by ourselves... that's one of the biggest differences... one of the difficult points... but the responsibility is totally different in this company and in my previous company because... the operations are so small here, I can't even say, staff colleagues... one of the difficulties for me is that one of my Finnish colleagues can assert that I have to come to the company... that is to make all the decisions... that's the biggest problem... that's impossible to provide any assistance for small local matters so that's a fate... for the local managers to carry on the entire task or one solution is to pay a consultant service from outsiders because we have to pay more so..." (Interview)
Japanese organizations. As another Japanese informant explained, there is an emotional need to depend:

"I always feel I want to depend on somebody, that's easy... I always have a feeling that I want to depend, I feel insecure if I can't have anybody..." (Interview)

Emotional understanding is an effective way of transferring tacit knowledge: everybody present is aware of it at the same time and it's felt as much as it's thought. According to Kincaid (1987, 338),

"It goes beyond words, or symbolic processing of any kind, to the mutual sharing of feelings about something as opposed to thoughts about it... it is this difference between feeling and thinking which differentiates the western and eastern perspectives in this regard."

Sympathy, empathy, and concern for others are considered essential for the Japanese to learn even at preschool (Tobin et al. 1989, 190). They involve themselves in emotional communication but they are taught from early on to control the display of emotions. One interviewee commented:

"Yes the Japanese are emotional, but they don't show it outside, they do it in their own circles" (Interview)

According to Ouchi (1981), the focus of Japanese management is on the development of trust. Although firms do not actively use emotional communication, trust is very important to both them and the Japanese:

"Agreement is still between people and not between firms... one has to trust the person... if you are a first-time buyer, so you can't trust that you will get good products... or that you will get a reasonable price... etc... etc... it's difficult to get a sense... better goods and maybe a better price... must be able to give reasons why a saleable product, and give a reliable picture of yourself and the firm." (Interview)

The Japanese individual always exists in a network of human relationships: there is not a clear cut concept of the human individual. The individual as an objective unit like an inanimate thing. According to Nakamura (1987, 182), it means that the Japanese want to locate the individual in experience, not in the abstract:

"largely because of the Japanese emphasis on concrete immediacy in experience, the individual was grasped as a living thing and not as a
bloodless, inanimate thing in the realm of the abstract. The living individual is always located in various links of human relationships.

The Japanese describe this form of human existence as 人間, and explain that it is based on mutual dependence, mutual reliance, and on regarding interpersonal relationships as an end in themselves (日本型システム 1992).

One of the informants commented:
"Japanese person is so much influenced by the persons surrounding... they even change the attitude depending of the person around you... we hear KANJINSHUGI [人間主義]."

The concept of 人間 is written as the reversal of the characters for the human being, 人的. The first character means 'a person', and the second carries the meaning of 'interval, space, opening, and distance'. Thus the meaning refers to 'space between persons', or the contextual, and indicates the need to adapt one's behavior depending on the people around. Interaction between persons in this contextual style takes place within the life space they both share, and is essentially seen as an end itself because it is an indispensable element in the composition of each person. (日本型システム 1992)

One of the reasons why Japanese companies do not want to send their employees for too long periods of assignment abroad might be that spending time in an individualistic culture will also change their self-identity. Returnees who are too individualistic cannot adapt back to interdependence in the Japanese society and they stand out as 変な日本人, we're Japanese. One Japanese interviewee commented on this individualization process:
"They become very individualistic, basically... so they... become a lot among Americans... they are in a Western society for a long time they are accustomed to being independent... not here in Japan sometimes it doesn't work..." (Interview)

Another informant complained about a young Japanese employee who had spent several years in the United States:
"One Japanese young guy is so fluent in English he is almost American and I don't think if he is good for us in the future or not... he is too American... also I expect him to adapt more to our way of doing things that is difficult part..." (Interview 苻)

For the autonomous Finns, the socialization process is an internal process, and on explicit knowledge can be shared with others. Tacit knowledge is considered to be something that one should make explicit. This type of autonomy may also appear to be a weakness to the Japanese:

"Finnish due to their independent mentality person by person, individually, they are even neat to make something dictating (=react to command others), even for simple easy decisions, but they can't like to dictate anything." (Interview 苻)

The Japanese, on the other hand, define their identity as being part of a group. Thus knowledge creation at all stages in the SC Model takes place on both the individual and the group level. As one Finnish manager put it, the Japanese system displays creativity at the group level:

"The creativity comes from within the system, Japanese are not innovative as individuals, as groups yes." (Interview 苻)

Autonomous Engineers

Knowledge creation is understood by the Japanese as a self-transcending process, in which one reaches out beyond the boundaries of one's own existence. Nonaka, Toyama and Konno (2001, R) explain further that "in the socialization process, people empathize with their colleagues and customers, which diminishes barriers between individuals". However, since the facets of individualism and collectivism vary across cultures, it may be difficult for the individualistic Finns to lower the barriers between individuals.

The concept of the autonomous self is not as simple as Western psychology assumes. We are autonomous in some areas and dependent in others. We cannot tell anything about the concept of the self in general by comparing the degrees of autonomy in one area (LeVine 1992). This is reflected in the logic that we use; one kind of logic is required in some situations, another in others. The cool, rational approach is preferred in the work context in the US, but
Informal gatherings assume a different approach, not to mention about love affairs (Goodnow 1992).

The Aggregate Mode of Individualism developed by Kim (1995) best describes Finnish individualism (Figure 25).

![The Aggregate Mode of Individualism](image)

Source: Kim 1995

Figure 25: The Aggregate Mode of Individualism

It is self-contained individualism in which the borders around the individuals are firm, and the fluid boundary of the group consists of abstract principles, rules, and norms that provide the mechanisms for unrelated individuals to interact with one another. Shweder and Bourne (1984) use the term egocentric contractual to portray this kind of individualism.

The detachment of the individual from other people, including members of the family, has been taken to the extreme in Finnish society. Children under school age (starting even at nine months of age) are cared for by professionals in day-care centers or similar, which does not allow the development of emotional ties
within the family. Primary-school children have to learn from early on to stay alone at home and take care of themselves until their parents come back. Both parents work full-time and often keep separate bank accounts and divide family costs equally between them, even if they are married. Divorce rates are among the highest in the EU, although common-law marriage (and separation as well) is common and socially accepted. Single parents (usually mothers, the notable example is the present President of Finland) are common.

The extremely individualistic concept of the self in Finland reflects the knowledge-creation style of the Engineer: the Aggregate type of individual does not want to share knowledge with others. He is autonomous in communication, and respects the space and freedom of others - thus he does not expect others to share their knowledge either. Emotional independence stresses this further: he does not want to get emotionally involved and keeps to himself. Thus socialization does not affect his knowledge processing - non-task-oriented communication is seen by him as a waste of time: dinners are for eating, and weekend are for private time not for socializing with work-related contacts. It is difficult for the Japanese to understand why Finns keep a distance from others: "It’s a little bit difficult for a Japanese to understand that Finns people are not openly speaking about his orient. As a result they get a close role they start speaking get generally they don’t speak about private matters and partly any between. This is not so easy to openly speak to each other... one experiences several times... that one of my counter partner friend start to speak about private life or some family matters or something and when close colleague don’t know anything... Sometimes I thought that they regard me as a close friend or maybe I am a Japanese not a Finns friend so that we can rather easily speak to me that is "a close friend." (Interview)

In his study of the Finnish Pietistic movement Siltala (1992) notes that there is also a dual attitude toward success and positive feelings observed in the modern Finnish mentality:

"Miis, seoma asesta saateta aiheesta teettö, jossa neittaa ja ansa oisit at taa seen taa a se a saajoja oisita normaalitiloja. Miis, ottajaat ja oisit teni at tai tei eri toin meresta. Seoma asesta seettö, jossa neittaa jaansittaa sen oisita teettö at teettö saa a se a jo a oisita oisita. Miisat miis, seoma asesta asesta teettö oisit, oisita toisaat sittä sait. Miisat oisita oisit oisita oisita oisita oisita. 253
When the individual-need for development was combined with the demands of the church community, it resulted in individuals who were individually responsible for similarity. The search for the acceptance of human anxiety and the weak inner self was changed to the collective self-consciousness of decent people. Pietism meant watching over the weak human being in his private God-relationship, whereas the strength of strong people followed civic morality. (Siltala 1992, 418)

Siltala (1992) identifies two junctions in the history of Finnish anxiety in which prerequisites of the self were changed. The first one took place with the great Pietistic movements at the beginning of the 19th century, and the second one occurred during the political awakening during the latter half of that century when the ability or inability to deal with the expression of one's own needs became an important issue. This was followed by the vague ideal of the normal person born in the post-political era.

The development of Finnish individuality has been a gradual process, which may have started with the introduction of Christianity to Finland. Siltala (1992, 11-27) notes that the common people became aware of the possibility of damnation and salvation at the end of the 18th century and then began to fight individually for their destiny. Pietistic movements started in the northeastern part of Finland (Savo), which was on the brink of famine due to the loss of livelihood caused by the slash and burn policy. This was an exceptional period when those who were concerned about their salvation had to reject the inner evil and reach for the good more eagerly than ever before. The battle was being

57 "The modern Finn is deprived of a legal framework in which weaknesses and strengths coincide as the normal conditions of the same person. Now the winners and losers belong in a very different reality. However, resisting acceptance and resigning from self-acceptance are both considered sacred for moderns, requiring the end of life as we know it. On one hand, success is reserved for a Finn, and on the other hand, it is not allowed. The human being should manage on his own without needing the mentality of a successful person, and instead of being able to progress and fall back, enjoy his successes and cry over his setbacks." (translation mine)
fought with religious language and expressions, and the primary question was about what a man should do in order to be allowed to live. Earlier membership of a community, kin, class and parish entitled one to or constrained existence, but social changes forced man to redeem individually his right to exist.

Too rigid individualism may also hinder the general development of mankind.

A well-known Finnish brain researcher suggests that

"If we are to have a healthy relationship to the world we have to abandon our individuality and 'melt' into society and nature. In this way the world constitutes an integrated whole, in which we are not a 'part' or member (...) but in which we are only 'it', the collective. This means that ultimately we are neither living nor non-living. This is what the meaning of our life is." (Bergström 1989, 148)

Interdependent Poets

In the facets of Collectivism, both the underdifferentiated mode and the co-existence mode emphasize 'sameness', while the relational mode emphasizes 'oneness'. The Japanese type of collectivism is difficult to place in only one of these modes. Kim (1995) suggests that the Japanese might be classified as representing the co-existence mode and perhaps also the relational mode.

Japanese culture has two sides to virtually all social phenomena, which would suggest the co-existence mode although there is a need to separate the two different realities that correspond to the two different selves (Azuma 1986). As a result, the relational mode 'is maintained in close relationships such as within a group or team working together, whereas the co-existence mode prevails in public situations. Since the Japanese concept of the self is a reflection of others ('I am your you', 汝の汝), an individual can also lose his self-identity when joining a religious group that insists on this. This would be typical of the underdifferentiated mode of Collectivism.

In terms of knowledge creation within companies, the relational mode of Collectivism has most relevance in Japan (Figure 26). Belonging to a company or corporate group sets a firm boundary for the group and distinguishes it from
other groups. Members of the same group let down the boundaries of the self (fluid boundary between persons) and join together in forming an entity. Markus and Kitayama (1991, 229) describe this as

"the willingness and ability to feel and think what others are feeling and thinking, to absorb this information without being told, and to help others to satisfy their wishes and realize their goals."

The Fluid Concept of the self in Japanese culture means that knowledge creation can take place at the group level at all stages. In socializing one transfers tacit knowledge by extending the borders of the self to cover the other and thus one is able to feel what the others feel. Metaphors can be used in the externalization process to provoke images of the collective unconsciousness. The combination process becomes receiver-oriented since it entails communication not between two separate entities but within the extended self that contains the group.

Internalization is similar to watching a Tea Master and imitating his movements in order to internalize the skill. Form is very important in this, because by repeating the right form one can also internalize the action.
According to Nakane (1984), Japanese groups are based on constant and tangible personal relations. Sullivan and Moraba (1986, 144) claim that

"It is these intense relationships that energize information flows in Japanese organizations so that variety created within organizations is reduced to information within low-level groups. Loosely knit groups would have great difficulty accomplishing transformation of the immense amounts of unstructured data that Japanese organizations collect." 

The way of knowing by extending the boundaries of the self to cover the other is quite the reverse of objective knowing. It requires empathy ('an ability to step into the other's shoes') and perception through all of the senses. When you become something instead of observing it, you can gather knowledge on different eyes and through different channels.

