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Strategies for Surviving in a Changing Environment

The History of Industrial Design Education in Finland

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Industrial design is creative activity that is performed in the context of industry. Industrial design is taught in art and design schools, but its evolution is strongly associated with transformations in the business and industry. The recent shift from manufacturing industries to the knowledge economy has put industrial design education in an entirely new situation. Strategic educational choices have affected how well the education has been able to adjust to these radical changes.

This paper presents the history of education of one professional practice in one country. It is a qualitative study using empirical findings that are read and interpreted in the light of the existing literature on professionalisation. This paper contributes with new insight into how external circumstances and rapid societal changes affect education in general and industrial design education in particular. The Finnish case clearly shows how the emphasis of a scientific cognitive basis and the affinity to dominant ideology with closeness to markets has been beneficial in a changing environment.

In the first section of this paper the theoretical concepts and methodology used in this paper are discussed. Second, the background of Finnish industrial design education is described. Third, it will be shown how industrial design education has had to fight for appreciation in the environment of applied arts. It will be argued that industrial design education could not claim to be the area which was closest to art and therefore the most valued. Instead, it was positioned with a strong scientific basis. This position affected the ideological approach of the industrial designers and their ability to adapt to changes in industry and society. Fourth, the implications of recent structural changes in industry for the industrial designers will be shown. Then, the rapid expansion of industrial design education that the structural changes led to will be discussed. In the last section the consequences of the expansion will be considered.



Previous Research on Education Strategies and Professions

There is an extensive body of literature on professionalisation and education (see for example Abbot 1998, Larson 1977, Elliott 1972, Weber 1947). In addition, the role of education in professionalisation in Finland has been widely discussed (Rinne & Jauhiainen 1998, Konttinen 1991, 1993). Internationally, several publications on what industrial design education is, or should be, are also available (see for example Potter 1969, Lewis & Bonollo 2002). However, on the education of industrial design in Finland, there are very few published studies available. There is only one thorough piece of research on the history of the University of Art and Design Helsinki (UIAH) up to the year 1973 (Huovio 1998), and one volume with articles on the history of the same university (Sotamaa 1999). Although there is not much written history on the events that have occurred after the year 1973, or any studies on other educational institutions offering industrial design education in Finland, there are several sources of information that the practitioners have produced themselves. Through the years many reports have been written on how the education should be developed (see Hytönen 2002, 2003, Ministry of Education [ME] 2000). A large amount of unpublished material is also available, such as school newsletters and reports. These sources have been used, and in addition, 25 practicing industrial designers have been interviewed in depth on the topic (see Valtonen 2005).

One frequently used approach to profession research is what Konttinen (1991,13) refers to as New Weberialism, where a profession is defined as an occupational monopoly. The way to reach this monopoly is through the concept of *social closure*, where various groups seek to protect and improve their socio-economic situation by restricting access to resources and privileges (Brennan 1997,196). In the modern Finnish society, the most effective way to reach social closure is through specialized education and qualification (Konttinen 1991, 14&217). Gesser (1985, 47&292) describes the educational system as a sorting mechanism, sorting the more talented from the less talented and informing the labour market of their abilities. Restricting entrance to education is a way of keeping others out of the professional realm. The assumption is that employers have a fairly low level of knowledge of the productivity of those offering services on a free market, and are hence willing to rest on formal qualifications. According to Larson (1977, 47) the more the entry process is institutionalised and standardised and the more it is under the profession's control, the more favourable the situation is for the profession.

As industrial design in Finland is a small and less-known professional practice, the difficult entrance to education has functioned as access to the profession and a means of quality control. Without the formal education of industrial design, designers are reluctant to refer to themselves with the term *industrial designer*. In situations where a person performs industrial design tasks but does not have the formal education, the terms *product designer* (tuotesuunnittelija/muotoilija) or the broader term *designer* (muotoilija) appear to be used.

“ [when I worked] in the [industrial] design agency I was a Product Designer, because I didn't yet have the ID [Industrial Designer] papers, I couldn't call myself an Industrial Designer. Or maybe I could have, but my title then wasn't anyway Industrial Designer. It was Product Designer. And then, after my graduation, it was changed to Industrial Designer. Even if I performed exactly the same job.” (Designer interview 15.12.2003)



The professionals themselves have been the ones to judge the entrance tests, and have had almost total control of the *production of producers* (Larson 1977, 48). According to Abbott, this form of protectionism through the creation of rigid entry standards is fairly common (1998, 84). The coupling of extensive education with several levels of examination prior to formal entry to the profession is part of a structure of control that seems utterly advantageous to the profession. It protects recruitment, controls the number of professionals and guarantees a minimum standard of professional ability - a strategy that seems monopolistic in effect. However, rigid standards can also prevent rapid expansion of the profession. If there is a need for such expansion, rigid structures can limit the capability to adjust and give an opportunity for other professional practices or competences to overtake the area of expertise.

