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THE CONTEXT AND DIFFUSION OF KNOWLEDGE
IN THE FINNISH JEWELLERY INDUSTRY
- THE ROLE OF THE HOUSE OF FABERGÉ

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The Context and Diffusion of Knowledge in the Finnish Jewellery Industry -
The role of The House of Fabergé

Key words: learning, ecologies-of-knowledge, jewellery industry, the House of Fabergé,
embeddedness

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The Context and Diffusion of Knowledge in the Finnish Jewellery Industry

-The role of the House of Fabergé

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Abstract

Researchers within the fields of economic geography and organizational management have extensively studied learning and the prerequisites and impediments for knowledge transfer. This paper combines two discourses within the two subjects: the communities-of-practice and the learning region approaches, merging them through the so-called ecology of knowledge-approach, which is used to examine the knowledge transfer from the House of Fabergé to the Finnish jewellery industry. We examine the pre-revolution St Petersburg jewellery cluster and the post-revolution Helsinki, and the transfer of knowledge between these two locations through the components of communities of people, institutions and industry. The paper shows that the industrial dynamics of the Finnish modern-day goldsmith industry was inherently shaped both through the transfer and the non-transfer of knowledge. It also contends that the “knowledge-economy” is not anchored in and exclusive for the high technology sector of the late 20th century.

Keywords: learning, ecologies-of-knowledge, jewellery industry, the House of Fabergé, embeddedness

Introduction

At the level of the firm it has been argued that knowledge and intellectual capital are crucial determining factors for creating and maintaining competitive advantage (Winter 1987) and constitute to an increasing degree the value of modern firms. The knowledge is to a large extent tacit and exclusively tailored to the needs of the specific firm (Leonard-Barton 1992), embedded not only in documents or databases, but in the organizational routines, processes and norms of the organization (Davenport and Prusak 1998) These relationships between firms are needed for knowledge diffusion and technology development (Powell 1998). Learning and innovation are considered substantial parts of knowledge exchange, and especially in handicraft-based industries the economic success is largely depending on the transfer of tacit knowledge between employees.

The industrial dynamics of the Finnish jewellery industry serves as an interesting case for studying the transfer of artisan knowledge, and indeed, the non-transfer of knowledge. More specifically we have chosen to study the transfer of knowledge from The House of Fabergé and the jewellery cluster in St Petersburg to the jewellery industry in Finland. The House of Fabergé has represented the pinnacle of design, organisation and technique in the history of the jewellery industry. Yet its impact on

the Finnish jewellery industry has been modest (Vainio-Korhonen 1994). This apparent gap in the knowledge flow between the two locations becomes even more perplex on the face of it, by the fact that a large part of the metalsmiths and jewellers, who worked for the House of Fabergé were Finns, and many of them returned to Finland as the Russian revolution shut down the jewellery cluster in St Petersburg in 1917. We examine this case from an ecologies-of-knowledge approach, where we combine both the communities-of-practice approach and the learning region approach for explaining and analysing the knowledge transfer within the industry and the industrial dynamics before and after the Russian revolution in 1917.

It would of course be rather ill-advised to study the changing fortunes and industrial dynamics without considering the aspect of market and finances. Noteworthy is that the House of Fabergé was not only supplying for the local market, but for a large number of international clients as well. It is clear that by the overthrowing of the tsar and by the declining influence of the royalties in Europe, the market and the demand for the kind of extravagant jewellery as produced by the House of Fabergé was declining rapidly. However, it would be just as ill-advised to overlook the importance of knowledge creation and diffusion when trying to explain regional industrial dynamics (Pinch et al. 2003). The level of innovation (be it design, technique or organisation) and level of workmanship at the House of Fabergé was remarkable, yet this atmosphere of innovation and learning in the jewellery industry has not been successfully replicated to the same extent by a single firm since. We thus examine and analyse the knowledge transfer process from the House of Fabergé to Finland through the lens of the ecologies of knowledge approach; What (except of markets) affected the innovation process and the knowledge transfer; and what were the respective the roles of the region and communities of practice?

The empirical part of this paper mostly relies on archival data. The House of Fabergé has been extensively covered in historical accounts, remarkably so considering that the company ceased to exist a century ago. A complete transcript of an interview with leading Finnish metalsmith Heikki Seppä was downloaded from the Smithsonian Archives. As this is a transcript from an actual interview conducted May 2001, it is easily analyzed and categorized as such. Also secondary material with statements

from several other Finnish metalsmiths active in Finland is used. The term metalsmith is in this paper used to cover several kinds of smiths working with precious metal, being both silver- and goldsmiths, and jewellers actually working with precious metal and gems.

The failure of a dichotomy

There exists a seemingly ever increasing tug-of-war between those downplaying the spatial dimension of knowledge transfer (Hendry et al. 1999) and those amplifying it (Asheim 1995; Lundvall and Johnson 1994). This tends to create a dichotomy of global versus local, where the usage of global networks equates the transfer of ubiquitous knowledge, and local clusters equates the transfer of tacit knowledge (Allen 2000).

We strongly posit for the view that there is no dichotomy of tacit and articulated (explicit) knowledge, following Brown and Duguid (2001) in their interpretation of (Polanyi 1962). In this view Polanyi was not contending for the existence two types of knowledge, but rather for two mutually interdependent dimensions, as the explicit dimension (or rather *articulated*, according to Polanyi) is based on the previously interiorized, implicit or tacit dimension (Allen 2000; Brown and Duguid 2001; Gertler 2003) There is thus not an automatic equation between tacit knowledge bound to local learning and diffusion, and the diffusion and spread of articulated knowledge shackled to global networks. This is not to say, however, that there is not a strong spatial dimension to knowledge transfer.

