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UNDERSTANDING THE PRODUCTION AND CONSUMPTION OF DESIGN EXPERTISE BY SMALL MEDIUM-SIZED FIRMS: Some Evidence from Norway

by

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UNDERSTANDING THE PRODUCTION AND CONSUMPTION OF DESIGN EXPERTISE BY SMALL AND MEDIUM-SIZED FIRMS: SOME EVIDENCE FROM NORWAY

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Abstract

This paper explores the ways in which industrial design services are organised, produced, and consumed by Norwegian small and medium-sized enterprises (SMEs). This includes exploring the geographies of this performance in terms of how consumers and producers of design expertise organize their activities. The paper also identifies different ways in which client firms utilize industrial design to develop or retain competitive advantage. The paper combines empirical data with the development of a theoretical contribution to the fields of product creation, enterprise competitiveness and the globalisation of production. The paper draws upon case studies of Norwegian firms of designers as well as client firms.

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Introduction

Economic geography is concerned with understanding the relationship between the economy, geography, space and place. Central to this academic project is a concern with exploring the ways in which products and services are manufactured or produced and increasingly consumed. The recent emphasis in the literature placed on material culture has highlighted the complex relationships that exist between identity and consumption. Much of this literature argues that consumers can no longer be conceptualised as passive and that the desire to purchase a product or a service 'is at least discriminatory and often unpredicted by commerce' (Miller, 1998: 139). The focus of the material culture debate is on the relationship between the consumer and the 'material' product or service and not on the product itself. In fact, much of the economic geography literature neglects the actual product to concentrate on other elements of the processes that envelop the production process, for example employment, flows of intra- and inter-firm knowledge (Bryson *et al.,* 2004) and the nature of the production form including alternative forms (Leyshon *et al*., 2003). There can be no question that these literatures have produced valuable insights into the evolving economic geographies of capitalism. Nevertheless, the relative invisibility of the product in much of this literature effectively black boxes an important element of capitalism's materiality.

Production processes make little sense without an appreciation of the products that are being produced. Similarly, the development of consumer orientated economies is related to the vast escalation in the production of material goods and services that has occurred. Our argument is that one part of the history of capitalism is the history of material products. Debates on material culture and consumption should be grounded, both theoretically and empirically, in detailed analysis of the design and evolution of products as well as the overall design of the production process. This is to call for a new geography of material products or manufacturing that places the product at the centre of the analysis rather than the final consumer. It is important to note that the material culture literature focuses on consumption by individuals rather than on consumption by firms (Bocock, 1992; Miller, 1998; Ritzer, 1999). This is an important theoretical point in that material products are the outcome of a whole series of firm-

based consumption relationships that are implicated in the design, manufacture and ultimate end consumption of products. It is these relationships that are the focus of this paper.

The debate over individual consumption centres on understanding the relationship between consumption and identity construction (Miller, 1998; Clark *et al*., 2003). Reductionist perspectives that relate lifestyle to consumption behaviour can even go as far as suggesting that 'you are what you buy' (Piirto, 1991: 233). Consuming specific brands enables individuals to create, maintain and project a particular identity and related lifestyle (Bocock, 1992). This relationship between identity and consumption is equally valid when applied to the consumption behaviour of firms. Firms purchase a range of products and expertise and in some cases deliberately set out to consume that which enables the projection of a particular identity that is, in part, founded upon the exploitation of brand capital produced by others. In this case, a simple process of "floating signifieds" (meanings) occurs with meanings embedded in a particular brand floating over onto the identity of the 'intermediate' firm consumer. To Goldman and Papson,

> '[s]tandardization of production in industry after industry has brought us into the age of parity products. From cars to sneakers, standardization has made it difficult to differentiate products. In today's consumer-goods markets parity products require signs and logos that add both difference and value to them' (1988: 25).

Exploiting the brand reputation of famous industrial designers is one way in which a firm can differentiate its products in the marketplace. In this case there are two circuits of consumption involved – the intermediate (the firm) and the final consumer (the individual). Both benefit from exploiting the brand capital of products and services that are incorporated into products that are manufactured for end-consumption. Firm based intermediate consumption can range from purchasing products (completed components as well as parts) as well as a wide range of expertise. A good example of the former is the computer being used to write this paragraph; this was designed and assembled by Evesham Computers (Worcestershire) but was supplied with a flat screen manufactured by Philips in Hungary. The latter includes auditors, management and technical consultants and industrial designers. The pivot around which we construct our argument is industrial design in all its complexity. Industrial designers are especially important as their reputations can envelope products with mystique. The aura of exclusivity and fashion surrounding 'designer projects' adds symbolic capital to the firm and the product and also may enhance profit margins and turnover. Design is a stage in the

creation and development of products and can be considered to be a fundamental part of the production process in both small- and medium-sized enterprises (SMEs) and large firms.