Other means of positioning an education are the *importance of a solid cognitive basis* and the *affinity to the dominant ideology*. According to Larson (1977, 47), a standardised and well-defined cognitive basis, an esoteric body of knowledge, and the capability to attain visibly good results and to approach a new paradigm improve the situation for the profession. The more scientific the cognitive basis, the more favourable the situation is for the profession. She also claims that it is beneficial for a profession, if its ideology coincides with the dominant ideological structures. As universities integrate with the new economy, professional groups within them have to develop strategies to position themselves. Fields that are closer to markets and contribute to the new economy have some built-in advantage (Slaughter & Rhodes 2004, 27; Katz 1999). In the following, the theoretical concepts of social closure, the importance of a cognitive basis and the affinity to the dominant ideology will be applied and validated on the empirical data from the case of the Finnish industrial design education.

The Early Days of Industrial Design Education in Finland

Education in the field of arts and crafts started in Finland in 1871 when The School of Arts and Crafts was founded. In 1917, the school was divided into two main levels of education. The higher art-based education included subjects such as model drawing, furniture drawing, decorative painting, and ceramics, and the lower vocational education had courses for bricklayers and stone masons, carpenters, metal workers and smiths, bookbinders, typographers and the like (Huovio 1998, 128). Education specifically for industrial design was envisioned for the first time in 1948. The Art Director of the Arabia porcelain factory, Kurt Ekholm, criticised the design education for not considering the needs of the industry, and for educating only artists and no industrial designers (Kalha 1999, 159). In the early fifties, people from the industry frequently criticised designers for being too artistic. One of the spokesmen for industrial design education was the Finnish designer Ilmari Tapiovaara. In 1951, he was nominated the head teacher of furniture drawing and in this capacity he started promoting education for industrial design. He had an early interest in the German Bauhaus-school and had met teachers from the Chicago School. In 1954, he presented a detailed proposition of a new curriculum in industrial design (Huovio 1998, 215-291). The plan was not realised, but two separate courses in industrial design were arranged in 1954-1956 (Järvinen 1999, 366).

In 1961, it was finally possible to choose the curriculum of industrial design within the department of Metal Art. Lack of space was an issue, not only for the education of industrial design but for the entire school. The



theoretical teaching in industrial design was given in one classroom, and the practical model making courses were held in an old care-taker's flat in the school's courtyard - a small, two-room space. The lack of space has been seen as one of the reasons why education of industrial design started fairly late in Finland, although plans for such education had been in place for years and Finnish industrial design had gained international reputation (Huovio 1998, 460). In 1973, the school gained university status, which resulted in a new degree structure. In 1979, it became possible to graduate as Candidate of Art, in 1981 as Licentiate of Art, and in 1983 Doctor of Art (Korvenmaa 1999, 174; Kulvik 1999, 228). The first doctoral dissertation at the University of Art and Design Helsinki (Uiah) was defended in 1991, and the first one from the Department of Industrial and Strategic Design in 1995 (Sotamaa 1999b, 269).

Positioning the Industrial Design Education

The approach emphasized in design education in Finland was that of the artist, albeit an artist working for the industry (Kruskopf 1989,178). Art and a cultural approach were regarded as higher level education, whereas vocational education was less valued. Business and industry were seen as controversial to art or the sublime. Compared to all the other study programs in design, industrial design was never the area that was closest to art. To promote industrial design through vocational goals, or the fact that the graduated industrial designers would work in industry would not have been successful either (see Konttinen 1991, Gesser 1985, Abbott 1998, Brennan 1997, 15-20, Elliott 1972). Instead, industrial design tried to gain respect through creating an image of a scientific approach and a strong cognitive basis. To emphasise science became a way for the early industrial designers to distinguish themselves from the rest of the school, which they perceived as art-based. The scientific approach was first used in the late sixties with the arrival of ergonomics, and has since then developed towards a more managerial and strategic approach.