The learning region approach

"Learning Regions" is a concept coined by academic authors in the fields of innovation studies and economic geography (Florida 1995), defining regions are collectors and repositories of knowledge and innovative thinking. It is closely connected to Lundvall's and other Danish researchers' term "learning economy" which is based on an idea that the ability to innovate and relate knowledge is one of the cornerstones of economic competitiveness (Lundvall and Johnson 1994). Florida (1995) underlines the significance of not only the learning of individuals, but also of

learning taking place within and between different institutions, may they be firms, research institutes or universities, for example. The core of the learning region approach is the idea that “tacit knowledge does not travel easily” as shared contexts and norms, eye-to eye communication and personal relationships are needed in order to successfully transfer knowledge from one individual to another. The approach implies that a firm or individual in need of knowledge is likely to first search for it locally, among those they have a relationships and knowledge about. (Gertler 2003) Recently doubts have been raised about the connection between the tacit knowledge and the localness, and it has been suggested that relationships that span organizational boundaries and geographical distances may be just as useful for transferring tacit knowledge (Coe and Bunnell 2003, Allen 2000) This view is drawing the field of economic geography closer to the communities of practice approach, as presented in the following chapter.

The communities of practice approach

Etienne Wenger and his team, while doing research on apprenticeship as a learning system, coined the term “Communities of Practice”. Nowadays apprenticeship is to a large extent not just a master teaching a journeyman or apprentice, but rather a relationship between an entire community of people where you may have masters and apprentices at diverse stages. According to Wenger, (2003) they opted for this term since the one issue that united the practitioners in a certain field together is the knowledge, practice, they share. Brown and Duguid (1991) later matched Wenger’s terms with Orr’s ethnographical study on service technicians and developed the aspects further. The communities of practice were a social construction, as the individuals included shared the same conceptions and view of the work, and through informal collaboration could help each other with problem solving. They are fluid and self-organizing with members changing in a straightforward way as individuals retire and new are employed, and they often cross formal boundaries of the organization

Ecologies of knowledge

The ecologies of knowledge approach may be seen as combining the theories of the learning region from economic geography from management’s communities of

practice into a fruitful fusion. In general researchers seem to increasingly acknowledge the importance of studying both the effect of and the need for both geographical proximity and external networks for the knowledge transfer process. In our view studies of internal networks transcending national borders and clusters are not necessarily mutually exclusive when it comes to transfer of knowledge and the learning process of the firm. This view is seemingly embodied in the so-called “ecology-of-knowledge” advocated by Morgan (2001) and coined by Brown and Duguid (2000). This approach is neither shackled by the spatial nor the organizational fetishism as it acknowledges the firm as the focal actor, but without trivializing the role of proximity. As Morgan (2001 p. 15) puts it:

“The spatial core of these ecologies of knowledge may be a regional cluster, but the outer boundaries might straddle multiple spatial scales, from the local to the global, because some of the firms which constitute the ecology will be multi-locational organizations.”

This approach will be used in the empirical study of ecologies of knowledge. The spatial core being the regional cluster of metalsmiths in St Petersburg around 1860-1917, and the spillover effect it has had on modern Finnish jewellery industry in the Helsinki area. In the study we compare and describe both the possible business network and geographical benefits and detriments, in regards of knowledge transfers in and between different forms of organizations within the clusters.

Tacit knowledge and learning in the artisan industry

Following Polanyi (1962), a large part of human knowledge is personal, and difficultly codified. Transferring tacit knowledge is only possible through close interaction between individuals in an environment of mutual trust and understanding. The acquirement of knowledge occurs through so-called “learning by doing”, as for example in the relationship between master and apprentice.

According to (Argyris 1977), the learning and knowledge leveraging activities of the individual may be either facilitated or repressed by what he calls “an ecological system of factors that may be called an organizational learning system.” (Huber 1991) follows the same line of thought arguing that an individual learns something only if its behaviour is altered through processing available information. Learning according to

Huber is thus close to (Argyris and Schön 1978) idea of single and double loop learning. They argue that single loop learning occurs when schema remains unchanged despite the acquisition of new skills. Double loop learning, on the other hand, causes the changes in the current schema and does hence produce a fundamental change in the behaviour. Watkins and Marsick (1993) join the arguments about learning as a systematic change, also on an organizational level. The value of learning on an aggregate level within and across organizations has been supported by a large number of researchers, including Brown and Duguid (2001; 1991 1996) Wenger (1998) and Wenger and Snyder (2000), discussing Communities of Practice, from where the fundamental arguments of this paper are developed.

Different kinds of knowledge

Lam (2000) suggests a further division of knowledge based on the dimensions of tacit-explicit and collective-individual. We find this separation worthwhile discussing despite the fact that Lam seems to distinguish between tacit and explicit knowledge, a distinction that is not made in this paper. This division has been made earlier by Collins (1993) and Blackner (1995).

The first type, *embrained* knowledge is more individual and explicit. An example of embrained knowledge could be that held by the scientist, where his cognitive and conceptual skills determine the understanding of abstract, theoretical knowledge. The second type of knowledge, so-called *embodied* knowledge is still on an individual level but more tacit than explicit. This is the kind of action oriented personal knowledge described by Polanyi (1962), which is accumulated by experience and practical understanding of occurrences. It is according to Barley (1996) context specific, and is not understandable or transferable outside the situation. (Lam 2000) However, as pointed out in Ancori et al. (2000), when we as individuals apprehend a piece of “objective” information we are likely to give different meaning to it depending on our cognitive capabilities. This, in turn, results in the fact that processing knowledge makes it personal and specific, and “embrained” knowledge would rather be the use of cognitive capabilities in order to turn give a more tacit dimension to originally explicit knowledge (as, for example, scientific knowledge).

Encoded knowledge is the collective and explicit kind of knowledge often referred to as information. This kind of knowledge can be stored in and spread through databases, blueprints or written documents. *Embedded* knowledge is collective and tacit, and may be found from organizational routines and from the shared norms of a firm. Brown and Duguid's "communities of practices" are formed in order to leverage and transfer this knowledge, as it is relationship specific and dynamic. (Lam 2000) Thus this kind of knowledge that is difficultly transferred over organizational boundaries since it is constrained by a given network of social relationships (Gibbons et al. 1994). The organizational routines (Nelson and Winter 1982) are viewed as the genetic substance of the organization, where the knowledge is embedded. The organization as such functions as a context where knowledge with both more tacit and explicit dimensions is leveraged in routines mainly important for new employees.

The jewellery industry in Helsinki: Artisanal argonauts or high-tech laggards?