The geographical literature on creative industries has focused on interactions between individuals, networks and firms in urban hot spots (Banks et al, 2000, Pratt, 2002, Drake, 2003). This literature describes short- as well as long-term relationships between business partners as well as drawing attention to the concentration of creative activities in world cities; places in which creative people can live as well as work. The emphasis has been on exploring creative industry clusters (film, post production, advertising etc) located in world cities (Scott, 2000) and on the ways in which creative people work though project teams, virtual communities and co-present interaction (Pratt, 2002, Grabher, 2004). Zukin (1995) defines designers, artists, and moviemakers as symbolic specialists that make up an important part of the urban economy and Banks *et al*., (2000) describes their arenas as idea factories or places where work and plans can ferment to produce new initiatives and collaborations. The focus of this paper is not on a creative industry *per se*, but rather is on understanding the co-production or co-consumption of design expertise by client companies. This analysis must include the design industry, but ultimately the importance of industrial design can only be appreciated by exploring the ways in which it is incorporated into products and services. In addition, examining these processes in Norway enables us to explore the relationship between Norwegian firms and the development of a nationally constructed design culture or community. Part of our focus is on understanding the different strategies adopted by companies to integrate design into their business models so that it becomes a key source of competitive advantage as well as enhanced profitability.

The paper is based on case study interviews undertaken during spring 2005. The case studies provide an opportunity to analyse firms' use of design as well as the ways in which designers work. This includes an investigation into client/designer interaction and also an analysis of relationships with other companies, including the co-production of design services with a client's internal staff or with other design suppliers. The interviews were up to two hours long and were taped and transcribed. This paper, concentrates on the analysis of fourteen case studies of designers and intermediate rather than end consumers. The cases have been chosen across a wide range of sectors that are typical of several regions of Western Norway, whereas some of the designers are located in other parts of the country. Another selection criterion concerns identifying firms and industrial sectors that use design in different ways. This implies

that there are different motivations for incorporating design into the production process and also differences in where design is placed in the overall value chain. The case studies are used in two ways. First, to illustrate different aspects of intermediate design based consumption and, secondly, to explore design performance.

Creative Industries and Industrial Design

Design consultancy firms are essential sources of external knowledge, expertise and innovation but their role in the knowledge economy has been largely overlooked. Yet the competitiveness of enterprises depends increasingly on specialist knowledge inputs via creative design and the development and continued modification of branded goods and services. Much of the existing literature on design provides an historical, artistic and cultural (Walker, 1989, Heskett, 1997 Julier, 2000, Høisæther, 2005), feminist (Attfield and Kirkham, 1989), marketing or strategic (Kotler *et al*., 1984; Jevnaker, 2000) perspective (Bruce and Whitehead, 1988; Bloch, 1995). There has also been an emphasis on the role of design for identity building (Wengström, 2002, Aarflot et al. 2005) as well as the role it plays in the clothing fashion industry (McRobbie, 1998). Design as a source of competitive advantage in an increasingly globalised world is largely absent from the academic literature on the new knowledge economy (see Bryson et.al, 2004). Much of the management literature on design has focused on how these processes have been organised from either the perspective of the firm or designer. Other literatures have focused on how this has improved the competitive performance of firms. In many cases, the firm has been treated as a black box and, thereby, more or less neglecting how these processes are shaped by individual characteristics and contexts.

Like most types of service knowledge the incorporation of design expertise into a product and related production process involves an interaction between tacit and codified knowledge. It can be difficult for a client firm to develop a sophisticated understanding of the quality of a designer's expertise; a designer's contribution cannot be completely appreciated until it is woven into a product and tested in the marketplace. The existing reputation of a designer is one indicator of quality; it is also possible to inspect existing designs, but the latter is no real indication of the impact a particular designer will have on a product's sales and the profitability of the client firm.

A further uncertainty is the way design projects are *context dependent.* The incorporation of design into the production process depends on the creative process of the designer and also on the client firm's management team and their ability to convert a design into a commercial product. *Isolating the design function from other actors* involved in innovation and management is therefore difficult, theoretically problematic and to some extent distorts understanding of the production process. On the one hand, to appreciate the value design contributes to the performance of firms it is necessary to explore the design function in isolation from the complexity of the production/consumption process. On the other hand, many firms would not have been in business if it had not been for their use of design as an important part of their management strategy. Additional complexity enters the production system with differences in the *organisation of the design process.* This includes the ways in which clients identify designers and also developing an understanding of the multitude of ways in which design is integrated into the value chain. By viewing these processes from the perspective of client firms and designers enables the development of a conceptualization of the ways in which these different competences and interests are combined in the production process.

Industrial Design and the Production Process

Industrial design along with film, music, art and museum collections, public sculpture, dance and restaurants can be conceptualised as entertainment and events that reflect the complex ways in which culture is entwined into the economy (Ritzer, 1999). Löfgren (2001) explores the decoration of buildings, products and events and notes that such phenomena are part of what he terms the *catwalk economy*. To Lash and Urry (1994) the economy is transforming itself into an economy of signs which is a consequence of the articulation of knowledge into the production process. Such signs are either incorporated into goods that contain significant quantities of knowledge and information (for example, software) or in the aestheticization of material objects (Lash and Urry, 1994). The aesthetic content of goods reflects the growing importance of design and research and development activity in the production of commodities such as clothes, cars and shoes. The important point is that consumption is increasingly driven by design and brands (Nike, Gucci, Chanel etc.) or symbols that are incorporated into products.