In the beginning of the industrial design education, the need for a scientific approach was also seen in discussions about the department name. The term *Technical Design* (Tekninen Design) was used, aiming to profile the education as design for technical products, rather than any artistic activity in industry. Technical design was seen as more scientific and as the opposite to *styling*, a world which created strong feelings amongst the designers. "It should be evident that styling is socially dubious, dangerous for the consumer, disgusting for the designer and questionable as a commercial phenomenon for the producer" said Olli Kaasinen (1968) in the School magazine *Arttu*, arguing for the use of the term *industrial design* (teollinen design). A student union leaflet described this science-based approach: "the most eye-catching in the education of technical design is its emphasis of methodology. Because of the coordinating role of the industrial designer their way of working with a complex design problem can not be merely intuitive, as some still seem to believe" (Tokyo tiedot 6/1970). The emphasis was on the scientific approach rather than on artistic intuition or creative thinking.

Striving for a scientific cognitive basis was strongest in industrial design with the arrival of ergonomics in the 1970s. As a contrast to the unstructured nature of art, ergonomics was seen as a precise, scientific basis for the design process. The designers describe this enthusiasm for precise science:

"We had plastic technology and we had the science of strength of materials, and mechanics, and machine drawing and we did projects from start to finish. Part of the arrival of



technocracy was also ergonomics, very strongly. In principle all work was driven by ergonomics, all the projects we did. In that way it was possible to distinguish from the old tradition of crafts, by considering how a product was to be produced and how it was to be used.” (Designer interview 10.2.2003)

“Ergonomics was then taught by this ergonomics group from the Finnish Institute of Occupational Health. There were physicians and engineers in this group. Quite a few of us then were immensely taken by it, we suddenly realised that it was exact knowledge and based on the human being. And humans are the ones we design for.” (Designer interview 1.6.2004)

During this time several research projects were initiated. The quest to define a fulfilled theoretical basis before any project work often created certain stiffness in the work itself. One of the designers remembers this approach:

“ I think the rise of industrial design was much to do with the fact that we realized that there are... that there are other starting points to a design development process than just the products form and appearance.[...]we tended to ponder about these things more and more and search for the eternal truth. I think it hindered the actual getting things done many times. [...] In the end it came to the situation where no one dared to do anything before they were absolutely sure what they were going to do. At least at the department of industrial design there was a time when everybody feared to fail and to experiment so that they just thought about these issues in theory and then the actual designs were never done but on paper.”
(Designer interview 10.2.2003)

The desire for a scientific approach and an esoteric theory overrode the pragmatic labour. Many student projects in industrial design were about defining what a product should be and which criteria it should comply with, rather than about actually designing products.

In the late 1980s, the theoretical interest in industrial design education shifted towards Design Management. The theoretical framework was adopted from general management theories and the aim was largely to bring strategic value to a company (Blaich 1993, 13). The first international design management conference in Finland was arranged in 1987, and had an advisory board with international influences and members such as Peter Gorb from the London Business School (Kulvik 1999, 228&244; Gorb 1988). Several international conferences soon followed, many with a design management focus. The conferences were well documented as a series of books that were used in the education of new industrial designers (see Melgin 1990 &1991). All in all 22 international conferences were arranged at the UIAH in the 1990s. (Sotamaa 1999b, 286-269).

This rise of design research in Finland coincided with the same movement internationally (Cross 1999, Bayazit 2004, Dickson 2002). By the mid-nineties the issue was no longer *if* design research was to be conducted but *how*: methods, theories and research processes were vividly discussed (Strandman 1998, Ainamo & Tahkokallio 1994). The amount of full-time design researchers increased, and design research activities were formalised.



Besides traditional scholarly or purely academic studies such as PhD's, also more practical or business oriented studies and research reports, started to appear. Design research and research reports became a way of aligning industrial design with business and of introducing design issues to the industry.

Recession and Expansion

In the early 1990s, after a long period of rapid economic growth and almost full employment, the Finnish economy entered an unexpected and exceptionally deep recession. In the 1980s, Finland had been a relatively rich Nordic country with advanced welfare systems, corporatist labour markets, and exports that consisted mainly of metal and forest industry products (Kalela 2001, 41). Within four years, from 1990 to 1994, the unemployment rate rose from 3,5 percent to 18,4 percent, house prices decreased by half, and the Helsinki stock market index fell by almost 70 percent. The decrease of the Finnish GDP in 1991-1993 was four times bigger than the collapse during the great depression of the 1930s. The recession has been cited to be the worst peacetime crisis that the country has experienced throughout its history (Kalela 2001,1-4&53, Kiander 2004, 6).