A traditional artisan industry embedded in a high-tech society makes an interesting case for knowledge transfer studies. The jewellery industry is one of the oldest craft based industries, and it featured prominently in Marshall's studies of industrial districts (1920) and in studies of Italian industrial districts (Lazzeretti 2003; Santagata 2004). It makes a distinct contrast to the high technology sector in the sense that it is often based on what might be referred to as "culture-based goods" (as opposed to "knowledge-based" goods). In terms of innovation, these industries are seldom seen as high-tech industries. When following OECD classification they rank within medium-low technology industries (OECD 2003). However, within the E.U there exists the recognition that handling and manufacturing of products from precious metals are to be considered "technically very complicated" (EU 2002). The OECD sectoral classification notwithstanding, the jewellery industry, like many of the artisanal industries, should not be seen as lacking in innovation of technology, techniques, or design. As the classification is based on R&D intensity an industry which is classified as low-tech does not necessarily equate it not being innovation or knowledge intensive (Asheim 2001).

The industry does in fact bear some strong resemblance to the high-tech sector, as it is often mentioned as being in the centre of “glocalism” (localized globalism). It is an industry that is highly dependent on the strategic input of creativity and intellectual activity (Santagata 2004). The jewellery industry is also regarded as having a high degree of tacitness in its learning process (Lazzeretti 2003; Storper and Salais 1997). It has been argued (Santagata 2004) that some cultural industries, such as the jewellery industry cannot be delocalized: the ideas and aesthetic designs are rooted in the local culture. Its intellectual properties and intangible capital cannot thus be delocalized.

Especially so-called design knowledge (know-how) is considered tacit to its nature and almost impossible to articulate. This is the knowledge emerged through the design process and is often leveraged only in the mind of the artisan (Wong and Radcliffe 2000). Alexander (1968) (cited in Schön 1983) also describes the knowledge involved in design. He argues that an artisan often is able to recognize and correct a form that does not fit the content, but may not be able to explain why it fits better after the correction. A statement from Vickers clarifies this as “[we] can recognize and describe deviations from a norm very much more clearly than we can describe the norm itself.” (in Schön 1983:53).

"Too many designers and producers in our sector still fail to understand that the new technologies are essential if we are to adapt to the realities of the international market." (Vitobello 2001)

Innovation in the jewellery industry

Although the jewellery industry is based on artisanal craft and fostering of traditional skill, it is also an industry, which in many respects has adopted new industrial processes and methods. There exists both the creation of new manual techniques, the combination and development of existing techniques in other industries, and the development of new mass production techniques. Learning occurs through different processes, and it is mostly the practice that shapes and supports the learning (Brown and Duguid 2000) Through formal education the young metalsmith might learn the “know-that”, but without being able to put the knowledge into use. The “know-how” to do something is only acquired through practice. (Ryle 1949) Below an example of

what Brown and Duguid (2000:136) would call “stolen knowledge”, acquired by merely observing when somebody is doing their job:

Q: “Did these older men that you admired give any instruction or did you simply learn by observation?”

A: No, no. Just observation. I didn't even learn Danish to that extent.” [Seppä (2001) on his stay at Georg Jensen's workshop in Denmark]

The silversmith in question (Seppä) was in this case supposed to be occupied with something completely different in the workshops of the world famous Danish master Georg Jensen, as he was still in the very early stage of his career. Still, he took advantage of the situation and acquired skills that later turned out to be very valuable for his development as a metalsmith.

The failure of knowledge transfer in the Finnish jewellery cluster 1920-1970

The jewellery industry in Finland makes an interesting case for several reasons. The industry has been rather highly regulated for more than 500 years, as a law passed in 1485 forced the metalsmiths to hallmark their products. In order to facilitate the control all the metalsmiths were encouraged to move to the cities at this time (Vainio-Korhonen 1994). The grounds for firm regulations was that the products were originally used as trade goods, and the value was measured in the percentages of precious metal. However, as their usage has altered, the value is now more dependent on technique, designs and the use of gems. (TaVM 2000)

There were about 300 metalsmiths in Finland 1999, of which the majority are running their own or jointly owned workshops producing jewellery as handcraft. Export-wise the industry does not feature very prominently although it has recently experienced a spur of growth. Partly of this growth may be attributed to a law passed in 2001, where the percentages of precious metal required was lowered in order to converge Finnish legislation to that of the E.U. A similar change in the Swedish legislation signified an increase in imports. (TaVM 2000)

Compared to other Finnish cultural industries, which rely on inputs of both design and technique, like furniture, glass and many other forms of industrial design, which all

made a name for them internationally in the 1950s and 1960s, the jewellery industry never really took off to the extent, especially in regards of exports. Interestingly enough, there were several positive conditions in place during the 1940s and 1960s for creating a competitive metalsmith cluster in Helsinki.

Not only where the design environment favourable because of possible spillover effects between the different design intensive industries and their actors, who were part of a small world network, but the guardians of metalsmith techniques were also present. Before the Russian revolution in 1917 St Petersburg, building up around Carl Fabergé's studio, was a central node for the craft of jewellery making and design in Europe. What makes the Fabergé legacy even more significant is that from a technical point of view the techniques used by the House of Fabergé represents a pinnacle reached by metalsmiths and jewellers in the history of the trade (Snowman 1980). In fact, it has been argued that what actually set Fabergé apart from other famous jewellery firms is not the design but rather the technical brilliance and the workmanship, which in many respects remains unchallenged (Farrington 1999). The House of Fabergé was in many respects very different from the biggest international competitors of those times, both in approach and execution of the trade, in many respects little has changed since then. The following quote by Fabergé himself sheds some light on the issue:

“It is understandable that if my work is compared to companies like Tiffany, Boucheron and Cartier, it means that they have more objects of value than I have...From them, you can find a necklace worth 1,5 million roubles. But they are salesmen and not jewellery artists. I am not interested in an expensive object if price is based on whether it has a lot of diamonds and pearls” –Carl Fabergé, quoted in Lopato (1980; 97)

A lot of the Fabergé-techniques are, however, lost today as are, more understandably, the extravagant and rather kitsch designs, and rather intriguingly, the organisational forms.

The Finnish jewellery industry, rather surprisingly show very little influx from the Fabergé legacy, design, technique and organisation-wise. Unlike popular perception, the industry has dominantly shown more influence from Sweden (Vainio-Korhonen

1994). This despite the fact that a large part of the Fabergé metalsmiths came to Finland following the Russian revolution in 1917.