The 'new catwalk economy' is complex as there are many different types and scales of 'catwalk'. At one level, designer kitchenware, furniture and clothing are all part of the

'catwalk economy', but at another level are motorboats, life-jackets and hospital equipment. The latter are designer engineered products that take considerable time and capital to develop while the former are sometimes part of a shorter timescale fashion-driven part of the economy. The role of design in creating a visual identity is usually associated with consumer oriented goods but can also be implemented in the manufacture of industrial equipment. An example is PI Sensors designed by Formel for Simrad, one of the largest manufacturers of marine electronics in the world. Simrad produces electronic sensors covered with absorbing, abrasive resistant polyethane material that are part of a monitoring system that gathers and sends information between fishing nets and the vessels. Different sized sensors are produced but manufactured to the same shape and colours to create a visual and functional Sensor "family." The timescale of designed projects, as well as how long a design survives in the marketplace, exhibits all kinds of variants that blurs this suggested dichotomy. Some designs of relatively technologically simple products are developed over several years but only survive for a few years in the marketplace while others, for instance some furniture designs, last for generations. A furniture producer noted that they had some designs that could be traced back to the 1940s that were still selling well. This firm's strategy is to 'rest' old designs by removing them from production for a few years.

Design is also much more than aesthetics, ergonometrics and technology. Design must also include the social dimension as it must meet human needs as well producing products that have commercial value (Bucciarelly, 1994, Farstad, 2003). Traditionally, designers acquired their expertise from either an art or technically orientated education. However, from the start of the 1990s, in Sweden and Norway, some educational programmes have been developed that combine these different types of expertise (Farstad, 2003). We have so far identified some elements that characterise design as a concept. What is perhaps more difficult is to distinguish design from engineering or R&D. It is possible to distinguish between these two types of activity by taking an institutional approach; design and R&D activities can be distinguished by identifying the institutions and professional associations that regulate each of these activities. Another difference highlighted in the literature is that design is much closer to market communication, branding and image building than R&D or engineering (Farstad, 2003, Bryson and Rusten, 2005). Design allows consumers to distinguish between products that incorporate similar technologies and functions but are designed to fit with particular lifestyles and taste communities. There is usually an important difference between the legal contracts that surround design compared to R&D activity. Designers have much looser

contract arrangements than R&D; many design contracts are royalty based rather than fixed price contracts (Kristensen and Lojacono, 2002). Depending on the context a design will usually build on an idea or tradition or innovation, but the design elements of a product are usually more sensational and visible to the consumer than the R& D elements; but both are essential for the functioning of the product.

There are many different reasons why firms incorporate design into their activities. It can be a strategy to differentiate products from others available in the marketplace. Design is a significant factor for the establishment, survival and growth of firms. It may concern the development of new as well as exploitation of existing market segments, and be about the differentiation of products and services. It can be motivated by the requirement to enhance profitability by developing designs that reduce material as well as labour costs. Design is not just about the aesthetic or 'catwalk' part of the economy but is also heavily implicated in the ways in which products are manipulated to enable efficient and profitable manufacture. Design may also be about developing a logical and coherent product range that will improve the ability of a firm to place its products in the marketplace. In this case, design is involved in market segmentation by developing designs that address different consumers' needs. Our case study research has shown that these are not mutually exclusive motivations and that different combinations of motivation exist.

Not all firms target the mass market but will rather be orientated towards specific consumer niches, usually towards high value/profit niches. Figgjo, one of Norway's leading porcelain manufacturers, produces a range of exclusive tableware that is designed in association with Norway's leading chefs; gourmet cooks were integrated into the design team from the initial inception of the project. This porcelain is only sold to gourmet restaurants. According to the manager, this porcelain range was produced on the understanding that gourmet restaurants are places of performativity in which the experience is as important as the food. The company markets this product by highlighting the exclusivity of these restaurants and by arguing that part of the dining experience is related to the tableware that should be objects of desire unavailable to less exclusive eating establishments.