Groupism (集団主義) in Japanese culture is not the same as groupism in China, where everyone does the same thing at the same time. Japanese informants observing a video of Chinese preschool noted that the authoritarian manner in which the Chinese taught group-oriented behaviors to children was quite different from the Japanese manner, which emphasized a gentler, more joyful, more understanding and flexible approach. Groupism in Japan is assumed to be compatible with human feeling:

"It makes possible the fullest realization of something truly human, the experience of camaraderie, of fusion, of unity with something larger than the self." (Tobin et al. 1989, 39)

A Comparison of the Concept of the Self in Finland and Japan

The major characteristics of the concept of the self in Japan and Finland are summarized in Table 17. The autonomous self may be advantageous on the individual level of knowledge creation, but when transferring knowledge between individuals, the ability to negotiate the self to be part of the group makes the transfer of tacit knowledge possible. Moraba, Toyama, and Brosière (2001, 500) suggest that the barrier between the self and others's remoted in
order to provide the right environment for new knowledge creation. Knowledge creation can be accelerated if the group reaches a shared rhythm:

"The management of interaction rhythms among team members, i.e. that of divergence and convergence of various interaction rhythms, plays a critical role in accelerating the knowledge creation process." ... "...the sharing of mental and physical rhythm among participants of a field may serve as the driving force of socialization." (Nonaka 1994, 24)

<table>
<thead>
<tr>
<th>Orientation to the Self and Other (conceptualized in this study based on Ting-Toomey 1988)</th>
<th>Modes of Collectivism (Nonaka 1995)</th>
<th>Type of Relationship (Doi 1986a)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Japanese</strong></td>
<td><strong>Autonomous Self</strong> - <strong>Autonomous Other</strong></td>
<td><strong>Collectivism</strong></td>
</tr>
<tr>
<td><strong>Korean</strong></td>
<td><strong>Autonomous</strong> - <strong>Autonomous Self</strong> - <strong>Autonomous Other</strong></td>
<td><strong>Collectivism</strong></td>
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Table 17: The Characteristics of the Concept of the Self in Japan and India

For the Japanese, being a member of a group means letting down the boundaries of the self and forming an entity together with the inside members of the group. This type of relational mode of collectivism is based on the 'oneness' of the group members. The boundaries between groups are firm: the other as 'the other group' is regarded as an autonomous whole. There is no easy access to existing groups, and therefore autonomy is respected. With regard to ins' side groups, the Japanese do not have the urge to be included. This is related to the Japanese concepts of 表 (omote, 'in the front') and 裏 (ura, 'in the back')

58 which refer to the separation of the outs'cercer and the ins'cercer (Doi 1985).

According to Doi (1986, 31):

"To be Japanese is to be aware of the fact that things have an omote and an ura, and a person is not consacr ined to be an adult until he or she has grasped this distinction."

This nature Japanese people need to immerse themselves in the group to which they belong but at the same time to accept that they are not part of...

58 As the concepts of 外 outs'cercer; 内 ins'cercer; 表 (the public) and 裏 (the 'inside')
other groups. A Finn, on the other hand, does not make a distinction between inside and outside; a core value in Finnish culture is 'honesty', which is interpreted in the sense that the true self is displayed on all occasions. The group-oriented Japanese sometimes seem helpless to the Finns:

"The Japanese are more group-type of people, consensus is very important... no big decisions are made alone... talk with someone... get the picture that very few improvising skills... finger in mouth... " (Interview)

"Japanese rely on others more easily... even rules for politeness require dependence... 'yoroshiku' be good to me, social situations require that this position is supported by behavior, that's those over a table bring the other positions... cannot for example become zero exec. Japanese superordinates need more instructions, get used to work... when the superiors is present the Japanese will behave differently... that in the backgroiund, rather a caretaker, focus on the size, doesn't speak, en masse... act area just two of you, can be direct action, others see, we are not bound by hierarchy, by the presence of the superiors... then it works well." (Interview)

"They are used to to a pace of our own, you take a car or two at a time and to a tennis at a time, eat to, do to be seen... There are many people in a small area and the employer expects to stay so not to cause chaos... in concert." (Interview)

The autonomy and independence of Finns was described by one of the informants as 'being more outgoing'. He considered the Finns more outgoing than other Westerners in the sense that they tended to explore things on their own:

"The Finns are more outgoing in the sense that they... like to explore... Americans can't go out very often, they are not able to stick to their own clubs or society often, Americans and only a car and one to the country side to out and... say it's too complicated, you can't read the road signs, they always complain it's just too complicated... but the Finns can do from people also easily, they... Americans are packing a car and they're a car... whereas if you get a new "raisa family", you'll only a car and they'll start going out... eat in golf... to be a golf... to be a golf... when you have a golf competition, they all come and add, same as when you have a brand ambassador," (Interview)

It seems that Finns adapt to Japanese culture by being independent: they do not expect to be included in Japanese groups so they live in their own way. The Finnish-Japanese business community provides them with an opportunity to meet other Finns once a month and this seems to suit them. During the data-collection process I attended one of these monthly meetings in Tokyo, and sat beside a Finnish manager who had driven that day from Osaka to Tokyo, he did
not read Japanese, but with the help of an elaborate satellite navigation system he was able to manage on his own on Japanese roads.

Other Western expatriates seem to feel a greater need to belong to groups. One informant noted that the French and Americans tended to stick to their own groups in Japan:

"...where there were a lot of French people and they were just saying that they couldn't eat Japanese food and they never go out anywhere and they would just like to eat good French food, lot of cheese and wine..." (Interview)

The Japanese living in Finland seem to lack opportunities to become members of any group. Since the Finns are also very autonomous and independent at work, it is difficult for the Japanese to establish dependence relationships when working with them. The Finns separate work and leisure time, and they do not generally want to spend time with their colleagues after working hours. The Japanese, on the other hand, are accustomed to building friendship relations with their work colleagues, whom they consider part of their 'inner group'. Important customers are also considered part of this group and very personal and intimate knowledge is shared with them. Sharing personal knowledge was considered a skill by one Japanese informant:

"If a Finnish person starts to speak a little bit about his private life then it will be good motivation for the Japanese to start accepting him as a person so that also could be thought of as a skill." (Interview)

Respect for the other's autonomy is also visible in how the Japanese and the Finns treat space in communication: both want to keep some distance from the communication partner and do not hold long eye contact during discussion. One Finnish informant had observed two young girls in a Yamanote train and realized that something was bothering about one of them (it came out that she was Chinese), as she kept moving closer all the time:

"Japanese don't care about...they are careful not to touch the other...the difference to a Finnish is that everyone keeps everyone as far as possible in a case...so that if somebody pushes you by accident, at least it hurts a little...a Japanese is very non-aggressive so it's a occurrence of the other, a Japanese is the one that 'can't let you come' that 'act of a occurrence of the other." (Interview)
The Finnish-Japanese Business Community

Business between Finland and Japan has grown over the years and a Finnish-Japanese business community now exists in both countries. The Finnish-Japanese Chamber of Commerce (FJCC) was established in Finland in 1981. It has regular meetings - either lunches or small events in the late afternoons, to which lecturers and speakers representing Finnish and Japanese business and politics are invited. Visits to member companies are also arranged on a regular basis. The main event for the FJCC is the annual Japan Golf Day.

The Finnish-Japanese business community in Japan has various activities. Informal monthly lunches of the 'Finnish Business Executives Association' became the Finnish Business Council (FBC) in 1992. When Finland joined the EU in 1995 it also became part of the European Business Council in Japan (EBC). To be active in this cooperation requires additional resources, as well as a formal status, and this led to the establishment of the Finnish Chamber of Commerce in Japan (FCCJ) in 1999. In the same year a group of Finnish companies established K.K. Finland Village "for the purpose of creating a high-class and affordable recreation facility for companies, their staff and for people interested in a Finnish type resort". It is located by a lake, a two-and-half-hour journey from Tokyo, with a landscape similar to that of Finland. Finland Village provides a context in which Finns and Japanese can socialize.

A key person in the Finnish-Japanese business community, Mr. Claes-Göran Bystedt, founded a virtual Finland House in 1994. Its overall purpose is to promote business between Finland and Japan, focusing on improving the businesses of Finnish companies in Japan. Finland House links the FCCJ and Finland Village.

The Finnish-Japanese business community in Japan promotes a network of human relationships for Finnish expatriate managers and Japanese managers working either in Finnish subsidiaries in Japan or in Japanese companies doing business in Finland. This network can be used to obtain knowledge and to
transfer experience gained by other companies, and on the personal level it can bring together people with similar interests: jazz music connected two Japanese and Finnish managers.

Shared experience, which enables the transfer of tacit knowledge, can be gained in joint activities organized by the FCCJ (such as Christmas parties and the Finnish Independence Day party). Finland Village is also a place for volunteer work activities, such as painting the cottage, and for enjoying the sauna:

"I have friends in the countryside who don't speak English... we have become acquainted at a certain level... in the sauna it is even good to talk and become friends, but we can't get along in the way that we could talk about anything... " (Interview)

Not all Finnish companies operating in Japan are members, or active members, of the FCCJ. One big multinational Finnish company with a subsidiary in Japan employing about 50 expatriates has its own society, and possibly does not consider it necessary to be part of the Finnish-Japanese business community. For smaller companies, however, this network can be crucial for both business and personal survival.

5.4 Externalization by Engineers and Poets

Externalization is a process of articulating tacit knowledge into explicit concepts. Nonaka and Takeuchi (1995, 66) consider it the key to knowledge creation, because it creates new explicit concepts from tacit knowledge.

"When we attempt to conceptualize an image, we express its essence mostly in language - writing is an act of converting tacit knowledge into articulate knowledge." (ibid, 64)

I considered in Chapter 4 the way in which language shapes our thought. It seems that it is not only the oral language, but also and especially, the written language that acts as a tool for organizing knowledge. The process of converting tacit images (we think in images) into explicit knowledge in the form of writing is very different in Finland and Japan. The phonetic script is cursive, character arc allows for the core of an abstract concept. is horizontal, eti-to-
right direction enhances left-brain bias and subsequent focus on the rational. As a result, Finnish externalization is abstract and linear. Sound-to-sign correspondence promotes transparency.

The pictographic nature of Japanese kanji enhances concrete thinking. The image in tacit knowledge is converted to another image in written kanji, and thus the difference between tacit and explicit knowledge is smaller than in phonetic writing. Since Japanese text is written both vertically from right-to-left, and horizontally from left-to-right, and because reading kanji is a holistic process, there is more symmetry in terms of using the brain when processing the text. Kanji are linked together through radicals (parts of the pictographs) and they generate a network of concepts. Consequently, Japanese externalization is concrete and associative in character.

Converting Tacit Knowledge in to Explicit Knowledge

Nonaka (野中 1990) originally used and the English term 'articulation' to describe the process of transforming tacit knowledge into (explicit) knowledge with form. 分 is a 'part, segment or division' and 節 means 'a node or joint in bamboo', thus the word associates first with 'dividing bamboo' (Henshall 1992; 漢字學習辞典 1983). 節 is also a point in a statement. In this combination and order，分節，is not part of common vocabulary in Japanese, so the meaning must be explained by the user of the term.

In the Japanese context, the externalization process as conversion from 暗黙の知 (tacit knowledge) to 形式的知 (formalized knowledge) denotes 'giving visual form' to knowledge from different sensory channels. Form is something that can

59 In another order, 節分，it means 'the day before the calendrical beginning of spring'. (The Bocanska 2001)
be seen (and felt), but does not draw attention to sound. On the other hand, the English meaning for explicit knowledge refers to verbal knowledge, thus tacit knowledge becomes explicit when it is verbalized (spoken). Interestingly, when Nonaka (野中 1990) first gave 'articulation' as the English equivalent to 分割化, he selected a word that has the meaning of both 'verbalization' and 'joining together', the latter being closer to the Japanese meaning as 'joining parts together'.

The English verb 'to externalize' is translated into Finnish as antaa ulkoinen muoto 'giving something an external form' (Alanne 1980). This is close to the Japanese concept of 'giving form' although the conversion of 'hiljainen tieto' (tacit knowledge) into 'eksplisiittinen tieto' (explicit knowledge) in the Finnish knowledge-creation process means putting a low degree of something into verbal form.