The community of people: The role of the Finnish metalsmiths

The House of Fabergé was created largely thanks to the network of master jewellers and metalsmiths that Fabergé managed to orchestrate. Carl Fabergé, sometimes referred to as “the last great craftsman“, never worked on the actual items himself. Instead, he acted as something of an artistic director, approving and sometimes designing the objects, but leaving the actual production to his carefully selected workmasters. (Farrington 1999)

Central nodes in his network were the hundreds of artists and workmasters who he found in Finland (at that time the Tsar’s Grand Duchy, annexed to Russia). In 1840 29% of all metalsmiths in Petersburg were Finns, and in 1869 27% (Engman 1980). By the early 1900 this number diminished somewhat, but the Finns still made up 1/5th of the total (ibid). Of the workmasters at the House of Fabergé as many as 3/4th were of Finnish origins. St Petersburg had no equal locality for Finnish metalsmiths; there were twice as many Finnish metalsmiths in St Petersburg as there were in the whole of Finland in 1840.

The environment in St Petersburg was very multinational. Around half of all the masters were foreigners, the Finns made up around 14% of this group. Consequently, most of the Finns worked as journeymen and apprentices. In many workshops almost all the workers were Finnish. (Engman 1980) The level of trust among these foreigners was high; this would certainly have facilitated the transfer of knowledge between the employees in the workshops.

The organizational environment: The role of The House of Fabergé

The House of Fabergé was close to what might be called a large international firm in its structure: the company was divided into workshops, each with its own narrow speciality. By the turn of the 19th century the workshops employed over 500 goldsmiths, enamellists, jewellers and other personnel (Snowman 1980). It was the

biggest company in Russia by 1910 and it remains the biggest jewellery firm to ever have existed. Most of the production took place in the workshops and factories in St Petersburg, but some specialised production was located in Moscow (silverware and traditional Russian jewellery). It had resale branches in Odessa, Kiev and London, but international sales operations were largely run as a catalogue-operation. Product-wise it is noteworthy that even though each product was unique and dedicated, between 1882 and 1917 The House of Fabergé produced 150,000 exclusive items (Farrington 1999). In the artisan industry it remains an exceptional example of a large competitive firm on the international market (both product and workforce) whose territorial roots remain integral of its and the surrounding district's success.

Fabergé produced a wide range of products and designs: the famous Fabergé eggs; silverware; jewellery; European-style charms, and Russian-style carvings. The Fabergé metalsmiths had acquired and developed highly specialised techniques, which were not used elsewhere (e.g. enamelling and reticulation), the tacitness of these techniques were (and are) very high, Seppä (2001) recalls:

“There was one guy [Mr. Lajunen] who actually had worked in St. Petersburg and he showed me how to reticulate. And he told me where the reticulation came from -- from Carl Fabergé's shops where the apprentices would heat the coffee pot that they were soldering the spout to. Heat one spot a little bit too much and it would reticulate. And then they found out that hey this is a nice surface. “We can use this technique”. So, they researched it and made it almost infallible kind of process. “

The Petersburg branch was organised by a number of separate workshops, which all had the responsibility to oversee each object all through the production chain: from design, through the complicated manufacturing stages; to packaging; to finally its sale in a showroom. Each workmaster was then entitled to stamp his initials next to the landmark “Fabergé” on the object that he had overseen. Each workshop was highly specialised in one form of object. The Moscow branch was run in an entirely different manner, more like a commercial enterprise, resembling more modern forms of production. Here the studios and workshops produced a wide range of products, from animal carvings to large silver items. The objects were anonymous and bore no personal signature of the workmaster. (Snowman 1980) It is noteworthy that even though the gold, jewellery and enamel products produced by the Moscow branch did

not reach the quality standards of the St Petersburg branch, the silver products produced in Moscow were superior. Moscow had historically always been the centre for silver production in Russia, it had become an agglomeration of most of the important and large silversmiths at the turn of the 19th century (Lopato 1991). From a learning region perspective this is interesting, since it underlines the role of the region and knowledge spillovers, but also locational path dependency, in the sense that Moscow had become the centre for silverware, and if you were in the silverware and silversmith trade it was hard to locate anywhere else, even if you were running a business in the scale of Fabergé.

The Moscow silversmith cluster also affected the Finnish knowledge of silversmithing. Most of the Finnish metalsmiths worked in St Petersburg, and thus the Finns knowledge on silversmithing was limited in comparison to the other metalsmith trades. This would later be evident by the fact that the Finnish silversmith art as taught in school in Finland, could be considered backwards and less innovative than the other metalsmith trades. This is echoed by the comments of one of pioneers of Finnish silversmithing, Heikki Seppä, who revolutionised the field with his silversmithing techniques, when describing the formal education in Finland in the 1940s:

“The goldsmith was working on jewellery. And the silversmiths were making coffee pots and trays and forging spoons and forks -- just run of the mill stuff. And when I look at some of the pictures from the school times, it just makes me so sick because I did not realize that silver can do a lot more than that... Finland is still not contributing to the silversmithing art... silversmiths are still working on two-hundred-year-old designs that don't say anything.” (Seppä 2001)

The high degree of specialisation as used in St Petersburg favoured a system built on subsidiary suppliers. This was the form of organisation, favoured by The House of Fabergé. Very few of the Finnish masters had shops of their own in St Petersburg, they concentrated on production for firms, like the House Fabergé, which took care of the sales. These Finnish workshops usually worked either under exclusive contracts or as free subsidiary suppliers. (Snowman 1980) This system of organisation would later seal the fate of many of the Finnish masters upon their return to Finland, and serves as part of the explanation on the non-transfer of knowledge from the Fabergé cluster to the Finnish jewellery industry. Of the few who made the successful transfer from St Petersburg to Helsinki was Alexander Tillander, who was one of the very few Finnish

masters who was running both a workshop and a shop in St Petersburg. The case of Tillander will be discussed later in this paper.