The Figgjo example is one of many examples that demonstrate the ways in which design is presented through the media. Consumers are fascinated by cookery programmes on television in which celebrity chefs create meals or with cookery books and magazines that describe the

art of cooking. Figgjo is just one of many companies exploiting the relationship between celebrities (television, film, etc), their audiences or fans and product design through endorsement. Cowen (2000: 40-41) notes that, in many instances, celebrity endorsement 'reflect[s] the ultimate corruption of public discourse [as] [t]he star is simply *paid* to supply the endorsement; he or she is usually not an expert on the product'. Celebrity 'designed' or endorsed products operate as one means for guiding consumers through the complexity of the marketplace. The famous certify the quality of the product or design and effectively guide their followers and fans in spending money. Celebrity product ranges encompass everything from lingerie to villages. A good example of the latter is Hiddenbrooke, California; a village developed by Taylor Woodrow Homes, the English house building company, that has been designed under licence as a copy of the landscapes displayed in the paintings of the American artist, Thomas Kinkade (Bryson *et al*., 2004). It is important to note that the Figgjo example is different from that of Kinkade as the gourmet cooks were integrated into the design team from the initial inception of the project.

The original intention behind a design project and the result of this work may alter as the design process occurs. Changes in a firm's internal motivations and resources as well as alterations in the market explain these unforeseen alterations. Neither should one forget translation and relationship problems that can undermine designer client interaction. The designer may have great difficulty in understanding the client's intentions and the client may also have difficulties in translating their requirements in a manner that can be completely understood by the designer. This problem is obviously intensified in clients that have never, or only rarely, employed professional designers. Our interviews have highlighted that such relationship/translation problems are founded on differences in the training and professional background of designers compared to managers or product engineers. Part of this difficulty is related to a conflict that can occur between design aesthetics or art and the requirement to create a product that can be sold at a profit. Designers and managers also have different tastes and attitudes in this area that have been formed during their education and training but also can be considered a generational factor.

Industrial designers may be in-house employees, self-employed consultants or be employed by an independent design company. Independent designers are able to work for many clients as they can be included in many different project teams. Designers can develop a distinctive identity in the marketplace with the implication being that they are only able to work on a

specific type of product for a single client. This could produce difficulties as designers would only be able to work for the same company. The solution to this problem is for a designer to be involved in a broad spectrum of products that might range from furniture to computers. This is quite a common approach to placing design expertise into the marketplace as evidenced by exploring the portfolios of some of the designers that have been interviewed for this research. It is usual for a designer to work only for a client for a limited time period, usually related to the time required to input specific design expertise into the development of one product or product range. We have also identified cases in which long-term relationships between the designer and the client company have been established. Even in long-standing relationships the designer must be able to retain their artistic freedom.

Some client firms consider it advantageous for their designers to have considerable freedom in the way their work is organised and eventually how the designer's work is combined with other commitments. One client company is:

> *"[C]ontinuously in a design process but our hired designer has had several other projects that are not in direct competition. Some of her products outside the company involve taking photographs for a book – this has given her valuable experience and ideas for the products she designs for us (Oleana)."*

The tension that exists between artistry and commercial interests explains why some designers prefer to work on their own. Another designer expressed it in this way:

> "*Large firms will perhaps want a particular logo whereas as I, as a designer, want a different one. You are, in that way, no longer working with your own concepts but working for the firm according to the preferences of their customers. In that way you may lose the profile you started with, and that can mean that you lose the interest*. "

This illustrates that clients and designers have similar as well as distinct interests in the product design process. The client is interested in maximising the financial return from the product, in ensuring that the product is differentiated in the marketplace and in maintaining and developing the brand identity of the product and firm. The designer is concerned that the product will sell, but is less concerned with commercial imperatives and more interested in developing a reputation for design constructed around the projection of a distinctive design style.

The Design Process

There are three stages to the design process. The first stage is concept orientated and consists of a dialogue between the client and the designer in an attempt to ensure that both understand the required design task. For example, the designer can come together with marketing staff or other parts of the management team to share information about the history of the company, about consumer profiles, research plans or collect any other information that might prove to be relevant to the project. During this activity '*these details along with market characteristics are necessary details that we have to map, and it is a part of the process that will involve a lot of sketching*." The second stage involves decisions that entail identifying alternative design solutions that are to be followed up in more detail. Finally, stage three includes evaluation and quality control and occurs when the main part of the project is complete. This final stage is undertaken to obtain feedback concerning the product's success in the marketplace. All three stages are important elements in a successful design project. As part of the process of introducing the product to the market it may be necessary for the designer to work with the client's marketing team. This interaction should occur in order to ensure that the design is marketed in the most effective manner.

Product design and translation into a manufactured product involves teamwork in which different types of expertise and knowledge are combined. This means that the development of trust-based relationships between members of the product team is essential to the overall success of the project. This includes sharing knowledge that is relevant to the design process itself, appreciating the importance of different types of expertise (R&D, design, marketing, brand management) as well as information about other aspects of the client's activities. The marketing team and other parts of the management team must share information about the history of the company, about consumer profiles, research plans or any other information that might prove to be relevant to the project. According to one manager the assemblage of different types of conflicting expertise in a product development team (engineers, practitioners and designers) can lead to heated debates. In many instances, project development teams function effectively as members understand and respect each other. One of the managers interviewed noted that: "*Our designer worked together with our factory workers and even demonstrated different polishing techniques to them. Our workers were really impressed that he was so hands on."* This example highlights the advantages that can

accrue from the designer being close to the production team, an argument that parallels the relationship between R&D and production.