Language as a cognitive tool was referred to in Chapter 3 as a key issue in the externalization process: when tacit knowledge is made explicit, it is being verbalized. The way in which language shapes our thought was then discussed in Chapter 4. The key persons interviewed for this study agreed that language affects our thinking: as one of the Finns commented,

"I think that when a person speaks a foreign language he doesn't speak it into his soul." (Interview)

There are similarities between the Finnish and Japanese languages (both being agglutinative, non-agentive, and topic-prominent). They even sound somewhat similar and there are many words that are similar but carry a different meaning. Such similarities were observed by the informants:

"It is easier for the Finns and Japanese to learn each other's language because of similarities in pronunciation and syllabic structure." (Interview)

"Chinese and English languages belong to the same group, "so the Finns and Japanese are in the same group, I'm afraid I will not know how to operate." (Interview)

"It is most amusing that both Japanese and Finnish have the impression that they are unique as nations in the world and both have the world's most difficult languages to..."
no foreigner can ever learn, and no foreigner can ever become really part of that culture and society." (Interview)

The existence of similarities has given rise to the myth among the Finnish-Japanese business community that the two languages are actually related to each other. This idea of being 'linguistic cousins' creates a feeling of familiarity, which is supported by the type of broken English used by Finns and Japanese in international business encounters. One Finnish expatriate manager who had also lived for a longer period of time in Britain commented that his English was deteriorating in Japan:

"What is funny here is that even though one uses English every day... writes English a lot, yet my English gets worse the longer I stay here... I feel shame as a Briton or American... feel ashamed... co-speak better English... I co-speak more exactly because there are so many who speak English well in Japan because there are so many who speak English exactly as possible... use simple words... forget all Oxford English." (Interview)

Finns who were used to explaining things in 'Japanese English' sometimes had to act as 'interpreters' between visiting Finns who spoke 'Finnish English' and the Japanese speaking 'Japanese English':

"...many experiences of when some Finns came here and we went to see some Japanese client who spoke quite well English... and this Finn explained something in English... then not without exception but very, very often this Japanese looked at me and I had to tell the same story in English so that a Japanese can understand that." (Interview)

However close the two languages may seem, starting to study Japanese at the age of 50 is still a great challenge, even for Finns:

"What has been a surprise concerning Japanese is that when speaking and pronouncing 'thereabouts', the Japanese listener doesn't understand at all - even though the Westerners understand each other's deficient Japanese." (Interview)

Metaphors in Knowledge Creation

According to Nonaka and Takeuchi (1995) when tacit knowledge becomes explicit it takes the shape of metaphors, analogies, concepts, hypotheses or models. Since Japanese writing consists of images, it is natural for the Japanese to use metaphors and analogies. However, even concepts are concrete and
'Pictographic' in Japanese text. Moraka (野中 1990) suggests that metaphors have an important role in the externalization process. Interestingly, he uses English loan words written in katakana when he talks about metaphor (メタファー一), analogy (アナロジー), and model (モデル), although there are Japanese kanji equivalents to these terms (野中 1990, 63; 68). However, by doing this he is able to lift the concept of metaphor to a more abstract level in Japanese, which might be necessary in order for the Japanese audience to realize how important metaphors are in knowledge creation. Since the Japanese written language (script itself when using kanji) is full of metaphors, the abstract word メタファー covers more than these.

The conceptual network generated by the word tacit in Japanese, 暗黙, as 暗黙 metaphors with tacit knowledge (Figure 27). Metaphor in Japanese as 暗黙 'clair de la conscience', and 暗黙 on its own refers to a "metaphor, a simile, a allegory, a fable, a parable, a story, a saying; an idea; an illustration, an instance, a comparison" (Kenkyusha’s 1983; Nelson 1982, Wieger 1965). Metaphor can also be written as 隠喻 'occasional understanding', or 比喩 'comparative understanding'. 直喻 means a simile, 'straight understanding', and it is related to 直感, as written as 直感 ‘intuition (insight), 直感的, a so written as 直観的 (immediate feeling, immediate sight). Intuition is also written as 直覚, which is a central concept in Nishida’s philosophy. This, 覚 is to ‘remember, conceive, laar’, making the meaning of 直覚 something like 'straight remembrance, instant learning'.
In the associative logic of Japanese kanji script therefore, we can move from 暗黙的知識, tacit knowledge, through 暗喩, a metaphor, to 直喩, a simile, and 直覚, intuition, and then back to 暗黙的知識, since intuition is the core of all knowledge.

Figure 27: The Conceptual Network Created by the Word Tacit in Japanese

The Finnish writing system and short literary tradition focusing on non-fiction emphasize the literal understanding of language. Tsoukas (1991, 571) claims that "Literal language has an inherently reductive propensity; it abstracts and segments experience in order to decisor relations between its constitutive components."
One cannot express feelings in literal language: one can only analyze and explain the situation that makes one feel in some way. For the Finns, externalization is expressing facts in a succinct manner, just like an engineer would prefer.

In contrast, one can express "an emotional reality lying beyond even conscious awareness" through metaphors (Tsoukas 1991, 571). Written Japanese texts "kanji" act as metaphors for concepts. Although the reader does not become one with the "kanji", this metaphorical use of script supports the immersion of the self and the other, the observer and the observed. Not only is the Japanese script metaphorical, there also exists a long literary tradition focusing on poetry and poetic expression.

Metaphorical language is a better alternative than literal language for expressing the continuous flow of experience, but in using it, humans are less able to detach themselves from experience in order to abstract it and explain it.

According to Tsoukas (1991, 571), metaphors are "closer to experience and consequently more vivid and memorable, but they are poor cognitive devices for either specifying mechanisms that produce observable phenomena or revealing the generality of the operation of explanatory mechanisms".

Furthermore, irony, carried to the point of paradox, allows expression of experience in a different way, as Bacač (1987, 337) points out:

"Irony, paradox, and contradiction are beyond the scope of action theory and action theory in general. Nor can a logical syllogism function if the meaning of some of the statements are taken as irony or self-contradiction?"

Nonaka and Takeuchi (1995, 65) claim that externalization is often driven by metaphor and/or analogy. They give examples from Japanese product development, such as when the Home Bakery product was developed by Matsushita. First the metaphor of 'Hotel Bread' was externalized along with an analogy of the 'Osaka International Hotel head baker'. This influenced the
concept creation by hinting at more delicious bread and by creating the ‘twist dough’ concept.

Interestingly, one Finnish interviewee used metaphors when describing differences in the Japanese and Finnish approaches:

“Many times, the Japanese custom is this that first you take a wooden knife and practice using it for twenty or thirty years and after this you take a piece of wood and see if these match together, and only after that you take a real knife and then you start practicing, and this takes fifty years … so cultural differences … the Japanese have a long perspective and Finns have a certain ‘the law’ that if you cannot collect enough food covering three months for the winter then you die… the Japanese have been able to assure that these are to be made relatively fast if it is a matter of survival.” (Interview)

Linear Logic vs. Associative Logic

The key persons interviewed for this study were aware that there were differences in the externalization processes of the Finns and the Japanese, but it was difficult for them to say what exactly they were:

“’In fact, this is the biggest difference between Finns and Japanese decision making culture and culture of understanding things: a Finn thinks that this is kind of starting point and the premises that this project starts from, and then next one has to decide these and these matters, and then after it come these and these operations, and then will come evaluation, … but for the Japanese the process is somehow completely different, I cannot describe it, and I still don’t understand how it works in its totality, but anyhow it is so that after a sort of observation about that thing, one starts thinking about … also during following time they might start again from zero point even though they had all the papers at their disposal and they had read them and were in principle ready…’” (Interview)

“One Japanese interviewee described Japanese decision making as lacking in logic: “In total, there were a lot of illogical business decisions involved” (Interview) and one of the Finns maintained that the Japanese in no way aimed for transparency and clarity, saying that there was “opaqueness in Japan in decision making, non-
transparency" (Interview). The differences in logic were described as 'cyclic' or 'roundabout' for the Japanese and 'linear' and 'direct' for the Finns:

"It is not the language, but the mentality (ameba-like, cyclic)." (Interview)

"As for this cyclic decision-making or ameba likeness it is kind of exactly the same way if the discussions are in English or in Japanese… always feels somehow… very often get to a moment where suddenly one doesn't know where we are going… that one thinks that everything was quite clear and then one is back to the starting point after all." (Interview)

"This Japanese process… we go kind of linear, then it is cyclic. When one round has been done, another round is taken and then a third round, and it is difficult to know at what phase the decision is done that OK, let's join." (Interview)

"We assume that things proceed and do not return, but they advance, as if they are saying 'we advance', but for the Japanese it is not returning but it is another round… it is that cycle… it touches the starting point before it goes for the next round, and it may not be repetition for them, but for me it is, because I think that if things proceed they proceed and go straight, and at certain phases it is still advancing and focused on the end point at which one realizes that one has to take another step and not return at all, but for me, looking at it as a cycle means that one has to take another step at the same time." (Interview)

One Japanese interviewee had observed some changes in the Finnish way of doing business, and he compared the American and Finnish styles as follows:

"In recent years, more and more the American way of business administration has been introduced also in Finland… and especially to young managers… they want to make it into a matrix type of organisation and also categorise matters differently, so that everything is more structured, so that the Americans say 'it seems to be taking a lot of time to get to different conclusions', and it is more direct then, but still the way of managing technology is categorised by different perspectives, so that you get the young managers, they try to introduce that kind of system in the company as well." (Interview)

The Finns described themselves as 'pragmatic, direct, clear, and purposeful', and as being 'very target-oriented:

"It was not direct, make decisions fast and start implementation and then it goes easier and faster, and if it goes well then one can comment that it is neat and, and if it goes bad, then one may be a little bit unhappy." (Interview)

"It is easier and more direct to operate rather directly and progress... to the point, a Japanese a certain tone is needed, it is easier and lag is not so much race." (Interview)
"The Finnish and Japanese mentality is quite alike: we are relatively modest and a little bit shy ... and honest." (Interview станавлиح)

The central characteristic for Finnish people is honesty, trust and following the same rules as everybody else.

On the other hand, they considered the Japanese too formal, even to the extent of being boring:

"In the Japanese the first problems arise from the fact that they are so formal and some say, boring, but the problems that are discussed many times are also here and they proceed with things slowly ... it is discussion or decision making." (Interview станавлиح)

"If the Japanese are flexible at the personal level, in business there are instructions, cannot be flexible unless they receive permission ... greater variability than we are in between stubbornness and flexibility." (Interview станавлиح)

The Japanese interviewees considered the indirect style of Japanese externalisation as being considerate of other person's feelings:

"The conclusion comes first, it comes gradually, gradually in the end... the best benefit is that you don't have to be direct... you have less tendency to hurt the person." (Interview станавлиح)

"For the Japanese people the conclusion comes last maybe... they say reasons first... process first and finally comes the conclusion... while they are talking they expect the other person to guess or to understand what they mean... through this process Japanese people expect the other person to agree to that person." (Interview станавлиح)

However, when taken to the extreme, Japanese emotionality can turn against itself:

"Sometimes in Japanese conference or meetings somebody just got so upset emotionally and they just lose the logic... they can't agree... they can't agree... but that happens... sometimes... and that of Japanese's... is applicable to me too... if somebody says the opinion against you... Japanese people have a tendency to feel that you are rejected as a whole person not only the opinion... so in order to avoid that you have to be very, very, carefully say that you don't agree to that person... but if somebody says directly that you can't accept or that they don't understand... the person will get upset and feel that he is not accepted as a person... very bad afterwards." (Interview станавлиح)

Language Skills

In my 1991 empirical study I discovered that the single most important criterion in recruiting personnel for Finnish subsidiaries in Japan was the ability to
speak English (Karppinen-Takada 1994). At that time, 35% of the Finnish subsidiaries in Japan had a Finnish expatriate manager, and very few of them spoke any Japanese, let alone were fluent enough to use Japanese in business negotiations. In fact, there was a saying among the expatriates that 'it's better not to speak Japanese', which seemed to discourage newcomers from learning the language.

There were expatriate managers in 63% of the Finnish subsidiaries in 2003, but there was no longer the pressure to hire Japanese personnel with fluency in English because 77% of the Finnish expatriate managers spoke at least some Japanese, and some were so able to read and write to some extent. The key informant on the Finnish business community in Japan identified two visible trends in the Finnish business organizations there: first, there was a trend away from using Finnish expatriates and hiring local (Japanese) managers; and second, there were more 'new generation' Finnish managers who had at some point in their lives learned Japanese (were either second-generation Finnish businessmen in Japan or had participated in the EU ETP program or similar).

In one Finnish subsidiary, the Japanese managing director stated explicitly that the ability to speak English language was not the major criterion in recruiting:

"When recruiting, English is not the key when we look for the people who promote Finnish products for Japanese clients. The reason is not that there are very, very different ways of transactions and the payment terms is also similar compared to others, and also the verbal commitment and confidence between the seller and buyer is one of the keys."