The institutional environment: The role of embeddedness in St Petersburg

The small worldliness of the St Petersburg jewellery production network is quite evident. Fabergé himself was half-Swedish on his mothers side, and surrounded himself with Finno-swedish workmasters and metalsmiths (Tillander 1990). The metalsmiths formed a foreign elite in St Petersburg, a tightly knit society of specialists, connected both by a common trade as well as family links. (Jangfeldt 2000) The Finns in St Petersburg had their own newspaper, charitable organisations, temperance associations and shared a cultural life (Engman 1980).

The transfer of knowledge was facilitated both by organizational proximity (The House of Fabergé), and relational proximity (shared metalsmith expertise; the tight knit community of the foreign elite), thus displaying strong resemblance to the more recent literature on communities of practice (Brown and Duguid 1996). People who have similar practices also share an identity, which, to some degree, separate them from other groups (Brown and Duguid 2000) It might not have been so much the information they shared that makes them different, but rather the attitudes and the shared background (Brown and Duguid 2000).

When the studio of Carl Fabergé closed its doors in 1917 after the revolution, there were quite a few Fabergé-trained metalsmiths who returned or fled to Finland. Some of them became teachers at the goldsmith school in Helsinki, others started their own goldsmith workshops in the city, while others took up employment at existing workshops. But very soon after the metalsmiths returned the non-embeddedness (both socio-geographical and organisational) and the effect this would have on the flow of knowledge became evident. The Finns returned and found themselves foreigners in their own country. Some were second and third generation Finns from St Petersburg, who hardly spoke a word of Finnish, others were first generation Finns who spoke Finnish fluently or with a slight accent. They were met by suspicion and were called “country traitors” and “ruskies”. (Hollming 2003) The embeddedness of the craftsmen

aristocracy of St Petersburg was gone. So were the common norms and conventions. In many cases the level of trust did not bolster between the returning masters and the young Finnish aspiring metalsmiths who wanted to learn the trade. Some kept their background secret altogether, and never told of their background. The woman who had designed the celebrated Winter Egg, Alma Pihl, took up work as a second grade art teacher, and never told any of her students of her past. And thus never transferred her knowledge to the Finnish jewellery industry. Her brother, who had been a leading craftsman at Fabergé, also took up a teaching position at an art school, but was convinced by a local professor to take up work at Tillander's firm in Helsinki. Tillander, who had also returned from St Petersburg knew the man's reputation and made him head-designer for the firm. But in that case the knowledge stayed within a small family-run business (in this case Tillander).

Others of the returning craftsmen were almost immediately drafted and sent to war in the 1930s and 1940s. Some of them returned but the war had left their scars and the motivation for passing on the knowledge and secrets of the trade were not always the highest. Seppä recalls how he learned a specific technique, which had been perfected by the House of Fabergé:

“I would sneak out to this old fellow who had been working for Carl Fabergé. And he was very, very sort of a dour guy. He did not want to talk to anybody. He just did his work and got his pay. But I snuck over his shoulder and watched how he worked... And [his work] was perfect every time. Great admiration for craftsmanship. But he would not teach me how to reticulate [a silversmith technique].”

This quotation illustrates two points about learning and teaching: For one, from the learning perspective it is an example of “stolen knowledge” (Brown and Duguid 2000), made possible by organizational proximity. It also serves as an example, and a warning, to remind us that from a teaching perspective, organisational embeddedness and a community of practice, is not very useful without the right socio-cultural and geographic embeddedness.

There are also examples of how the Fabergé legacy was lost due to the lack of organisational embeddedness: some of the craftsmen and designers still felt bound to “the code of Fabergé”, which forbade them to pass on the secrets of the House of

Fabergé, even years after the house had stopped existing (Godenhielm-Tillander 1991).

The narrow knowledge of the specialist versus the broad knowledge of the apprentice

Before a formal school was established, the only way to be trained as a metalsmith was to get accepted as an apprentice at the workshop of some metalsmith master. The period of training was rather long, about 5 years, and about two third of the apprentices passed the test for becoming a journeyman. (Vainio-Korhonen 1994) The journeyman period was rather extensive, as it took in average 10 years before they could present themselves for the master craftsman's certificate. The time as journeyman included an obligatory journeyman's ramble, which was a kind of study trip made though the home country or abroad. This trip was very important not only for the young journeyman but for the whole industry in order for new tendencies and new techniques to spread. (Kruskopf 1989)

The system with journeymen and masters was terminated towards the end of the 19th century, when freedom of trade was eventually initiated. Due to this the relationship between the journeymen and the masters slowly transformed into that of employer and employees, thus many of the masters perceived a future threat of competition from the apprentices, and turned increasingly unwilling to take them in. (Fagerström 1983)

Also at the house of Fabergé the business was divided into several small workshops, each with its own specialty. Consequently, each metalsmith turned increasingly specialized. Seppä remembers the situation in Finland as:

“Even though you chose to become, let's say like I did, a silversmith, you still had to keep your hand in engraving, in goldsmithing, in gemology, and even enamelling. So those skills were not getting away from you. You still have to be with them, although less time than those who majored in them. So that general knowledge was seldom found in the profession.” (Seppä 2001)

When the metalsmiths returned to Finland, there was an overflow of highly specialised masters, but no market for such costly jewellery. Rather, the industry inquired about artisans with general knowledge and a broader base of skills.

“So the tradesmen -- although the field was very narrow, but they were masters. When you had an engraver who had nothing but engraving, he was doing very well, I mean, much better than our students. But, our students also knew what was involved. So, I mean, the overall value of a trained student was really sought by the industry.” (Seppä 2001)

Hence a need for a Goldsmith school increased even more, and finally after 20 years of planning it was established in Helsinki in 1938 by the Finnish Goldsmith Association. Some time later the city of Helsinki bought the school as it run into some financial problems, and again later it was bought by the city of Lahti. (Seppä 2001) The Goldsmith school is today a part of the Polytechnic of Lahti, and is one out of four institutions where you can study for a Bachelors degree (three years). (Finnish 2004)

The generational gap: Artist or artisan?

In an industry where one generation of artisans teaches the next, the perceived “foreignness” of the returning Fabergé artisans did not help to diffuse the Fabergé techniques into the next generation of Finnish jewellers. Neither did World War II: Due to the war the generations did not really meet until the 1940s, when the war had taken its toll on both the next generation of Finnish jewellers, and the returning St Petersburg jewellers. In this sense there was a “lost generation” of Finnish jewellers, those who would be the main vessels for the Fabergé knowledge.