Previous experience, patience and also the economic capability and willingness to take risks appear to characterise many of the managerial decisions behind the success of a design. Another aspect of the design process involves research that is undertaken to inform each stage. Many of the projects we have studied have reported some actions that are required to understand what is required by consumers. The methods deployed to investigate customer preferences vary. For a pram manufacturer, discussions were held with parents but perhaps, more importantly, participant observation was undertaken in large crowded cities. According to the manager: "*We really wanted to develop a pram that enhanced the eye contact children have with their parents. This also meant that the child was sitting higher up and could get a better view*." For a cutlery manufacturer it involved several visits to a gourmet restaurant located in Oslo. This location was an important meeting point between the designer and the CEO of the client firm, but also an important test lab for trying out styles and testing the functionality of prototypes of the cutlery design before it was set in production. For the porcelain manufacturer, collaboration with the *Gastronomical Institute* (Norway's premier School for Chefs) was an important part of the process of creating a modern collection of tableware. In this case, part of the creativity of the designer was transferred to the chefs as they had to decide what should be served on an odd shaped plate. Yet another example is a company producing coachwork for buses where analysing EU-regulations (in this case about vehicle safety) became a critical element of the design process. In the majority of case studies it was important for the designer to discuss the ideas, forms, details and the management of the production process with experienced production workers. Some designers also noted that it was important to acquire experience of the ways in which a product had been received by consumers. This is especially important for identifying modifications that could be incorporated into revised designs as well as demonstrating to clients that the designer is concerned about the overall commercial success of the product rather than solely with the more artistic elements of the design process.

Sourcing Strategies

Much of the literature about design services explores externalization versus internalization of design expertise within client firms. This type of debate is centred around transaction costs and understanding the advantages and disadvantages of market versus hierarchical

relationships (Bryson *et al*., 2004). What is absent from this literature is any consideration of the more geographical dimensions of design relationships, for example, the search process, the relative location of designers and clients, the question of co-location of client and designer as well as design clusters.

Client firms try to identify a new designer by seeking advice from colleagues, friends, suppliers, branch plants/subsidiaries, design authorities as well as information from the media. Other clients employ designers they have worked with before. There are also instances in which the designer rather than the client takes the initiative. In these cases, a designer has approached the firm with a design proposal. Two types of 'prospector' designer can be identified. First, high profile established designers are able to choose which firms and products that want to work with. This choice is either driven by artistic or commercial motives or by a combination of these factors. Second, young designers who are trying to establish a reputation will try to develop a portfolio of designed products.

Research has revealed that people involved in some of the key cultural industries including designers are attracted to larger cities; places in which word-of-mouth, social networks and previous experience underpin the formation of business relationships (Florida, 2002 a & b). Our research into design highlights that such soft relationship networks are important in this sector, but that the client search process is much more nuanced than the existing literature suggests. The complexity is in part attributed to the segmentation by reputation that exists within the design community. This is a complex issue. At the top of the design profession are the "design stars" – extremely high profile established designers that are frequently known by name by relevant taste communities (Bryson *et al*., 2004: 168-169). Many of these designers work extremely hard and will be engaged in projects for client firms located irrespective of the location of their design studio. Some client firms are extremely ambitious and will only engage 'design stars' irrespective of location. For practical reasons (cost and time), other client firms search for designers located in the same region but also as some of the managers told us, on the understanding that a local designer will have a better understanding of their business culture and design requirements than a 'foreign' designer. In such cases understanding the specific needs of the client firm is more important than employing a 'design star'. The design sourcing strategy that is developed is heavily related to whosoever took the initial initiative to create a designer product. In a number of instances, client managers met

the designer at a trade exhibition or seminars and it was during this type of initial meeting that managers and designers planned their first projects.

In some projects, the designer will take the role of broker by taking responsibility for assembling a team of experts. In these cases, the internal expertise of the firm is identified and combined with expertise that is acquired from outside the client firm. These temporary project teams are established by combining the business networks of the designer with those of the client company. The designer's network may, however, consist largely of non-local experts. Taking advantage of friendships and existing networks is one way of introducing some guarantee that the project might succeed. At the same time, the designer may also engage colleagues in their design firm, as this is a way of strengthening the team as a whole. This may lead to difficulties for client firms that are trying to develop or maintain a local or regional supply chain. In these cases, the client engages with the designer to ensure that as much work as possible goes to local firms. One company concerned with maintaining local linkages noted that:

> "*We did in fact manage to have the designer we hired undertake design for the project work being undertaken by one of our local suppliers, even if they were not that sophisticated. We also matched this high profile designer with some other local firms. By doing this, the interest in design has spread to more and more firms in our region who now consider design as an advantageous strategy for their business. This also gave the designer more customers, besides being a way of bringing in other designers that could find projects here. "*

This firm is located in a close business community and prefers to employ local providers of expertise. This type of patriotic local purchasing is a feature of remote Norwegian communities and is part of a local business survival strategy for firms located in relatively geographically isolated places. Similar patriotic sourcing strategies were identified in our study of management consultancy (Rusten *et al*., 2005). Bringing in a designer from outside the local business community meant that new knowledge and expertise was acquired that could easily be shared with co-located firms as none of them were competitors, but rather collaborators, suppliers and friends.