(Interview 9)

The trend in the new breed of Finnish expatriates to speak Japanese changes their quality. Some new companies (established after 1991) were managed by Finnish expatriates with Japanese speaking skills, and there were also three subsidiaries that had previously been managed by Japanese personnel, but were now under the control of Finnish expatriates with Japanese language ability. Thus the move towards selecting expatriate managers could also be a result of the development of their language skills. As one interviewee noted:

"In the foreign community, most can speak only everyday Japanese, not read or write... but there was a foreigner who spoke Japanese was a
Another interviewee commented that not all Finnish companies were interested in expatriates with Japanese language skills:

"Company [X] is a different case... about 50 persons... they stay so short time... they are not counted... they are a group of people to do a task from a few years assignment, and... they don't have the recruited locally and so speak Japanese." (Interview)

Using English as a common language that is foreign to both the Japanese and the Finns has its advantages, but the Finnish expatriates who want to learn Japanese might thus find very few opportunities to improve their spoken Japanese:

"I came out that those Japanese who are able to speak English or some other language understood by the visitor, have been reluctant to speak Japanese. Surely, it's cumbersome to understand bad language, they don't feel that they are understood and so on... even my Japanese mother-in-law told me always during the first nine months that you have really improved in Japanese language... and shifted immediately to speak English." (Interview)

Some Japanese interviewees acknowledged that they processed their thoughts differently depending on whether they spoke English or Japanese:

"For me explaining in English and Japanese is a totally different process because... it's so difficult for me to mix the two languages in one conversation... I can speak English... my mode is English... and Japanese... and Japanese... can also switch in a Japanese way." (Interview)

"In English I will always say the result or conclusion first and then because... I will explain the reason right after... say the sentence... so get used to it and speak... Japanese first and introduction and talk about some related matters and then the conclusion always comes at the end." (Interview)

The Finns also saw the difference in thinking style when Japanese people were using English:

"When operating in English clearly the Japanese can operate more directly." (Interview)

However, the Finns who were able to speak Japanese extended the Finnish direct style (language 1) to Japanese (language 2):

"If you speak in English one can speak more directly... also Japanese... I try to speak also in a Japanese the direct and native from the standpoint that I am a foreigner and I am not a part of this society, so I can take advantage of this and act just as best suits me." (Interview)
Even the Finnish expatriates who were relatively fluent in Japanese, did not necessarily use Japanese in business negotiations, and considered English a neutral choice:

"Taga is equally a foreign language to the Finns... in that respect if one uses more Taga it would be a neutral language for both, if one could communicate in Taga... I don't use neutral, but since I can say that I manage Japanese really well so I prefer to use Japanese in all situations rather than English." (Interview

"It is reasonable that both are on thin ice... foreign language for both... Japanese is anyhow so demanding for me and one needs to play with nuances in it... when one doesn't understand perfectly." (Interview

Yet, speaking Japanese was considered to be an advantage for the Finnish expatriate:

"It is clearly an advantage to speak Japanese... somehow immediately... the counterpart is more relaxed even if he speaks quite good Taga... it is possible to operate in Taga faster than in English." (Interview

Interviewee recalled meeting Japanese people after learning to speak some Japanese: they seemed to be totally different:

"as if I had never met them... only when I met them in Japanese could I become friends with them... it was quite an interesting experience." (Interview

The main advantage in speaking Japanese for the Finns came from being able to select which language to use in appropriate situations:

"Isaa money... I speak taga..." (Interview

"The selection of language depends on what one talks about." (Interview

"Generally speaking with the Japanese... in human interaction, not in business or serious matters... Japanese is always better. For sure I would also have those business negotiations in Japanese if I felt strong enough... but it's good to get some leveling... usually my Taga is better than that of the Japanese counterpart..." (Interview

Finnish, Japanese and English are used alternatively in the Finnish-Japanese business community:

"After a while we start speaking Finnish... now they also start speaking Japanese... I cannot say anything... they just answer..." (Interview

As I have suggested in this section, the conversion of tacit knowledge into explicit knowledge is shaped by the language that is used. This is the process of
externalization is different in Finnish and Japanese. The Finnish language promotes abstract and linear categorization, whereas the Japanese externalization style is concrete and associative. I noted earlier that theory suggests that language one also coordinates the processing of thought in language two (Tan et al. 2003). My empirical study suggests, however, that Japanese who are fluent in English will also adopt their externalization style in the English mode. Finns speaking Japanese, on the other hand, seem to keep their direct Finnish externalization style, partly as a deliberate choice allowing them to get things done more quickly.

5.5 Combination by Engineers and Poets

Combination is defined as a process of systemizing concepts into a knowledge system (Nonaka and Takeuchi 1995, 67). It involves exchanging and combining different bodies of explicit knowledge through media such as documents, meetings and telephone conversations. The reconfiguration of existing information through sorting, copying, combining, and categorizing explicit knowledge can lead to new knowledge, according to Nonaka and Takeuchi (ibid.). They claim that middle management plays a critical role in creating new concepts through the networking of codified information and knowledge.

From Explicit Knowledge to Explicit Knowledge

The process of combining (explicit) knowledge with form is called 連結 (1990), which means 'coupling, connection, combination' (Kenkyusha's 1983). The verb derived from it means to 'couple; attach; connect; interconnect; join; interlink', such as attaching sleeping cars to a train. This is the transfer of existing (explicit) knowledge, such as when a teacher explains to the pupils the movements of the moon.

In Finnish the English word 'combination' has the meanings of uniting (yhdistäminen) and being united (yhdistyminen) or connected with something.
Although the process of combination has a similar meaning in Japanese, what is being connected is verbal knowledge in Finnish knowledge creation, and 'visual form' in Japanese. Since Japanese writing consists of pictures, in theory there is no difference in the process since both could be said to combine verbal knowledge. In practice, however, these two patterns comprise very different processes.

For engineers, combination means connecting existing facts with others to create a solution to some technical problem, while for poets it means uniting images and meanings from different fields by association.

An approach that raises the quality of explicit knowledge is called 'knowledge rationality', which describes the rational ability to reflect on experience. It is an effective approach for producing explicit knowledge, but Nonaka (1994, 22) is aware of its weakness:

"Knowledge of rationality is an explicit-knowledge-oriented approach that is dominant in Western culture. It centers on the combination mode of knowledge conversion, and is effective in creating digital, discrete declarative knowledge. Knowledge of rationality tends to ignore the importance of existing explicit knowledge."

Verbal and Nonverbal Communication

Combination in the knowledge-creation process was linked to communication in chapter 3.5. There are different orientations to communication: the Japanese are receiver-oriented and pay attention to listening and interpretation skills to the extent that communication has telepathic characteristics to an outsider. In China and the United States, successful communication is believed to depend largely on the clarity of expression of the speaker, consequently there is emphasis on teaching children to express themselves clearly. In Japan, however, successful communication is believed to depend largely on the empathic and intuitive abilities of the listener (Lebra 1976), and thus children are taught less to express themselves than to be sensitive to others' spoken and unspoken forms of self-expression (Tobin et al. 1989, 190-191). Receiver-orientation
communication is understood tacitly in Japanese, which means that the knowledge-creation process may take some time. One Finnish interviewee observed that the Japanese were slow in decision-making:

"In Japan everything takes such a long time... to get a project started can take... warming up and preparing one-and-half years... then when they finally get the decision out they expect the results to start taking a week." (Interview

A Japanese interviewee also explained that negotiating in the Japanese style was time-consuming:

"Between Japanese persons... if I compromise this much then usually the other person will compromise this much and then negotiate... just around here just about both sides compromise... these kinds of negotiations are difficult to North Americans." (Interview

This receiver-oriented communication does not work with the Americans, as a Japanese interviewee noted:

"They[Americans] are like this way and sometimes I compromise this way and then we expect them to compromise this way too... but if we go back this way and then they go forward this way and go back this way and then they come this way... like chasing." (Interview

The Finns are sender-oriented, but minimize both verbal and nonverbal messages. In the two-dimensional mode of contextuality of communication conceived in this study, the succinct mode of communication describes best the Finnish type of communication, and the telepathic mode Japanese communication. It was mentioned earlier that Americans are encouraged to express their wants, needs, and feelings verbally. Finns, on the other hand, are taught to stick to the facts in their succinct verbal communication.

The succinct mode of communication bears some resemblance to the Japanese telepathic mode in that both use longer periods of silence. This similarity was also recognized by the informants. Interviewee C claimed that it was easier for Finns and Japanese to get along with each other than with Americans. Another key person noted that Finns had an advantage even compared with other Europeans:
"Similarly in communication... leaving space for the other... 'stealing space' at the other person's say, staying at all the time and keeping your own sayings on a spare frame, 'stealing and adjusting, facing a common tune.'" (Interview 2)

Finns economize on words: for example, when buying a transfer ticket in a tram a Finns will just say 'transfer', not adding other words such as 'please'. This is not because Finns are rude, but because they respect the time and personal space of others and the want to bother them as little as possible. This may appear as a lack of initiative to the Japanese. Although the Japanese interviewees generally had a very positive image of Finns, one also complained that they were too slow and patient:

"Finns are quite acceptable, serious, faithful, trust, not too formal (...) I often complained to them that you are too slow, you are too patient, you are not too dictative [...] those are the three key words." (Interview 1)

Misunderstandings in verbal communication between Finns and Japanese are also caused by the different styles: Finns minimize what they say and put a literal meaning in the verbal message, while the Japanese talk around the subject and leave the real meaning to be interpreted in-between the lines. Both Japanese and Finns have to adjust their communication style when speaking to each other in English. One expatriate Finnish manager said that he had to adjust his verbal communication when speaking to the Japanese:

"Slowly, simple sentences and simple words, forget about 'showing off', check every now and then that they are following." (Interview 2)

The Japanese recognize the need to change their communication style depending on whether they are speaking English or Japanese:

"...the tone of the speech is also different, the things that I care is also different... it is to be more careful and considerate when speaking Japanese... and in a special manner which they accept they accept me as a woman... you know." (Interview 3)

Several Finnish informants stressed that, it was important to have concrete material or use drawings when discussing with the Japanese. As one of them expressed it:

"Physical material is very important... that you leave something on paper because they can read and write English more, much more than they can speak or
Since the Japanese adopt the Japanese communication style in English, they use aizushi back-channeling in English, for example, which was confusing for the Finns:

"They say always that 'hai, hai, hai', yes, yes, yes all the time along the way...it's quite a back-channeling that's coming out of your mouth, they do not back-channel the meaning at all...someone say 'immediate, stop, stop, stop'..." (interview)

It's difficult to place the Japanese style of nonverbal communication in the categories of the communication theories. The very idea of verbal communication in Japanese is very different from the Western (usually compared to American English) idea; the Japanese language is seen as a subjective experience rather than as an objective entity. Words are employed as tools for communication in the English language, and thoughts and ideas are treated as things contained in words (Maynard 1997, 180-181), whereas in Japan, language is considered a poor medium for expressing feelings but a useful medium for expressing social cohesion (Tobin et al. 1989, 191).

Understanding language in the former sense places communication at an angle of the conduit process and language is treated as an object that can be transmitted from one place to another: "In the American view, words are compact, useful, and manageable - a most tangible objects that can be transmitted from one person to another." (Maynard 1997, 181)

Conversely, the Japanese consider words meaningful only in the context of a communication event. Social, situational, psychological, and emotional factors must be integrated before words can be understood: language is seen as an event rather than as an object (Maynard 1997, 181). Nonverbal communication in Japan has a greater subtlety than elsewhere: it is analogical and it refers to something expressed by sympathy and empathy. One interviewee described it as giving space to the other.
Nonverbal communication is in a way giving space to the other... longer acceptable silent moments in discussion in Japanese and Finnish than in South-European or American in which silent moments should be filled. (Interview)

Often-cited characteristics of Japanese nonverbal communication include smiling, bowing, and being silent. The two former lie behind the notion of the polite Japanese, and silence is often misunderstood as a lack of communication, which it is not.

The Japanese associate human contact with nonverbal rather than verbal communication (Doi 1974a, 20). Verbal communication in Japanese is receiver-oriented, which means that the speaker may leave the sentence open to be finished by the receiver. The Japanese hesitate or say something ambiguous when they fear that what they have in mind might be disagreeable to others. Their nonverbal communication does not mean touching or kinesics, but is more to do with feeling the mood of the other person.