The reasons for the recession are to be found in the economic policy failures and the fall of the Soviet Union that caused the trade between the two countries to cease abruptly. Instead of a revival of domestic demand, the recession was atypically followed by a rapid structural change and export-led growth (Kalela 2001, 4-6&10). The industrial transformation from areas based on natural resources towards higher knowledge intensity areas, such as engineering, electronics, and particularly mobile telephony, is quite unique (Dahlman, Routti & Yli-Anttila 2006, 6). Openness of the economy increased, and corporate ownership and governance became more international (Kalela 2001, 8&15). Globalisation made a new focus on innovation possible, as heavy development costs can more easily be covered on large global markets (Romppainen 1995, 1).

In this new competitive situation, the importance of brands grew for companies. Industrial design became a tool in better understanding end-users and building brands. By 2000, the electronics industry, a knowledge-based industry that uses industrial design to a very high degree, had become the biggest export industry. The importance of industrial design became more evident, and industrial design was more extensively used in the industry (Sotamaa 1999b, 275). At the same time design and design management evolved from creating a coherent product portfolio to a broader view on corporate strategy and brand experience. During the late nineties the term *strategic design* was frequently used (see Zetterlund 2002, Hytönen, Järvinen & Tuulenmäki 2004). The affinity to dominant industry structures proved very beneficial to industrial design, as the education connected directly to the new economy (Slaughter & Rhodes 2004, 27). Many adjacent professional practices to industrial design, such as interior architecture and architecture, suffered from extremely high unemployment at the same time when the need of industrial designers increased. This led to the expansion of industrial design education.



Maintaining the profession's control during education expansion

For a long time, the University of Art and Design Helsinki (Uiah) was the only institution educating industrial designers in Finland. When the need for industrial designers increased in the 1990's, both the state and the professional players tried to respond to the demand.

The Ministry of Trade and Industry (MTI) founded in 1992 an Industrial Design Strategy Commission, including professional industrial designers, to investigate the situation. The report of the commission stated that higher education in industrial design should be diverged to two schools: The Uiah and the Institute of Design in Lahti, today part of the Lahti University of Applied Sciences (MTI 1993, 23). The Institute of Design in Lahti had been founded in 1899, and started in 1992 a four-year Industrial Design program for a Bachelor of Crafts and Design degree.

In 1996, a second Master level education in industrial design was founded in Rovaniemi, when the Rovaniemi Institute of Art and Craft was merged with the Faculty of Art at the University of Lapland. At the same time, the Uiah also increased the amount of graduations from the Department of Industrial and Strategic Design from ten or less a year gradually to over twenty a year in 2002 (Nikkanen 2003).

By 2003, the three institutions together had 52 students starting their BA education in industrial design (Hytönen 2003, 9) - over five times more than those graduating before 1994. The existing educational institutions and the industrial design professionals clearly tried to respond to the increasing need of industrial designers. In addition to this increase, however, two phenomena occurred that affected the amount of design students even more: the polytechnic reform and the arrival of cross-curriculum industrial design education.

The polytechnic reform in Finland was launched at the beginning of the 1990's with an experimentation and development phase and finalized in 2000 (Ministry of Education [ME] 2000, 21). The polytechnics were created from post-secondary vocational institutions by raising the requirements and through merging several institutions into multi-field polytechnics. Some of these institutions, such as the Arts and Crafts schools in Kuopio, Kouvola, Hämeenlinna and Turku, had a long history of educating in the areas of design, arts and crafts, similar to the background of the Institute of Design in Lahti or the Rovaniemi Institute of Art and Craft. A few students from these schools had always started working in the area of industrial design after graduation, but the situation changed dramatically with the arrival of the polytechnics, especially when the governmental restrictions on starting positions in the polytechnics were abolished in 1999. Today there are 29 polytechnics, 23 of which offer education in design, totalling 550 starting positions yearly for a Bachelor level degree with a professional emphasis that takes three and a half to four years to complete. In addition, there are 3230 starting positions on the secondary level (ME 2000, 15; Hytönen 2002, 7)

Cross-curriculum industrial design education started in 1995, when the first International Design Business Management (IDBM) students began their studies. The program is a joint program between the Uiah, the Helsinki School of Economics, and the Helsinki University of Technology. Ten to fifteen students yearly have been selected from each of the participating universities, totally 30 to 45 annual participants. In 1998, the



Usability School, aiming to give qualifications in the area of smart products, image based user interfaces and usability, was founded. It is a joint programme of three universities: Helsinki University of Technology - computer science, University of Helsinki - cognition science and UIAH - industrial and strategic design. Each of the universities can place five new students to the program yearly.