There was also another emerging aspect that did little to bridge the gap between the generations: The identity of being an artisan or artist. Most of the old guard as well as the “lost generation” of Finnish jewellers considered themselves artisans, whereas the 2nd generation of Finnish jewellers who were educated in the 1960s and 1970s increasingly identified themselves as artists. This coincides with the relocation of the Helsinki goldsmith school to Lahti. The identities of the artist and the artisan is to be separated, according to Seppä this division of identities can largely be credited to educational institutions:

“The term, which surfaced about 30 years ago in art schools was that now you are in the art school, we're going to make you an artist prompted me to face that statement and say: You cannot claim to be an artist. The world will claim you to be an artist. So, no mind what schools you go into, the result is not a guaranteed artist. So understand this and don't call yourself an artist ever. I have never. I'm a metalsmith... But, those people who get it from other places than academia are not likely to call themselves artists because they have never even heard the word. Some customer might say oh, but you are an artist. This is art. But it does not sink as deeply into the mind of the student as it does in the academia. It's almost taken for granted. I'm in art school! I'm become an artist! And the one sort of layman kind of way of going into it doesn't hear that. He's not brainwashed to believe that he's an artist. He's just making things and being prominent by the customers.”

In many ways this division further sealed the fate of the Fabergé knowledge in the Finnish jewellery industry.

Discussion and Conclusions

In the early 20th century there were five regional clusters which stood above the rest in regards of jewellery production. Of these, Arezzo, Valenza Po in Italy; Birmingham in England, and Amsterdam in the Netherlands remain at the competitive core of its nations cultural industries. One of the regional clusters, St Petersburg, with its enigmatic core company Fabergé, has disappeared from the map. As has been outlined in this paper, not only has the cluster disappeared, but so has the knowledge that it produced.

We have presented the central role that the foreign workforce played in creating the most competitive jewellery cluster to ever have existed. In the light of our high technology society of today, the mobility of the workforce that located in the 19th century St Petersburg is rather striking. There are interesting parallels to be drawn between the success of Fabergé and the influx that the foreign-born workforce has had in the high-tech industry in e.g. Silicon Valley (Saxenian 1999). The House of Fabergé can be considered as a knowledge-based firm on an international competitive market.

Previous research has shown that firms with a common geographical background and history can share knowledge resources, which can provide them with a collective competitive advantage (Pinch et al. 2003). Following the “learning region” approach (Lundvall and Johnson 1994) it can be argued that it is unlikely that this locality, the St Petersburg jewellery cluster, seen as a container of the most tacit dimensions of the metalsmith trade, could have emerged or, indeed, relocated anywhere else. However, in this case, the necessity of the region is more rooted in the production of knowledge, rather than the transfer of knowledge. Transfer-wise it can be argued that the essence of the metalsmith trade, both design and technique-wise, was not contained to the Fabergé organization. The complex relational proximity was embedded both in the specific culture (of being foreign in St Petersburg, thus feeling kinship with other foreigners) and family (the artisans helped family even though they did not necessarily work for the House of Fabergé). The transfer was thus facilitated by a number of untraded interdependencies, which are hard to reproduce anywhere else; common codes of communication, shared conventions and social norms; and personal knowledge of each other based on past history of both formal collaboration, informal interaction, and familiar kinships. It was not uncommon that the established metalsmiths helped their kin who arrived in the city, although these could be seen as competitors in the jewellery industry (Hollming 2003). The uniqueness of the region’s ability to spur on innovation was further enhanced by the spillover effects from other cultural (arts and crafts) industries present in the city. Innovation in the House of Fabergé was not as Coe and Bunnell (2003, p.438) put it; “a series of isolated events associated with heroic individuals” associated with “traditional innovation”, but rather a result of situated social relations between actors in an localized organization plugged into an extra-local networks.

In many ways the St Petersburg case bears many similarities to an industrial district as defined by Becattini (Becattini 1990). By this definition the district is a socio-economic and territorial entity characterised by an active community of people, institutions and firms specialised in operating in a naturally and historically bounded area (Becattini 1990). However, the St Petersburg district differs from the traditional Italian jewellery district as described by e.g. Lazzeretti (2003) and Santagata (2004), by not being an agglomeration of small firms, by rather an agglomeration of small

firms emergent around one large nodal company. A lot of the small independent workshops were working exclusively for Fabergé. However, it might be argued that St Petersburg could have developed more into what we see in places like Vicenza, Valenza Po, and Arezzo had the revolution not intervened. It is possible that workers employed by Fabergé would have left and set up small shops of their own in the area. This is, however, speculation, and as can be seen in the case of the jewellery sector in Finland, the Fabergian knowledge was seemingly rather immobile.

The division of knowledge made by Lam can easily serve as a theoretical reference for explaining the knowledge transfer and learning within the jewellery industry at arrival of the Faberge metalsmiths and in modern times. As the types of knowledge present different characteristics, they are likely to be acquired and transferred through different mechanisms. The encoded knowledge is mostly the kind of information provided nowadays in the schools of professional training, where the students are confronted with what Ryle (1949) would call “know-what”. It might be represented by the knowledge leveraged into information systems and CAD software. If everything goes well, the student is able to turn this into embrained knowledge depending on his conceptual and cognitive skills.

The embodied knowledge is the kind of knowledge that is most personal and inherent within the jeweller, determining his initial attributes for professional advancement. This knowledge will not emerge from the professional education, but is rather likely to develop as the jeweller starts practicing his profession. This knowledge seemed to be present in a large extent in the Faberge metalsmiths as they were representing the top tier in their profession. The embedded knowledge is likely to develop jointly between the jewellers in a workshop. Thus, where several jewellers are working together the main challenge would be to transform the embodied knowledge into embedded knowledge that individuals could share. In the artisan industry where tacit knowledge constitutes a large part of the professional skills, interaction between individuals is fundamental for the transfer of skills. Here encoding the total pool of knowledge is not a reasonable aspiration. Also the examples given by Heikki Seppä of learning through observing (or spying on) other, more skilled metalsmiths working illustrate this way of acquiring knowledge.