One interviewee gave advice on reading Japanese nonverbal signs:

"It is not telepathy... it is based on learned things... more important than a list is maybe in a way... to take open and into situation... the counterpart also has an open way, things will sort out... so need to make sure that one communicates in a certain way... stance, attitude is most important." (Interview)

Silence in Finnish and Japanese Communication

Tobin et al. (1989, 153) note that, although American children enjoy great freedom to express their opinions and feelings, they are much less free than children in China or Japan to remain silent and to hide their feelings. Many of the key persons interviewed for this study took up silence as an important similarity in communication between the Finns and the Japanese. As one Finnish informant said:

"Tolerance of silence... that distance... can be taken as a tic... to the middle of a conversation, a tacit effort getting into terible angst... it's something... this is a tacit message... Finns and Japanese take courses so that they communicate... Finns and Japanese step back when Americans come so close." (Interview)
The meaning of silence is very different in these cultures, however. Finns are atypical in the West in that they are known as 'the silent Europeans'. Just as in Japan, there are many proverbs in Finland praising silence over speech: 'Speech is silver, silence is gold'. The national joke in Finland is that a Finn can 'remain silent in several languages', referring to the obligatory study of several languages at school (Finnish and a second language). Some researchers have interpreted Finnish silence as a sign of the 'Eastern character' (Widén 1986), but I claim that its meaning differs from silence in Japan. Keeping silent in Finland usually means an interval in communication rather than engaging in active nonverbal communication. During the break the person may be thinking what to say next, or he or she may not be thinking of anything special.

The Japanese word for 'tacit', 暗黙, can be translated into English as 'silence', but we should bear in mind that silence has a very different meaning in Japanese than in Western communication. For the Japanese it involves the active use of different senses in order to understand holistically what is going on.

Cultural Mediators in International Business

Ohmae (1988) wrote his book "Beyond National Boundaries" with a Japanese audience in mind. Although he structured the text and added some clarifications for the English edition, it is still easy to see that the book was intended to make the Japanese aware, rather than to convince the non-Japanese. One of the most striking examples of this occurs in the chapter on communication: Ohmae seems to think that it is the Japanese who have the duty to bridge whatever cultural gaps exist between Japan and the rest of the world. This idea could stem from the underlying assumption that the Japanese language and culture are too difficult to be mastered by non-Japanese. It could also be a result of the sort of inferiority complex that the Japanese have in relation to Western cultures. Since I do not support either of these two assumptions, I assume that since the book
was written for the Japanese, the aim was to emphasize the importance of understanding foreign cultures and to encourage the Japanese to be more active in this regard.

In fact, Ohmae (1988) stresses the need for the Japanese to explain themselves to the rest of the world. Western interpretations (by so-called Japan experts) might be "inadvertently false or be couched in language that is detrimental to Japan in the long run" (ibid, 69). However, given their high-context culture and extensive use of tacit communication, the Japanese are not very good at explaining things.

Communication between companies rooted in different cultures also poses problems in the globalizing world. Although it has been said that national borders will soon no longer exist, and that markets are very homogenized around the industrialized world, it still remains a fact that modes of communication and ways of thinking are very different in different cultural contexts, and companies operating in these environments must also take this into account.

Global business requires communication between high- and low-context cultures as well as among them. There is a need for cultural mediators who can successfully interpret between them (Karppinen-Takada 1992). As Ohmae (1988, 107) suggests, "The result could be an entirely new species, a type of mutant with hybrid vigor." In terms of where to find these new "mutant heroes", the company has few choices: it can start training them, recruit them or hire them. Expatriate managers with local language skills are potential cultural mediators.

5.6 Internalization by Engineers and Poets

According to Moraba and Tabeshi (1995, 69), the internalization process turns explicit knowledge into tacit knowledge. They relate this to 'learning by doing', and maintain that it helps if the explicit knowledge is verbalized or diagrammed.
into documents, manuscripts, or oral stories. Documentation both facilitates the transfer of explicit knowledge to other people, and helps individuals to 'internalize what they experienced, thus enriching their tacit knowledge.

The Conversion of Explicit Knowledge into Tacit Knowledge

Transforming (explicit) knowledge with form into tacit knowledge is called 内面化・内田(1990), which refers to 'inner, internal, insíce', the inside and the interior, that is, to internalization and interiorization (Kenkyusha's 1983). He also refers to it as an everyday word 住み込み (inwelling).

A Finnish, internalization can be understood as 'sísästää' or 'sísästyi' (becoming internal), becoming ingrained with something). The verb has been used in expressions such as 'taiteilijan sisäistynyt luonnontuna' (the artist's inward sense of nature) (Aanne 1980).

Although it may seem that internalization is a similar process for the Finns and the Japanese, there are differences in how they perceive the explicit knowledge that has to be internalized. As discussed earlier, for the Finns explicit knowledge is verbal knowledge, which means either spoken or written in phonetic writing. Thus they perceive only verbal knowledge as something to be internalized and scan the environment only for words. Internalization is listening - by being quiet you convert verbal into 'hiljainen' (silent or a low degree of something). On the other hand, for the Japanese 'knowledge with form' is not limited to verbal knowledge, and it also includes knowledge perceived by different senses.

Internalization in the Finnish context concentrates on what has been said (or written), and what has not been said (or written) does not exist. One does not answer on what has been asked, one does not provide additional information. In the East, verbal symbols of any kind are treated sceptically, with the least confidence of all placed on the spoken word (Kimcaic 1987, 336). Verbal
knowledge is of little importance to the Japanese, it may even be just noise
disturbing the perception of what is important. But implicit knowledge has the
meaning of something that has been given a form. When internalizing this form
one opens it up to become images, smells, tastes, touch and emotions - even
sounds. One has to scan the environment with all the senses in order to
understand all the hidden meanings. For example, documenting one's
experience in the form of photographs, notes, and souvenirs, is an important
way for Japanese travelers to internalize their travel experiences.

The Japanese gift-exchange custom provides another example. There is a
tradition of wrapping that goes back to the Heian era over a thousand years ago.
Love letters in the Heian court were written in an ambiguous symbolic way and
wrapped to capture the scent of a seasonal flower. The receiver could learn not
only from the multiple meanings in the written text, but also from the size of
script, the quality of the paper, and the scent of the flower what the feelings of
the sender were. In modern Japan one periodically exchanges gifts with people
connected to one's private and business life. These gifts are carefully wrapped
and carry multiple symbols, starting from the prestige of the department-store
paper bag.

The development of sensory perception in Finland and Japan

I have claimed earlier in this study that the internalization process is affected by
the ability to receive signals or knowledge from the environment. Cultural
differences were found to exist in perception and sensing: in the West there is
generally more focus on verbal cues and the perception of nonverbal signals is
not practiced consciously. The Finns also focus on verbal communication, but
since the communication style is succinct, the scope of perception is more
limited. For the Japanese feeling-based receptivity is the dominant mode from
early on, and verbal signals are considered secondary, even disruptive. Since
there is similarity in the quantity of verbal messages and to erance for silent
periods in communication, the internalization processes of the Japanese and the
Finns appear similar. However, whereas the Finns take succinct verbal messages
literally and pay less attention to nonverbal cues, the Japanese look for hidden meaning behind every word and scan the environment for nonverbal messages.

Discussed studies of American and Japanese mothers in Chapter 3. It seems that, as compared to American caretakers, Finnish mothers, like Japanese mothers, have less verbal communication with their infants. However, Japanese mothers have more physical contact, whereas Finnish society and public opinion encourage the physical separation of the mother and the infant. The Japanese traditionally carry their infants on their backs: this custom persists even today because Japanese streets are unsuitable for baby carriages or prams. The physical closeness with the mother trains the infant in bodily movements, which are part of nonverbal communication in Japan. The concept of space also serves at an early age: there is a custom of co-sleeping of children with their parents. As Caudill and Platt (1974, 277) argue:

"The frequency with which children co-sleep with parents expresses a strong cultural emphasis on the nurturant aspects of family life and a correlative de-emphasis of its sexual aspects."

Finnish infants seem to lack both verbal communication stimuli and physical contact. A look at the information distributed at maternity-care centers in Finland suggests that Finnish mothers need to be encouraged to talk to their infants and touch them. It seems that the average Finnish mother does not talk very much with her infant, neither does she have very much physical contact with it: outside the home the baby sleeps in a baby carriage or sits in a pushchair. This is encouraged by society, for example, in that in the Helsinki transportation system one adult travels free of charge if she has a baby in a pushchair (if the baby is being carried the carrier must pay the fare). The fact that Finnish infants spend longer periods of time, both sleeping and awake (such as when the mother goes shopping), in a baby carriage suggests that they get very little experience of human communication. The view from the baby carriage is literally 'tunnel vision'.

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Inside the home the infant sleeps in its own bed or cradle, and preferably in its own room if there is enough space in the home. Again the advice from maternity centers and public opinion encourages this sleeping separation as healthy both for the infant and the marital relationship. The official advice from maternity centers is taken very seriously: breast-feeding has become popular again in recent years. bottle-feeding was considered both healthy and gender-neutral (either parent can feed the baby).

Finnish infants also sleep outside in the fresh air during wintertime. In cities the infant's baby carriage may be placed on the balcony. It could be argued that this time is spent in contact with nature (there is plenty of nature in Finnish cities) since the infant hears and feels natural sounds when sleeping in the open air.

The origins of the Finnish type of communication can be found in her near history. The now middle-aged (35-60 yrs) generation was born between 1944-1969, a time of major structural changes in Finnish society marked by rapid industrialization and urbanization. The model of a silent father who had returned emotionally disturbed from the war, and an active mother working both outside and at home, may have influenced the way in which this generation was brought up. In terms of caring for children, this background has certainly had an influence, along with the fact that the dual-income society directs the mothers of small infants to return to full-time work within one year of the birth of the child.

It is clear that cultural variation in communication starts very early in human life. A cultural bias in communication habits in early infancy is further cemented at school age, when achieving literacy also shapes the cultural way of processing and transferring knowledge. This forms the culture-specific knowledge-creation patterns. I have claimed earlier that silence in Finland denotes a lack of communication (passive silence), whereas in Japan it is tacit communication (active silence). Although Finns and Japanese feel at ease with
each other in silence, the Finns are not able to read the nonverbal stimuli sent by the Japanese.

Learning with the Body

Internalization could be understood as learning. In this study I have analyzed the different learning styles in Finland and Japan that reflect the first learning task, acquiring interact. Learning for the Finns is abstract and theoretical while for the Japanese it is a physical activity. Even the writing system is mastered through the physical repetition of kanji (physical memory). Japanese arts such as the tea ceremony, ikebana (flower arrangement), and calligraphy are all learned by experience and by observing the master carefully. For example, the body movements in the tea ceremony cannot be verbally explained, they have to be learned with the body.

The Japanese word 体得 is translated as 'realization, experience', and a verb derived from it means to 'realize, learn from experience' (Kenkyusha's 1983). 体 means 'body' and 得 means 'to gain', 'potential' (obtaining something valuable) (Henshall 1992). Thus 'learning from experience' denotes using the potential of the body. According to Nonaka (1994, 22), commitment to bodily experience means intentional self-internalization of the object and situation, which transcends the subject-object distinction thereby provoking access to 'true experience':

"Japanese firms encourage the use of judgement and knowledge formed through interaction with customers and by personal bodily experience rather than by 'objective', scientific conceptualization. Social interaction between individuals, groups and organizations are fundamental to organizational knowledge creation in Japan."

Nonaka (1994) warns that this may sometimes lead to a sort of 'experientialism' in which the importance of reflection and logical thinking is neglected. This, in turn
could lead to an over-emphasis on action and efficiency at the expense of a search for higher-level concepts that have universal application.