Not all firms employ fully trained designers; some will hire design students. In one case a firm was introduced to design expertise via work undertaken for them by a design student.

This student introduced some very innovative and profitable improvements to the client's product line. The firm, therefore, decided to establish their own design unit by hiring people on a permanent basis and combining this capacity with expertise obtained from external designers employed on a contract basis.

The geography of industrial designers mirrors that of the geography of Norwegian producer services in general (Bryson and Rusten, 2005). Design firms are concentrated in the most heavily populated areas of the country especially in the East and also in or close to other larger urban areas. (Figure 1). However, as several industrial studies have documented Norway's most important production regions are located in the Western parts of the country and these include several non urban areas (Hansen and Selstad, 1999, Lindkvist, 2004, Rusten 2004). The map of design consumption does not necessarily map directly onto the location of supply. Neither does there appear to be a clear urban/rural divide, but more a pattern that can be explained by the clustering of sectors, local traditions of utilizing and having success with design and the success of public agencies in assisting SMEs in launching design projects. A consultancy report by Asplan Viak (2004) on government supported design projects identified that firms located in Aust Agder and Buskerud had received between 1999 and 2003 as much as 1/3 (N=98) of governmental supported design projects while their expected share related to their share of the Norwegian population should have been no more than 1/10.

INSERT FIGURE 1: Map on last page here Figure 1: The Geography of Industrial Design Services in Norway (number of firms

Industrial designers are part of a 'networked economy' in which established relationships function to bind people together. Young designers describe the profession as one which has a very open and informal atmosphere with a lot of generosity and willingness to share experiences between designers. Several of them know each other from the days spent at art school. Younger designers try to help each other by providing referrals and recommendations to their friends in the design industry. This is possible in this sector especially with designers specializing in different types of product and design expertise. Some of these links are between designers located in the same city, whereas others bind designers together located in different parts of the country.

Design and the Value Chain

Industrial design begins as tacit knowledge that is held in the mind of the designer or design team. The tacit stage contains within it the artistic and creative part of the design process. Tacit design knowledge becomes codified as it is converted or translated into standardized products for mass production. In this process the artistic design is translated to meet the requirements of the production process in terms of tooling, raw materials, the client's existing equipment and cost. It is important to distinguish between professionally trained designers and their expertise and products that are created without recourse to this type of expertise. The point is that all products and services have been designed, but not all have been designed by professional designers. There are at least six reasons for including a formal professional design element into the development process of a product or a service.

1) *Design product strategy.* This occurs when a firm deliberately sets out to develop a design-informed and even design-rich product. At an extreme level it is possible to argue that in this instance the form or design may be more important than the actual substance of the product. A good example is the development of Voss bottled mineral water - a designer bottled water. The Voss case began when some designers came together to decide to bottle good quality Norwegian water targeted at the luxury segment of the market. The intention was to market the water only to high class hotels and restaurants. The company eventually found a suitable water source and then decided to identify a Norwegian geographical name that was also well known outside the country. Voss was chosen as this is one of Norway's well-known winter sport resorts, and also a name that is relatively easy to pronounce for non-Norwegian speakers. Voss water became the water of choice for famous stars like Madonna and it is rumoured that she avoids staying in hotels that do not stock this product. This case is an example of a product in which design initiated the development of the product and in which design is also central if not the main element of the product's value chain.

   A similar design product strategy lies behind the success of Ty Nant Spring Water. In 1989, this Welsh company introduced a unique designer blue bottle for its products at the London Savoy hotel. Ty Nant's strategy has been to develop a range of beautiful coloured and shaped bottles for its water that differentiates the product in the marketplace. In 1999, the company introduced a crimson bottle and in 2001 the

company teamed up with the Welsh born designer Ross Lovegrove to create the PET bottle – an asymmetrical bottle designed to evoke the fluidity of water. The company's website notes that:

> [w]ith it's iconic product range, Ty Nant is recognised throughout the world as one of the ultimate stylish refreshments, through associations with aspirational events, publications and television and film media. Examples include official water supplier partnerships with world-recognised sporting, music, arts and fashion events including the Louis Vuitton Sailing Cup, The Stella Artois Tennis Championships, London Fashion Week, The MTV Awards, The MOBO Awards and the Venice Biennale of the Arts. Ty Nant is also regularly placed on the sets of top-rating UK and US television programmes such as – Smallville, Sex and the City, Friends and The OC, as well as Spooks, Little Britain, Easteanders and Hollyoaks (www.tynant.com).

The company has an active media placement policy to try to ensure that its products benefit from association with celebrities as well as high-profile cultural events.