According to (Lam 2000) the structure of the organization may depend on the kind of knowledge most valuable for the activities. An organization relying on knowledge of more explicit form is likely to have a more formal power and control structure, and formalized tasks and routines. Conversely, an organization where the tacit part of knowledge is more important is more likely to rely on informal structures, autonomy and commitment on part of the employees that enhance the mobility of the knowledge. In the jeweller industry this can be identified in the return of old fashion Faberge type workshops where independent handicraftsmen are joined together, sharing for example tools, technical equipment and marketing. This is according to Weckström (1998) the future for the Finnish jewellery industry, as they are flexible and able to adapt quickly to changes in customer needs. The jewellers should take example from Faberge in marketing their own brand name instead of just manufacturing their products as standardized goods.

The traditional forms of innovation are now faced with more high-tech influences from other sectors and industries. The CAD-software has been in use for a good ten years, and is used by most designers. But the technological innovations are not limited to the design process, for example the art of engraving is almost lost due to the influx of technology and laser-engraving. The fact that hand-engraving is still thought at the Lahti school is considered an advantage for the Finnish jewellery industry (Seppä 2001). The industry now faces further competition from machines in areas thought too tacit for technological replication. A partnership comprising an Italian creator of jewellery, an Italian technological research centre, a Swiss supplier of precious metals, a German laser designer, a subsidiary of one of Europe's leading microelectronics companies has resulted in the use of laser beams for cutting and piercing precious metals, welding them without the addition of extraneous materials, and applying granulation and decorative engraving techniques. The cuts are more precise and reduce raw material losses (Vitobello 2001). The very high cutting speed makes it possible to produce haute-couture jewellery at industrial prices: a nightmare scenario for many a craftsman. The case shows how the goldsmith industry is the end user of a new technology, which has been developed within another industry (optics). Although this technology has been enhanced and formed in cooperation with and by

the jewellery industry, this innovation is more likely to be attributed to the optical industry in high-tech sectoral classifications such as that of OECD.

In this context is noteworthy that Fabergé in many respects embraced new technologies wherever it was deemed not to produce inferior qualities to that of handicraft. There were several automated machines used in the Fabergé production process (Lopato, 1991).

The craftsmen have been forced to refine and reinvent their own techniques. The perfection of the so-called anticlusting method in the silversmith industry is a fine example of continuous artisanal innovation: a method developed by Heikki Seppä, and perfected by his students, a method that is impossible to replicate by methods of mass production, which makes it possible to form silver in numerous ways, which have not been possible by traditional techniques (Haapanen 2003). The craftsmen have for a long time been stifled by the taught that the tacitness of one hundred year-old techniques is not reproducible by machines, and that innovative design will keep them one step ahead of mass production. Ironically the technological transformation and codification of knowledge can be seen as a slow wake-up call for the Finnish jewellery industry. Here we see a divided industry between those embracing new technology to bolster competitiveness, against those turning to forgotten history and forgotten forms of tacit knowledge in order to bolster artisan innovation. The keepers of the tacit knowledge are now forced to innovate once more, turn to forgotten techniques and reinvent materials in face of competition.

We need to ask ourselves how much has actually changed with the introduction of newer spatially bridging technologies for the production and transfer of knowledge? It is questionable if the workforce is more mobile today than 100 years ago in the jewellery industry. The markets were not local then, as are they not today. And in many respects that is what set Fabergé apart, the effective use of a local production system and the use of global networks for attracting talent and distributing products. Fabergé and its workforce were part of an ecology that very much resembled what we might label a learning economy.

Henry Ford (1916) reportedly once stated that: “...*History is more or less bunk. It's tradition. We don't want tradition. We want to live in the present and the only history that is worth a tinker's damn is the history we made today.*” In the face of this statement, its source, and his legacy on the artisan industries, it seems only fitting that the jewellery industry digs even deeper into tradition and history in order to rediscover and reinvent its once so illustrious innovation process.

References

Alexander, Chris (1968), *Notes Towards Synthesis of Form*. Cambridge, Harvard University Press.

Allen, John (2000), *Power/economic knowledge: symbolic and spatial formations*, in *Knowledge, Space, Economy*, John R. Bryson and P.W Daniels and Nick Henry and John Pollard, Eds. London, Routledge.

Ancori, Bernard, Antoine Bureth, and Patrik Cohendet (2000), *The Economics of Knowledge: The Debate about Codification and Tacit Knowledge*, *Industrial and Corporate Change*, 9, 2, 255-87.

Argyris, Chris (1977), *Organizational Learning And Management Information Systems*, *Accounting, Organizations and Society*, 2, 2, 113-23.

Argyris, Chris and Donald A. Schön (1978), *Organizational Learning: A Theory of Action Perspective*. Reading, Addison-Wesley.

Asheim, Bjørn T. (1995), *Industrial districts as "learning regions" : a condition for prosperity?* Oslo, STEP group.

---- (2001), *Project Organisation and Globally Distributed Knowledge Bases*, in *Conference on Global Economic Change*. Worcester, USA.

Becattini, Giacomo (1990), *The Marshallian industrial district as a socio-economic notion*, in *Industrial districts and inter-firm co-operation in Italy*, Frank Pyke and Giacomo Becattini and Werner Sengenberger, Eds. Geneva, International Institute of Labour Studies.

Brown, John Seely and Paul Duguid (1991), *Organizational Learning And Communities Of Practice*, *Organization Science*, 2, 1, 40-57.

Brown, John Seely and Paul Duguid (2001), Knowledge and organization: a social-practice perspective, *Organization Science*, 12, 2, 198-213.

---- (1996), Organizational learning and communities-of-practice, in *Organizational learning*, M.D. Cohen and L.S. Sproull, Eds. Thousand Oaks, Sage.

---- (2000), *The social life of information*. Boston, Harvard Business School Press.

Coe, Neil M., and Timothy G. Bunnell (2003), "Spatializing" knowledge communities: towards a conceptualization of transnational innovation networks, *Global Networks*, 3, 4, 437-456

Davenport, T. H. and L. Prusak (1998), *Working Knowledge*. Cambridge, Harvard University Press.