Learning from experience in the Japanese market was considered quite difficult by the Finnish expatriates. One of them noted that even though one might get into the system and learn to understand it,

"...but on the other hand, no outsider can ever understand that society. The outsider has a lifetime because one cannot get everything, and nobody is part of one's genes." (Interview ɕ)

However, there were also successful learners. As one Japanese interviewee noted of the Finnish expatriate who was a hub in the network in the Finnish-Japanese business society:

"He understands well the Japanese because he lives in the same way and not in the residential areas for foreigners." (Interview ɕ)

**Intuition**

Intuition was discussed in this study as an individual-level internalization process. However, intuitive understanding can also be understood as part of the internalization process. As far as Nishida is concerned, knowledge is not limited to reflection, and intuition is also a kind of knowledge. In fact, he claims that "直覚の方がむしろ真の知である." (It is intuition rather than reflection that is real knowledge). (西田 2004, 228)

Japanese internalization reflects the traditional perception of reality in the East, which can be traced back to the classical Asian theory of perception. More confidence is placed on the direct, immediate perceptions of reality at the 'point instant' of time, and on intuition than on perception of the word filtered by conceptual thought. This assumption is the source of the belief that the world itself is an illusion. (Kincaid 1987, 336)
Intuition is discussed in the West in the context of psychotherapy and human relations training, but it has been considered to be beyond existing methods of empirical research:

"Empirical research in the social sciences is very dependent on verbal recall and reporting. Intuitive understanding of some aspect of reality very often cannot be put into words." (Nicaic 1987, 336)

Here's an important difference between Eastern and Western perspectives on communication: the East remains sceptical of conceptual thought and its verbal representation, while the West remains sceptical of intuitive perception because it's so difficult to represent verbally and to measure. Although conceptual and intuitive thinking is used in both, there are differences in the degree of emphasis and confidence placed on these two terms of perception (information processing) in communication theory and practice. (Nicaic 1987, 336-337)

One Finnish expatriate who had lived for over ten years in Japan and spoke Japanese, commented:

"When you have been here long enough then you become kind of local and then you can sense what the others kind of mean with what they say." (Interview 1)

When asked what he meant by 'sensing', he answered:

"Well, for example body talk and all that kind of...when it says something so what it means with that's not ambiguous...then one can go home and think and is a companion if it...so what do you think that it meant with it, was it so or was it be this." (Interview 1)

Learning Intent in Finland and Japan

It seems that the relative ease of learning to read and write in Finnish fosters a low learning intent. Since the Finnish educational system fosters specialists, the area of interest for learning tends to be quite narrow later on. Conversely, inherent in the Japanese knowledge-creation pattern is high learning intent based on the efforts necessary for achieving literacy. Sullivan and Nonaka (1986, 144) claim that Japanese managers have an 'insatiable thirst for data':

"Japanese managers are inexact decision-makers with an insatiable thirst for data, and the way that senior and junior managers make data is of greater consequence than the way they sort to tonic trust within the organization".
This is reflected in the management practices that stress variety amplification: Japanese senior managers follow an information-gathering policy that considers all phenomena relevant; they require all employees to be `identifiers of corporate problems and opportunities'; they seek a large quantity of information from the environment; they state a desire for the firm to attain an ideal - a dream; they focus on creating challenges - barriers to overcome, problems to solve; and they vitalize people (Sullivan and Nonaka 1986).

Japanese managers are also interested in a variety of things beyond their own field. This was visible in this study, too: whereas the Finnish expatriate managers only commented on the practical differences between the Japanese and Western ways, one of the Japanese informants was able to discuss the philosophical roots of the Japanese way of thinking as follows:

"...one of the most differences is base of our feelings... and that's only my personal view... in Europe, culture is standing for Jesus Christ, religion, and you can clearly see ethics to enter into, therefore you can say that's right, that's wrong, this is, yes, false, so... not acting, Japanese people can't make that face of base in our minds, of course we have a Baccalaureate, but the basic idea of Baccalaureate is to accept everything... and in Japan, it's a Japanese Baccalaureate, it's a base of our original religion and Baccalaureate... and if you go to a Japanese shrine, Japanese temple... in some temples you have a shrine in a temple... and that's really a different way of thinking... and traditional Japanese people think that's the right way to protect, to have a temple and that's maybe not the accepted in the European countries... so you can culturally go, you have a different way of thinking, the tree is, sea is good, etc. and therefore you can't make the base to judge things... and therefore, the most important thing is what other people thinks... and how you should take balance in the society... and how to create consensus in a company... that is the base of Japanese way of thinking... that is our biggest difference." (Interview)

In contrast, American management behavior has been described as variety reduction, the tendency of senior managers to state policy focusing only on relevant issues and sources of information; to identify specific employees who will identify problems and opportunities; to seek out high-quality information from the environment; to state a desire for the firm to attain a realistic goal; to focus on taking advantage of opportunities - facing holes in the barrier to crawl through; and to direct people (Sullivan and Nonaka 1986). Finnish management practices also reflect this style: it is important to keep within the area of your own specialization ("suutari pysyköön lestissään") and to focus on the topic, and one should confine oneself to doing one's own business.
quality information is something that could be considered objective truth, while non-business-related information is not important. As the Japanese see it, Finns concentrate only on work-related things. A Japanese informant suggested that Finnish expatriate managers should change their attitudes when they needed to deal closely with local customers:

"For example, when they talk about the very silly handphone set games so perhaps at least one or we need to show an interest otherwise that one is well educated and different person or something like that... this is not too difficult." (Interview ฤ)

Sullivan and Morada (1986, 142) suggest that where Americans use information to achieve, the Japanese use it to cease or feelings and positions that are adaptive to the group and the context. This is an important part of doing business in Japan, as one interviewee noted:

"It is often criticized that the Japanese business efficiency is slow because when we visit the customer maybe it takes about three minutes for real business but another one hour is talking about golfing or... some other matters, and competitor and what else so..." (Interview ฤ)

Language and Receptivity

Hamel (1990, 85) considers receptivity a function of the language and benchmarking skills of those who operate across the collaborative membrane:

"Knowledge, particularly human-bodied knowledge, that is encoded in an unfamiliar language is for practical purposes, inaccessible".

The quality and amount of information received by the individual depends on the information space surrounding him or her. Language skills and education regulate the size of the information space. Consider differences between a literate and an illiterate individual's space in our society; or the existence of professional languages such as legal and medical languages.

Receptivity of expatriate managers in Japan evolves over time, as one informant commented:

"The development of knowledge on Japan moves up on a rail by learning more... when one has been in Japan for three months one starts to realize, that one begins to understand their system, what these mean and what they think... not the lack of information but into a situation and one has back again." (Interview ฤ)
Although Finns generally know several foreign languages, in 1991 very few expatriate managers in Japan were making an effort to learn Japanese. In 2003, even expatriates who spoke fluent Japanese knew very little script, as one key person estimated:

"Big change in that respect...in 1988 there were very few, and now in these companies there are already about ten of the Taiwanese who can take care of things in Japanese here...of those expatriates who speak Japanese nobody reads and writes fluently." (Interview)

One of the Finnish informants was not acquainted with the Japanese writing system, but admired the Japanese who could master it:

"Well...it is so complicated and uses three different letter types mixed together to express different thoughts...so one has to respect these Japanese who all learn from childhood about the use of this system...it is really fantastic learning result that they know it as a nation." (Interview)

In practice it seems that most of the Finnish and other foreign businessmen in Japan are still illiterate in Japanese. This means that they rely on secondary sources for information on the Japanese market. They either use available English translations or ask their employees or contacts to translate for them. This limits their information space.

Learning to read and write Japanese is time-consuming and very few expatriates can allocate enough time to it:

"It is a huge task...takes a few months of active study so that one can begin to understand the writing system...so it is actually quite interesting." (Interview)

However, those who had started learning to read the Japanese script considered it very important in understanding the Japanese:

"One learns a lot, at least in my opinion, about the way of thinking in this culture...when one learns how these are written, what this sign means." (Interview)

One informant had taken a sabbatical year in order to enroll in intensive Japanese language training. He reported having spent six hours a day on lectures and from three to five hours on homework. In three months he had learned 600 kanji and about 3000 words: "By then my spoken Japanese language skills were
practically zero" (Interview 2). After nine months of study, he felt that the logic of the Japanese language had (perhaps?) started to 'stick in his mind' and began to open up for him.

For the Japanese their own writing system is more convenient than the Latin alphabet, as one Japanese informant commented:

"Of course Japanese is easier, because the kanji... my eyes pick up the kanji so directly, almost automatically. I can understand the meaning of the page by going 'like this... but in English I can't do it. I don't get the words so easily... feelings are something that you cannot write in a foreign language..." (Interview 3)

One Finnish informant who was exceptionally fluent in Japanese said that it was "easier to read by glancing at kanji... even when you don't know the pronunciation, the meaning is transferred." (Interview 3)

Asymmetry in language skills leaves the other partner unable to learn from the cultural experience. The partner possessing the cultural mediators can use them as gatekeepers for any type of knowledge. Since you have to know enough of the culture to ask the right questions, cultural mediators can control what information they want to give you. They can concede what knowledge is important for you, and then concede how much of it to disclose to you.

Hamel (1991, 95) described a frustrated European engineer working with a partner in Japan as being shut out of discussions in Japanese (lacking the language ability), and being told only the information the Japanese collectively considered necessary.

Seen in this light, Ohmae's (1988, 107) suggestion that only the Japanese are able to be mediators between Japan and the rest of the world gives the competitive edge without arguing for the Japanese. Unfortunately, this is also the reality in most of the cooperative ventures between Japan and Western countries. Hamel (1991, 95) also noted that this lack of cultural skills served to limit the transparency of Asian hosts.
Acquiring cultural knowledge is also related to the problem of unlearning, which Hamel (1991, 97) defines as "not only a cognitive problem - altering perceptual maps - but a problem of driving out old behavior with new behavior". The ability to acquire cultural knowledge is an indicator of flexibility and the ability to learn in general.

Both the Japanese and the Finnish expatriate managers who had studied Japanese writing, thought it was a key to understanding the Japanese way of thinking:

"If I couldn't read, I wouldn't manage, I'd get too pissed off when not getting into the system...yes, I believe that as I said that I understand better how the Japanese think when I know what these signs mean." (Interview ³)

"Yes it's complicated but it's really convenient...I think that Japanese writing system is indicating Japanese way of thinking." (Interview ⁴)

One Finnish informant started studying kanji immediately upon arrival in Japan, and reached the level of 500 to 600 kanji. Now he looks up only the most interesting ones in a dictionary and reads advertisements in Japanese in the commuter train:

"My reading skills are developing all the time, not reading aloud...not Japanese vocabulary." (Interview ⁵)

"They invent brilliant ways to make use of compact characters and different ways to abbreviate...mobile phone messages are very compact: from four kanji maybe only two." (Interview ⁶)

Access to Knowledge

Language skills determine access to Japanese knowledge to a large extent. As one Finnish informant noted:

"Those who speak this language get into a larger circle that someone like me who cannot communicate in that way." (Interview ⁷)

However, there are ways to compensate for the lack of language skills. The Finnish business community itself provides a network that can be used for obtaining knowledge:

"In fact I still don't have very many Japanese good friends who are in a way my friends, but they are linked to some larger entity." (Interview ⁸)
One significant finding in this study was that the spouses of Finnish expatriates also played an important role in access to knowledge. As one Finnish informant (married to another Finn) commented:

"If one is a bachelor then one has only a certain type of network at his disposal, but if one has arrived as a couple or if one has children there are different levels along..." (Interview)

However, another Finnish informant with a spouse and children said that

"The old guys know nothing, but young ones are promising. Some of the old ones have a second 'setting': they are married to a Japanese woman or the wife is from somewhere in Asia, for example Singapore." (Interview)

It appears from the above discussion on language skills and internalization that receptors must be competent in order to receive. Hamel (1990, 86-87) also acknowledged that this was an important notion in terms of learning in joint ventures:

"They must be capable of interpreting, collating, and assembling the fragments of knowledge garnered from the partner in the course of the partnership. This implies that while there may be a large gap in organizational capability between the partners, the training, the operating experience, and conceptual skills of operators should match those of their counterparts in the alliance as closely as possible."

It is possible that different patterns of knowledge creation are responsible for the differences in receptivity in international joint ventures and the resulting outlearning of partners. However, although internalization patterns are culturally rooted, it is possible to learn to be more receptive and to widen the scope for scanning the environment. Language skills provide access to a larger pool of potential knowledge, and thus international companies could achieve a steeper learning curve by encouraging their managers to acquire local language skills instead of promoting 'geocentric type' of managers who assume they will get by anywhere in the world in English.
6 CONCLUSIONS AND IMPLICATIONS

"Orient und Occident
Sind nicht mehr trennbar."

(Goethe)

This final chapter presents the conclusions and major findings of the study. The theoretical contributions to the multidisciplinary fields that are linked with it are presented, and the implications for future studies are discussed.

6.1 Conclusions

The aim of this study was to analyse how knowledge-creation theory can be applied in different cultural contexts. The "simple, elegant model", as Castells (2000, 171) calls Nonaka's knowledge-creation theory, has proved valid and useful in cultural comparison. Its simplicity of the model that renders it useful in cross-cultural analyses, although it has been criticized for distinguishing tacit and explicit knowledge because these are mutually constituted and inseparable related (Tsoukas 1996; Tuomi 1999). However, Takeuchi (2001, 320) considers such distinction the key to understanding the differences between the Western approach to knowledge (knowledge management) and the Japanese approach (knowledge creation). The West has placed strong emphasis on explicit knowledge, and Japan on tacit knowledge.