2) *Product driven strategy.* In this case, a firm with a reputation for a designer product tries to stretch its brand and reputation by applying its expertise and name to a new product range that is distinct but related in someway to its existing products. A good example is the Stokke pram. Stokke is a successful Norwegian company that has an international reputation partially constructed around the Tripp Trapp chair, a high chair designed to accommodate the needs of children of all ages. Tripp Trapp is a wooden highchair that converts into an adult chair and is designed and manufactured to last for generations. The inherent design qualities of the Tripp Trapp were undermining Stokke's competitiveness as the market for its key product was becoming increasingly saturated. A traditional furniture company thus stretched its brand by developing a heavily designed and designer innovative urban pushchair that was designed to ensure that babies are carried much higher off the ground than other strollers. At this height babies can enjoy interaction with their parents, obtain a better view as well as being removed out of the direct range of car exhaust systems. The Stokke Xplory ™ is a revolutionary design that like the Tripp Trapp has become an international success, for example, winning the UK Practical Parenting best buy award. It is co-marketed with the el-car as well as more exclusive car models and the designers and design team are part of the marketing campaign.

3) *Process driven strategy.* In this case, a firm develops a designed product that has been developed to maximize the benefits of a sophisticated high technology production system. The design of the production system is as important as the 'designer' elements of the product. The Ekornes Stressless range of high tech furniture has been designed and developed so that it can be manufactured using a robotic based high technology production line that has much in common with that found in advanced car factories. This high tech armchair is produced using an extremely efficient production process that enables each chair to be customized to meet the needs of individual customers; customers design their own chair by choosing from a range of options. The design of the product and the production process go hand-in-hand and both provide Ekornes with a competitive edge in the marketplace. Their competitiveness is partly related to the supply of 'customized designs' and partly by their ability to retain manufacturing within Norway.

4) *Fashion driven strategy*. In this strategy a firm develops fashion-rich products that are designed to be exclusive and only available in special locations. A good example would be perfume in which the packaging, brand and retail experience are more important than the actual chemistry and production process. Another example is the Figgjo porcelain series that is only sold for use in gourmet restaurants.

5) *Customer driven design strategy.* In this instance, a firm will design a heavily customized product for an individual or firm. For example, the design and manufacture of a ship in which a customer orders a bespoke product. Other examples include interior design (houses, offices, aeroplanes etc) and contract furniture. The Morgan Motor Company, Malvern (UK), the oldest independent sports car manufacturer, has recently designed and manufactured a bespoke Morgan coupe tailored-made for Prince Eric Sturdza, president of Banque Baring Brothers Suisse. Charles Morgan, the owner of the company, produced a series of rough sketches of the proposed car on his Apple computer and a 21 year old Coventry design student, Matthew Humphries, designed and created the first quarter-scale clay model. The bespoke coupe is based upon Morgan's Aero Eight's chassis and fundamental design themes. If the car passes European and American crash tests then Morgan will consider a limited production run of around 50 cars.

6) *"Politically" motivated design strategy.* These products are designed, developed or modified to take into consideration regulations imposed by government or by lobbying groups. In most cases these pressures result in the development of inclusive products or sustainable products. Such products are either specially designed to meet the needs of a particular cohort, for example older people, children, left handed equipment and environmental friendly products. This category also includes products that are designed to meet the needs of the majority of users, for example, user friendly computers.

These six ways in which design can be integrated into a firm's business model also illustrates that design can be incorporated into different stages or parts of the production process, for example from instigating the development of a deliberately 'designer' product to 'bolt-on' design that is added on to an existing product range.

The placement of design in the production process varies between firms operating in the same product sector. The design of a product and the relationship between the design and the overall design of a production system varies between firms. Three variations have been identified. First, furniture manufacturers in Norway have experienced intensified international competition and many of these firms have reacted to this market pressure by developing design-centered strategies. Ekornes transformed its production system from a traditional labour intensive system to one that was informed by automotive automated assembly systems. This has allowed this firm to retain all its production and assembly operation within a relatively high-cost production economy, Norway.

A second strategy that has been commonly adopted across Europe and the USA is to develop a new international division of labour that involves relocating elements of the production process to low cost (labour and raw materials) production locations. A good example of this strategy is Hjellegjerde, a firm which some years ago moved some production capacity to the Baltic countries.

A third strategy is to survive by exploiting small, but high value niche markets with production and design centered around the highest quality of craft production combined with chic design. There are many examples of this type of niche manufacturer. Hjelle, a furniture

producer, manufactures furniture for board rooms, embassies and wealthy households (Rusten, 2004). Similar examples from other sectors and countries exist within, for example, the car industry, where a whole range of niche products are produced including hand-built sports cars (Morgan, UK).