Engman, Max (1980), Finnish goldsmiths in St Petersburg during two centuries, in *Carl Fabergé and his contemporaries*. Helsinki, Oy Tillander Ab.

EU (2002), Komission kertomus neuvostolle, Euroopan parlamentille ja talous- ja sosiaalikomitealle. Toinen kaksivuotiskertomus vastavuoroisen tunnustamisen periaatteen soveltamisesta sisämarkkinoilla., Vol. 2004.

Fagerström, Raimo (1983), *Suomalaista hopeaa*. Helsinki, WSOY.

Farrington, Karen (1999), *Fabergé*. San Diego: Thunder Bay Press.

Finnish, Goldsmith Association (2004), *Jalometallialan koulutus Suomessa*, Vol. 2004.

Florida, Richard .L (1995), Toward the learning region, *Futures*, 27, 5, 527-36.

Gertler, Meric S. (2003), Tacit knowledge and the economic geography of context, or The undefinable tacitness of being (there). *Journal of Economic Geography*, 3, 1, 75.

Gibbons, M, C Limoges, Novotny H, S Schwartsman, P Scott, and M Throw (1994), *The new production of knowledge*. Beverly Hills, Sage.

Gordon, Ian R, and McCann, Philip (2000), *Industrial Clusters: Complexes, Agglomeration and/or Social Networks*. *Urban Studies*, 37, 3, 513-532

Hendry, Chris, James Brown, Robert DeFilippi, and Robert Hassink (1999), Industry clusters as commercial, knowledge and institutional networks - Opto-electronics in six regions in the UK, USA and Germany, in *Interfirm Networks: Organizational & Industrial Competitiveness*, Anna Grandori, Ed. Florence, KY, USA Routledge.

Huber, George P. (1991), Organizational Learning: The Contributing Processes and the Literatures, *Organization Science*, 2, 1, 88-115.

Jangfeldt, Bengt (2000), Svenska vägar till S:t Petersburg-kapitel ur historien om svenskarna vid Nevans stränder, Stockholm, Wahlström & Widstrand.

Kruskopf, Erik (1989), Suomen taideteollisuus. Suomalaisen muotoilun vaiheita, Helsinki, WSOY.

Lam, Alice (2000), Tacit Knowledge, Organizational Learning and Societal Institutions: An Integrated Framework, *Organization Studies*, 21, 3, 487-513.

Lazzeretti, Luciana (2003), Density dependent dynamics in Arezzo Jewellery District (1947-2001): Focus on funding, in *Proceedings; Regional Studies Association Internatrional Conference*. Pisa, Italy, 12th-15th April 2003.

Lopato, Marina (1991), Carl Fabergé, keisareiden ja kuninkaiden jalokiviseppä, in *Pietarin kultainen katu*, Keuruu, Otava.

Lundvall, Bengt-Åke and B. Johnson (1994), The learning economy, *Journal of Industry Studies*, 1, 2, 23-42.

Morgan, Kevin (2001), The Exaggerated Death of Geography: Localised Learning, Innovation and Uneven Development, in *The Future of Innovation Studies Conference*. Eindhoven University of Technology, 20-23 September 2001, The Eindhoven Centre for Innovation Studies.

Nelson, Richard R. and Sydney Winter (1982), *An Evolutionary Theory in Economic Change*. Cambridge, Harvard University Press.

Pinch, Steven, Nick Henry, Mark Jenkins, and Stephen Tallman (2003), From 'industrial districts' to 'knowledge clusters': a model of knowledge dissemination and competitive advantage in industrial agglomerations, *Journal of Economic Geography*, 3, 4, 373-88.

Polanyi, Michael (1962), *Personal Knowledge. Towards a Post-Critical Philosophy*, London, Routledge.

Powell, Walter .W. (1998), Learning From Collaboration: Knowledge and Networks in the Biotechnology and Pharmaceutical Industries, *California Management Review*, 40, 3, 228-41.

Ryle, Gilbert (1949), *The Concept of the Mind*, London, Hutchinson.

Santagata, Walter (2004), Cultural districts and economic development, Working paper No.1/2004. Torino, Università di Torino.

Saxenian, AnnaLee (1999), *Silicon Valley's New Immigrant Entrepreneurs*. San Francisco: Public Policy Institute of California.

Schön, Donald A. (1983), *The Reflective Practitioner*, New York, Basic Books.

Snowman, Kenneth A. (1980), Carl Fabergé, goldsmith extraordinary, in Carl Fabergé and his contemporaries, Helsinki, Oy A. Tillander Ab.

Storper, Michael and Robert Salais (1997), *Worlds of Production: the Action Frameworks of the Economy*. Cambridge, MA, Harvard University Press.

TaVM, 27/2000 (2000), "Hallituksen esitys Eduskunnalle laiksi jalometallituotteista TaVM 27/2000. Proposition about legislation on products of precious metal., Vol. 2004.

Tillander, Herbert (1990), *Från torparson till hovjuvelerare*, Jyväskylä, Schildts.

---- (1980), A short history of the firm of Tillander, in Carl Fabergé and his contemporaries. Helsinki, Oy Tillander Ab.

Vainio-Korhonen, Kirsi (1994), *Kultaa ja hopeaa mestarien työkirjoissa. Suomen Kultasepäntö Ruotsin ajan lopulla valtakunnallista taustaa vasten*, Helsinki, Suomen Historiallinen Seura.

Watkins, Karen E. and Victoria E. Marsick (1993), *Sculpting The Learning Organization - Lessons In The Art And Science Of Systematic Change*. San Francisco, Jossey-Bass.

Wenger, Etienne (1998), *Communities of Practice: Learning, Meaning and Identity*, New York, Cambridge University Press.

---- (2003), Interview with Etienne Wenger, on the Knowledge Board, Vol. 2004.

Wenger, Etienne C. and William C. Snyder (2000), *Communities Of Practice: The Organizational Frontier*, Harvard Business Review, 78, 1, 139-45.

Winter, Sidney. G. (1987), Knowledge and Competence as Strategic Assets, in *The Competitive Challenge*, D. Teece, Ed., New York, Harper Collins.

Wong, W.L.P and R Radcliffe (2000), The tacit nature of design knowledge, *Technology Analysis and Strategic Management*, 12, 4, 493-512.

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