In my opinion, it is precise by separating tacit and explicit knowledge that the theory allows the analysis of these concepts in different languages and cultural contexts. The original theory of knowledge creation put forward by Nonaka generates different cultural patterns. I have called the two emerging styles acoticed by Finns and Japanese those of Engineers and Poets.

The general question in this research was how Does Culture Influence the Knowledge-creation Process in International Business? Analysis of the cultural dimensions of knowledge-creation theory generated more focused research questions. I have identified several cultural dimensions that influence the
knowledge-creation process: language (cognitive capacities), the concept of the self, communication style, and receptivity. Figure 28 summarizes the influence of culture on knowledge creation, and I will discuss the major findings in the following.

![Figure 28: A Theoretical Model of the Influence of Culture on Knowledge Creation](image)

**Language**

Language has an important role in knowledge creation since it is a tool for organizing knowledge (conceptualization, logic). It is also used to transfer knowledge between persons.

The role of language in knowledge creation was analyzed from two different perspectives, in terms of (a) how the concepts of tacit and explicit knowledge differ in different languages, and (b) how language, especially the script and achieving literacy, influences the development of cognitive capacities.
(a) I analyzed the meaning of the concepts of tacit and explicit knowledge in English, Japanese, and Finnish in chapters 2 and 4. My conclusion was that the concepts tacit/explicit knowledge, 㤦煨䤓/十八䤓, and 习近/extField all have different meanings and indicate different types of experiential perception. Tacit and explicit knowledge focus on verbal knowledge, the former on the lack of it and the latter on its presence. It seems that the aim of knowledge creation in English is to verbalize tacit knowledge.

The Japanese concept 㤦煨䤓䩴 draws attention through the metaphorical meaning of the kanji sect to write it to "a black dog in the dark", which indicates knowledge understood by different sensory channels (auditory, olfactory, tactile, and with a sense of taste). 暗黙的知 is not the opposite of this, but represents knowledge that has been organized, given a form. The Japanese knowledge creation is not limited to verbalizing tacit knowledge, but rather displays efficient ways of converting and transferring of knowledge in its tacit form. The Japanese style could be described as Poetic.

In Finnish the selection of 习近/tieto to translate tacit knowledge suggests that it is understood as a 'low degree of something'. Eksplisiittinen tieto on the other hand reflects the custom of using loan words to create abstract concepts. In practice the Finnish knowledge-creation style focuses on verbalizing knowledge in a precise and succinct way, which is called the Engineer style here.

Cultural analysis of other concepts in knowledge-creation theory would be necessary, but were beyond the scope of this study. I briefly mentioned the differences in understanding the concepts of objective (客観的) and subjective (主观的) in Japanese in chapter 4, and further discussed Nishida's (1990; 西田 2004) view of not distinguishing the subject and the object in the Japanese understanding of experience. These are important notions with regard to the
criticism Nonaka’s theory of knowledge creation has received in the West (Crossan 1996). The Western understanding of abstract concepts is not the same as the Japanese concrete writing of these concepts suggests.

(b) A major contribution of this study was in the application of Goody’s (1991) Culture-Cognition model to analyze the impact of language on the development of cognitive skills in two very different contexts: the Finnish and Japanese languages and writing systems. Studies conducted by Luria (1976) led me to understand that writing and literacy influence the conceptual-cognitive process. Goody (1989; 1991) and Ong (1990) also provided evidence of how (alphabetic) writing and literature shape our cognitive capacities and skills. In my study, I have combined these views with certain sinologists’ (Hansen 1989; Allinson 1989) understanding of Chinese characters and their influence on thinking. I have also found recent evidence from neuroscientists (Tan et al. 2003) to support the view that languages (and moreover different writing systems) stimulate different types of knowledge processing in the brain.

I summarized my findings in chapter 5.1. The major difference between the Finnish and Japanese writing systems is in that the Finnish context writing is ‘spoken language that is written’, whereas in Japanese there is combined use of the phonetic syllables hiragana and katakana, which allow writing the spoken language, and ‘kanji’ (Chinese characters), which represent ‘written language that is spoken’.

Knowledge processing is very different in Japanese and Finnish scripts. In chapter 4.3, I analyzed how images are processed in the Finnish and Japanese languages. The use of ‘kanji’ in the Japanese script facilitates the retention and conceptual understanding of images. I suggested in chapter 4.3 that the ‘kanji’ form a network of concepts that are disassociated as images and linked through association. Thus knowledge creation in Japanese does not require phonetic analysis and synthesis, since the graphic shape of the logograph gives its direct meaning. The Finnish language differs from English, for example, in that the close
correspondence between sound and graph requires less analysis of the phonetic composition. However, the use of the phonetic script enhances abstract thinking. The consequent categorization is abstract and linear in Finnish, and concrete and associative in Japanese.

My analysis of the Finnish and Japanese scripts also enhances understanding of how the process of achieving literacy becomes the primary knowledge-creation model in the two contexts. Chapter 4.3 discusses differences in the sign-learning challenge for the Japanese and the Finns. Achieving literacy in Finnish means learning the 29 Finnish phonetic letters and ten Arabic numerals, and is usually managed during the first school year. After this, the child can start using the language creatively for reading and writing. This primary model of knowledge creation thus stimulates relatively low learning intent: learning should be easy.

For the Japanese, learning the two sets of phonetic syllables (hiragana and katakana), each with 46 graphs, and ten Arabic numerals, is likewise an easy task, and children often learn this prior to school, or at the latest during the first school term. However, basic literacy in Japanese also involves learning over 2,000 kanji (Chinese characters) with different pronunciations. Achieving literacy in Japanese thus takes several years, and even after twelve years of education nobody can be considered perfect in the writing system. The never-ending process of learning to read and write in Japanese generates the primary knowledge-creation model with high learning intent.

The complexity of the graphs in the phonetic and logographic scripts influences the way they can be memorized. The relatively simple phonetic graphs in Finnish and Japanese can easily be stored in mind. However, memorizing kanji, some of which are written with over twenty strokes, is a task that requires a way of learning by experience. The kanji are always written in the same predetermined order in a square. By repeating the same logograph several
In the course of time, one establishes kinaesthetic memory, 'a memory of the hand'. Kinaesthetic memory can thus be considered part of embodied knowledge.

Discussed literary tradition as collective memory in chapter 4.4. Shared tacit knowledge can be used efficiently in knowledge creation in the form of common metaphors, and in the socialization process when common experience is complemented or substituted by secondary experience from literature. The Japanese literary tradition stretches back over 1,000 years, and its metaphorical and poetic style of expression persists in present-day Japan. This enables tacit understanding among the Japanese, but at the same time keeps this knowledge opaque for non-Japanese.

The Finnish literary tradition is only about 100 years old, which suggests that the Finnish knowledge-creation style may resemble that of an oral society to some extent. The written (and especially the printed) word is quite often taken as a fact or truth in Finland, and it is interpreted literally. Transparency is valued in a Finnish knowledge creation and thus there is emphasis on explicit knowledge.

Individual and Social Levels of Knowledge

Understanding what constitute the individual and the societal levels in knowledge creation was identified as one of the critical issues in the cross-cultural application of the theory, which has been criticized for its approach (Hedlund 1993; Spencer 1996; Tsoukas 1996). It seems to rely on the Western concept of the self and the other, whereas there are cultural differences in how we understand the self and also in varieties of individualism and collectivism.

In chapter 3.5, I developed a model of orientation to the self and the other based on Ting-Toomey's (1988) two-dimensional grid of facework maintenance. Combined with empirical data from Finnish-Japanese business community in my analysis of knowledge-creation patterns in Finland and Japan in chapter 5.3. The Finns are considered autonomous engineers and the Japanese as interdependent poets in their knowledge-creation style.
According to the theoretical framework developed by Kim (1995) and presented in chapter 3.5, the Finns are considered in chapter 5.3 to represent an aggregate mode of individualism, which is extremely individualistic to the extent of being self-contained. It is clear that knowledge creation in this kind of cultural context means focusing on the individual level. Knowledge can be shared only when it is in an explicit form. Hedlund (1993) draws attention to the fact that Polanyi focused on personal knowledge, and on the social level tacit knowledge becomes more complex. In an extremely individualistic context tacit knowledge cannot be shared by individuals.

However, the Japanese relational mode of collectivism (chapter 5.3) is based on the fluid concept of the self in a group with a firm boundary. This allows knowledge creation on the group level at all stages. The Japanese do not have to convert tacit knowledge into explicit knowledge in order to share it with others, they rather extend the boundaries of the self to cover the other. Losing individuality in this way would be a nightmare for the autonomous Finn, but becomes an efficient mode of societal knowledge creation for the Japanese. Knowledge creation is primarily an individual process for these engineers, and only in the combination process can explicit knowledge be shared. On the other hand, Poets engage in knowledge creation on both the individual and group levels, and it is sometimes difficult to distinguish the two since the concept of the self is fluid.

Knowledge Creation as Communication

The process of knowledge creation also involves the transfer of knowledge between individual actors, although the emphasis is more on the creation of new knowledge. From an individualistic perspective, however, actual knowledge creation takes place only within individuals, and we can only share this knowledge on the group level. According to the SECI model, externalization and combination processes involve the communication to others of what has been discovered by the individual. Thus cross-cultural differences in
communication have been discussed in this study in order to discover how cultural differences in communication styles influence the knowledge-creation process.

In chapter 3.6 I combined studies on communication in different cultural contexts to propose a model of communication orientation focused on the sender and the receiver. Cultural differences in verbal and nonverbal communication were further analyzed and a two-dimensional model of communication contextuality was proposed. It was already obvious that the concepts of explicit and tacit knowledge in Finnish focused on the verbalization of knowledge, whereas the Japanese understanding of these concepts stressed nonverbal communication.

My analysis of the Finnish and Japanese communication styles in chapter 5.5 revealed that the Finns are sender-oriented and that their communication mode is succinct. The Japanese, on the other hand, are receiver-oriented and their communication mode could be described as telepathic. Although tolerance of silence in communication is a common character in both cultures, I argued in chapter that the meaning of silence is different: for the Finns it is a pause in communication whereas for the Japanese it means active engagement in nonverbal communication.

Receptivity in Knowledge Creation

The internalization process in knowledge creation means converting explicit knowledge into tacit knowledge, which involves receiving signals from the environment and perceiving them. I was interested in how cultural differences in receptivity affect the knowledge-creation process. I discussed the capacity to learn, the transparency of knowledge, and receptivity in chapter 3.7. A review of cross-cultural studies suggested that there are cultural differences in how we use sensory channels, and biases toward certain channels are already developed in infancy.
compared the development of sensory perception in Finland and Japan in chapter 5.6. It seems that Finns focus on verbal messages (the auditory channel), whereas the Japanese focus on more holistic sensory perception. Thus when internalizing knowledge the Finns only consider verbal knowledge worth paying attention to, whereas the Japanese scan a variety of knowledge forms. Nonaka and Sullivan (1986) define Japanese information gathering as variety amplification: a large quantity of non-specialized information is sought from the environment. I compared the variety-reduction style adopted by Finns and Americans in information gathering: perhaps even more than the Americans, Finns focus on their specialization area. This was also noticed by the Japanese key informants in this study, and they recommended that Finnish expatriates should widen their areas of interest.

Receptors must also be able to receive, and in an international context this means that in order to understand even explicit and verbal knowledge one has to understand the language. I discussed language and receptivity in chapter 5.6, and language skills as access to knowledge. Longitudinal observation of the Finnish-Japanese business community disclosed that there has been considerable development in the acquisition of Japanese language skills among Finnish expatriates. While very few Finnish expatriates could speak Japanese in 1991, in 2003 there was a new generation of expatriate managers who were relatively fluent in the language, some because their parents were actively working in Japan. However, most Finnish and other Western expatriate managers located in Japan are still illiterate in Japanese. As my analysis of the influence of the writing system on the development of cognitive capacities showed, the Japanese writing system is an important key to understanding the Japanese way of thinking. Furthermore, as long as one cannot read the local language, one is at the mercy of information gatekeepers in the form of English-language newspapers, translators, and English-speaking employees or colleagues.
As Yamada (1997, 147) notes, "The power of English has made the English-speaking world complacent, assuming that everything they need to know can be found in English, and never able to know otherwise." English is the most popular foreign language; American movies are distributed throughout the world, and so-called international non-profit organizations are preaching a message of 'transparency' based on the Western worldview and values. According to Yamada (1997, 147-148), there is a learning gap between the English-speaking world and the rest: while all Japanese students begin studying English from junior high school onwards, a mere 45,700 students, mostly at university level, were studying Japanese in the US in 1992. There is also a huge information gap between the worlds: in 1990, the Japanese translated more than three thousand books written in English, but the Americans translated and published only eighty-two from Japanese.