Other universities, such as the Department of Architecture at the University of Oulu, which employed their first professor in industrial design in 1990, have also included industrial design in their curriculum (Sotamaa 1999b, 276). Also the Helsinki School of Economics has since the mid-nineties published several theses on Master and Doctoral level that touch upon the issues of industrial design. All in all, there are now almost a hundred university students a year in cross-curriculum education including industrial design studies.

As part of the Bologna process, the education system in Finland was renewed in 1994 (ME 2002). Instead of direct Master degrees (5-6 years), the degrees were divided into separate Bachelor level education (3-4 years) and Master level education (2 years). The UIAH and the Faculty of Art and Design at the University of Rovaniemi are still the only providers of higher design education (MA and beyond) in Finland. All students accepted are entitled to complete an MA after the due completion of their BA. The entry control has remained rigid; still in 2003, only 6% of those who applied for BA studies in the UIAH were accepted. (For statistics on the entrance figures, see TaiK 2006, HKKK 2006, TKK 2006.)

The total monopoly of education has broken down through the arrival of the polytechnics, but the educational realm is still fairly well institutionalised, standardised and regulated. The division of education in higher and lower university degrees proved to be an important means for the profession to maintain social closure. Most polytechnics still educate designers or product designers rather than industrial designers. The term industrial designer is, however, not protected by legislation, a criterion needed for full professional jurisdiction (Abbott 1988).

Conclusions

This paper has shown that when industrial design education started, it had to fight for recognition in an environment where an art-based approach was considered more valuable than work in industry. In this environment, industrial design education emphasised a strong scientific cognitive basis and the affinity to the markets. This prepared the education for the rapid societal and economical changes in the early 1990s. A deep recession caused the industry in Finland to undergo a structural change from a manufacturing industry, where forest-industry products such as pulp and paper were the biggest exports, to a high-tech knowledge economy. This structural change benefited industrial design but was catastrophic for many of its adjacent professional practices, such as architecture and interior architecture. Industrial design became an important competitiveness factor for the industry, and more industrial designers were needed.

This paper has also discussed the rapid expansion in Finnish design education in the 1990s, and the consequences of it. Earlier only one university with very rigid entry standards had educated a small amount of industrial designers (10 or less a year), and difficult entrance to education had functioned as a gateway and



quality control to the professional realm. In the need for more industrial designers, these entrance numbers were increased and new education was initiated. The amount of starting positions in industrial design increased five-fold within just one decade. Thus the professionals themselves clearly tried to respond to this increasing need of industrial designers. In addition to this, the restrictions on starting positions in the newly founded polytechnics were abolished in 1999. As a result, there are now 550 starting positions yearly in various design courses in the polytechnics and 3230 on the secondary level, many of which aspire to enter the field of industrial design. Several joint courses of industrial design and other faculties have also been founded, such as the International Design Business Management (IDBM) education between students of design, technology and business.

Based on the rapid increase of education, it is possible to say that the restriction of education that Gesser (1985), Larson (1977) and Abbot (1988) referred to, was crumbling in industrial design. However, Finland changed its degree system to be of international equivalence, dividing higher education into separate courses for BA level and MA level studies. The rigid entry standard has remained, as an MA degree in industrial design can only be acquired in the University of Art and Design Helsinki or the University of Lapland. Most design educations at polytechnics educate designers or product designers rather than industrial designers. Without formal education in industrial design the occupational title Industrial Designer is rarely used.

This paper has also shown that although the amount of industrial design education increased, the educational situation has ameliorated. Industrial design now clearly has a well-defined educational path, from the very first education to the higher education levels (PhD), a cognitive basis with an own professional language, and a research tradition. Although there were rigid structures for industrial design education, it was able to adjust in the rapid expansion of the profession and its education. The strong cognitive basis and the affinity to the dominant markets helped industrial design education to benefit from the rapid societal changes. The industrial design education has transformed from a study program fighting for recognition in the middle of an educational tradition with very diverse values to an important institution within the new knowledge industry.

When education is developed in an environment where the criteria for success are constantly changing, the learning from this case can be utilised globally by other educational institutions facing similar conditions. New study programs are frequently initialised, and they, similarly to industrial design, have to define their standing and gain their position in the surrounding environment, as well as adjust to sudden changes in society. The Finnish case also contributes to the theoretical concepts of the importance of a cognitive basis and affinity to the dominating markets, thus validating the existing theories of professionalisation and giving them an extensional application in education.

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