6.2 Theoretical Contributions

This study is multidisciplinary and is linked to several research traditions and previous studies. Its major contribution is in the field of organizational learning: by showing that the theory of knowledge creation developed by Nonaka can be extended cross-culturally to describe cultural patterns of knowledge creation, I am adding new understanding to the study of organizational learning in international business. Earlier studies have indicated that there are differences in how Japanese and Western managers process knowledge; however, I have identified cultural factors that explain why these different patterns of knowledge creation will emerge.

I have also been able to explain some unanswered questions from earlier studies to do with why outsourcing takes place among partners in Japanese-American joint ventures (Hamel 1990). The transparency of the Western script and its focus on verbal knowledge gives easy access to outsiders. In contrast, the Japanese knowledge-creation style involves high intent to learn. On the other hand, the ambiguity of the Japanese language (and the Americans' lack of
Japanese language skills) makes it opaque for outsiders. Moreover, our earning intent reduces the capacity to learn among Americans.

Hamel used the term 'transparency of knowledge' to indicate openness and accessibility of skills. He was referring to situations in which one partner would unreservedly give the other partner access to these skills by the other partner, and noted that asymmetry of transparency was inevitable (Hamel 1990, 17; 51).

My study indicates that both the transparency of knowledge and the intent to learn are culturally dependent qualities. This does not mean that outsiders cannot acquire these skills as well, however, provided that there is a willingness to learn.

The contribution of this study to research on internationalization is that it suggests a final stage to the internationalization process: internal internationalization, which means developing the cultural skills necessary for understanding the cultural contexts in which the company is operating. Longitudinal observation of the Finnish-Japanese business community in 1991-2003 showed evidence of improved Japanese language skills among Finnish expatriates, and increased networking among the Finnish companies operating in Japan.

Language and communication studies have been an important dimension of this study, and along with the search for explanatory factors in cultural differences in knowledge creation, I have also further developed existing theories. My two-dimensional model of contextuality is an extension of Hall's (1977) concepts of high- and low-context communication. It was developed based on insight of the meaning regarding silence in Finnish and Japanese communication.

In explaining how language influences the knowledge-creation process I have applied Goody's (1989; 1991) culture-cognition model, and used the studies conducted by Luria (1973; 1976). However, my original contribution was to apply this knowledge to a non-alphabetic script, the Japanese writing system. It is my own discovery that Japanese associative logic in fact reflects the {kanji}
script, and that kanji could be considered not just a writing system, but also a set of independent concepts. I also discovered that the kanji form a network of associated concepts.

Goody and Luria have shown how achieving literacy influences cognitive capacities. I am further claiming that different types of script create different types of cognitive abilities and skills. Moreover, learning to read and write develops the first model of knowledge processing, which later dominates knowledge creation. For the Japanese this means learning by repetition and the subsequent development of kinaesthetic memory.

Finally, I believe that my study also makes a modest contribution to the emergence of a new world paradigm by strengthening the realization that 'our way', the traditional Western way, is not the only way. The Latin alphabetic writing system dominates the Western world, and gives the impression that it is universal. If we were to understand that the Western pattern of knowledge processing is just one pattern among several, we could start learning from the different ways of creating knowledge.

6.3 Implications for Future Studies

Carle (1997) analyzed the encounter between Asian and Western thought, and showed that Eastern thinking had influenced several important Western thinkers apart from Jung, including Leibniz and Voltaire. Martin Buber (1878-1965) was another early advocate of the idea of dialogue between Eastern and Western religions, and especially of the comparative study of mysticism. His development of communication in 'I-Thou' and 'I-It' relationships draws on Taoist ideas. (Buber 1965; Friedman 1956; Carle 1997)

Although there are these notable representatives of Western thinkers interested in and influenced by Eastern thought, Carle (1997, p) noted that the approach by the West to the East has been more that of
"systematically imposing its religions, its values, and its legal and political systems on Eastern nations, frequently careless of local sensitivities and indifferent to indigenous traditions". Recent postcolonial studies point at the way in which "oppressive and racist attitudes not only are to be found in the historical reality of empire, but also become firmly inscribed in Western discourse at many levels."

Some non-Western writers also remind us that the West has to learn from the East, to look at the rest of the world in a new light, a perspective illuminated by humility and sincerity: "...the West needs to accept other languages of discourse apart from the one presented since the Renaissance and the Enlightenment" (Ibrahim 1997, 43). Oliver (1989, 24) notes that although there was a need for Westerners dealing with the East to be aware of the differences that had to be bridged, and to learn how to bridge them, it was the leaders of the East who had to acquire the requisite communicative understanding since the West had the power, the wealth, and the technology that the East wanted.

It is thus clear that knowledge about 'the other' is not symmetrical: one to Western economic dominance the rest of the world has been learning about Western culture. The multiple existing worlds are asymmetrical in the sense that they may partially resemble each other. The Western worldview includes the idea of 'either/or', it implies selecting among alternatives. When we look at another culture and see differences, we tend to think that these disclose similarities in the same variables. This results in dichotomies: if we are logical, then they are illogical; if we are rational, then they are irrational, and so on. However, another worldview may be based on inclusion, not selection. It is possible to be rational and emotional at the same time, or to combine linear logic and associative logic. The other world may resemble our world, and yet have something more in it.

Allinson (1989, 23) points out in an overview of the Chinese mind that we could integrate the different approaches in East and West:

"To the more spatially oriented Western mind, telecommunication and transportation are the foundations of modernity (as we have become more spatially oriented Westeners), we must make great efforts not only to understand East and West by attempting to understand the two different
thought tendencies as analogous, but we must be careful to preserve the
differences. As in the metaphor of the yin and the yang, East and West
require each other for their own existence, and future development
calls for one system of thought replacing the other, but for an
integrated growth which maintains and expands both tendencies.”
(Emphasis mine)

The way in which the Japanese have been adopting foreign ideas, starting with
contact with the Chinese and Koreans, and especially with Westerners after the
Meiji Restoration (1868), has been that of 合わせ, adjusting, rather than
選び, selection. Thus the Japanese 選び釈入, incidence some aspects of
our Western 選び釈入 (Sugimoto and Swain 1989). The information space of
Japanese is wide because they seek to understand the Western culture in
addition to their national culture. The Latin script is comprehensible to them,
whereas for most Westerners simple texts in Japanese such as ヘルシンキ60 or
東京61 are completely incomprehensible.

The fact that we live in multiple objective worlds does not mean that the other
world is a mirror image of our world, as is often thought. We tend to assume
structural similarity when we compare different cultures: looking at Japanese
society, in which it is men who mostly work and women who look after the
home and children, we make conclusions about the equality of genders.
However, it’s precisely the structure that is different. Continuing the mirror
metaphor, perhaps instead of looking we should close our eyes and listen, or
smell, taste, and touch, or just feel.

Neither does it mean that others are fundamentally alien to us. As Shweder
(1991, 5) points out, they are

"just inconsistent and importantly different in their conception of things
(as expressed in their texts, in their discourse, in their institutions, in their
personalities) from our conception of things, at the moment."

60 "Helsinki" written in Japanese phonetic script katakana
61 "Tokyo" written in kanji
This implies that it is possible to understand the conceptions held by others, and in doing so we would also be able to understand more about ourselves.

Applying Morana’s knowledge-creation theory to different contexts does not make us cultural imperialists: we are dancing partners. We are inviting our partner to dance (Allinson 1989, 3 about ‘imposing Western categories on the Chinese mind’). Clarke (1997, 15) quotes the Cistercian monk Thomas Merton as one of the bridge-builders between East and West in the following:

"...it is no longer sufficient merely to go back over the Christian and European cultural traditions. The norms of the more are no longer confined to Europe and America. We have to gain new perspectives, and on this our spiritual and even our physical survival depends." (Merton 1961, 80)

In this study, it is suggested that interpretation of the origins of different ways of thinking and knowledge processing will be an integral part of crossing boundaries, and will help in building bridges between East and West in International Business.
APPENDIX 1: Kanji learned at Primary School in Japan

常用漢字學年別一覧表

1. Grade, 1 年生 (80 字)
一右兩丸王音下火花花具学気体玉金九空月犬見五口校
左三山四子系字耳七車手十出女小上森人水正生青石
赤先千川早草足村大男竹中虫町天田土二日入年白八
百文木本名木目夕立力林

2. Grade, 2 年生 (160 字)
引羽雲露遠黄何夏家科歌画会回海絵外角楽活間丸岩
顔書記弓牛魚京強教近兄形計元原言古戸午後語交
光公工広考行高合国黒今才細作算姫市恩止紙寺時自
室社弱首秋週春書少場色食心新親因数星晴声西切雪
線船前組走多大体台谷知地池茶昼商長鳥直通弟店点
電冬刀東当答頭同道読内南肉馬賈売麦半番父風分開
米歩母方北妹毎万明鳴毛門夜野矢友曜用来理里話

3. Grade, 3 年生 (200 字)
悪安暗愛意医育員飲院運泳駅央横屋温化荷界開階寒
感漢館岸期起客宮急球究級去業局曲銀区苦具君係
軽決血研県庫湖向幸号根祭板皿仕使始指死詩歯事
持次式実写者主取守酒受州拾終想集住重宿所署助勝
商昭消章乗時深申真神身進世整昔全想相送息連族他
打対代第鎖炭短談柱柱注丁帳調追定庭笛鉄転登都
度島投湯等豆動業農波配倍箱癲反板悪皮美鼻筆
水表病秒品負部服描物平返勉可味命面問役策油有由
遊予様洋羊葉陽落雨旅空緑礼列練路和

4. Grade, 4 年生 (200 字)
愛乗以位圏胃衣印染英塩億加果課貨芽改械害街各覚
完官管観聞顧喜器希旗機季紀議救求泣給早漁競共協
鏡極訓罩郡型徑景芸欠結健建駕固候功好康航告差最
菜材昨刷察札穀參散産殘司史士氏試見治辞失借種周
祝順初唱松焼涼餓象賞借臣成清靜席積折節說職浅
露天倉巣争側束経卒孫帝隊達早置仲貯兆陽低停底的
典伝徒努灯鳴堂得特毒熱念敗梅博飯費飛必標票不
付夫府副粉兵別変辺便包法望牧末満末振民無約勇要
養浴利陸料良量輪類令例冷歴連労老緑

311
5. Grade, 5 年生 (185 字)

压易移因當永衛液益演往応恩仮価可河過賀解快格確
額刊幹慣眼基寄規技義逆久旧居許境興均禁句群經潔
件券検陸減現限個故護効厚構耕講鉛混查再妻採災際
在罪財桜雑賛酸師志支枝資銅似示識賀合謝授修術述
処序承招証常情条状繊職制勢性政精製稅績資接設絶
舌銃祖素総像増進則測懶損態貢退団断築張提倡敵通
統導銅德独任燃能破判版犯比肥非備儀評資婦富布
武復樸仏編井保基報豊暴負防務夢迷綿輪余預容率略
留領

6. Grade, 6 年生 (181 字)

異遺域字映延沿我灰拋単革割株卷干看簡危揮机貴疑
吸供胸鄉勤筋敬系警剝激穴憲權場巖源呼己誤后孝皇
紅銅降刻毅骨困砂座渡裁策冊童姿私至視詞誌磁射拾
尺若播收宗就衆從緬織熟純処署諸除傷将陸城蒸針仁
重推寸盛誠宣專泉洗染善創奏層操窓裝臓藏存尊宅
担探誕暖段值宙忠著席潮頂質痛展党糖討屆難乳認納
腦派俳俳背肺班晚否批秘腹奮並瓣陛片補蕃宝肪亡
忘棒枚幕密盟模誤優郵幼欲翌乱卵覗裹律臨朗論
REFERENCES


土居健郎 (1985) (Doi, Takeo) 表と裏 (Ura and Omote) 弘文堂: 東京.


Hörnell, Erik; Vahlne, Jan-Erik and Wiedersheim-Paul, Finn (1973) Export och utlandsetableringar. Almqvist & Wiksel: Uppsala.


宮田雅之 (2000) (Miyata Masayuki) 万葉逍遥 (Man’yoo Promenade).

p. 10-15 in 万葉恋歌 (Manyōkoiuta, Love Songs from the Man’yōshū) 誇談社インターナショナル株式会社: 東京.


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