The Life Cycle of Designed Products

There is a subtle balance between being able to produce a new product collection to meet expectations in the market and producing standardized production efficient robust products that will survive long enough in the marketplace to obtain a sufficient return on development costs. Too much stress on design centred improvements will increase the probability that a product experiences fashion rather than functional obsolescence. This means that manufacturers are always investing in design related production expenditure at the expense of overall profitability. A better scenario is the development of long life products that will secure a profit stream for a long period of time. According to some of the managers we have interviewed, expectations from the market to continually introduce new designs can be especially challenging in sectors like clothing, textiles and electronics.

There is, however, also an opportunity to develop well-designed products that may attract particular types of home as well as European and North American customers. One example, amongst our cases, is the textile and clothing factory Oleana located outside Bergen. This firm has an established reputation for the production of luxurious garments created in wool and silk. Their approach has been to use long-term sustainable designs inspired by Norway's diverse textile tradition as well as international trends that have informed the development of Norway's textile heritage. Thus, the firm has developed its own distinct fashion that combines tradition with a modern idiom. New products are presented twice a year. Oleana's business model is based on products that have a relatively long life in the marketplace and as such the firm does not follow mainstream fashions. For another producer, Tonning, this means making minor adjustments to furniture designs that were created originally in the 1940s. This type of strategy is partly about the development of environmentally friendly designs that are not too closely connected to the fashion system. This type of strategy also reduces energy consumption as well as the waste that is associated with the consumption of short-term fashion driven consumption.

As well as developing clothing, Oleana's designer, Solveig Hisdal, is also responsible for the photographs as well as design folders that are used to market the clothing range. She also arranges the product displays in the boutiques in Bergen and Oslo. She is responsible for maintaining the atmosphere and logic that surrounds the products by following her designs through the value chain. In several of the other cases we have studied design transmission has been divided between individuals and distinct competencies. A typical example would be industrial designers who are engaged in the development of the product and related production processes, while graphic designers and marketing experts are responsible for promotional design and branding. Designers' communication skills and ability to bring the design concept through these different stages varies but might be crucial for the success of a project. The fact that tasks connected to the design project are passed from one individual to another or from one category of expertise to another implies that conflicting ideas and interests may occur. In a number of interviews respondents highlighted conflicts that have occurred between industrial designers and those working on graphic design or marketing; each expert had different understandings of the project, their roles as well as working methods.

The increasing emphasis placed on environmental sustainability is also encouraging firms to design products that are intended to have longer lifetimes, or contain a large number of reusable parts. In some cases, clever design is being used in which total obsolescence is designed from the project. Thus, Arcam's (UK) range of hi-fi components (CD players etc) is designed from the ground up to include built-in upgradeability as well as long-term product support. This permits consumers to upgrade subcomponents of the product thus avoiding the necessity of recycling a complete unit. Design to aid efficient recycling is an important element of a country's environmental strategy. Products are increasingly designed to enhance the effectiveness of recycling the various materials incorporated into the design. Even when this occurs recycling may still be impossible or difficult; the recycled parts may be unavailable in the quantities required for effective recycling in particular locations (Weber, 1979). This example illustrates the way in which design intentions can fail when they do not consider the geographical context in which the completed products are placed.

Conclusion

This paper has explored the ways in which a sample of Norwegian SMEs integrates design into their products as well as production processes. The identification of these relatively

different design approaches and product categories challenges the whole concept of what design is, the motivations that a firm has for using design as a source of competitive advantage, firms' motivations for using design, the understanding between designers and customer firms, and eventually what formal disciplines are relevant to design performance. Designers should have a combination of skills to be able to investigate, understand and implement the needs, taste and behaviour of clients and their customers. The ability to translate and combine this information with artistic skills and creativity is important and implies that designers must have the capacity to engage in a dialogue by listening to and understanding other professions including the commercial interests of client firms. Not only is this skill crucial in the designer's ability to obtain a contract but it also influences which role designers play in these projects. Different types of expertise are involved in each stage of the product design process. A couple of our key informants characterised designers as brokers that were involved in changing relationships between a firm's existing and new suppliers. In fact, our case studies have demonstrated that design is not only connected to the product but is also becoming an integral part of management. The incorporation of design into the value chain of a product may transform innovation, technology, production, marketing and sales. The ability to work in this way depends on the formal training undertaken by designers, their previous professional experience including the range of products they have designed as well as the way in which design is presented to the business community. Several commentators have noted that many Norwegian designers focus too much on creativity and the artistic elements of the production process, forgetting that successful design includes more than just colour and style. A closer collaboration between technical, commercial and artistic disciplines is required. This mix of expertise has been incorporated into a new educational programme for designers being developed at NTNU, Trondheim. In addition, it is important to remember that design is a collaborative process involving a range of different, distinct and sometimes conflicting expertise. Like other parts of the creative economy (film production, management consultancy and research) design is increasingly developing into a project based sector in which teams are created on a project-by-project basis.

Client firms experience problems in incorporating design expertise into their business activities. One problem is related to the educational background of designers and the under emphasise placed on management, marketing and commercial training. Another challenge has to do with the fact that design is very much associated with catwalk products like furniture, clothing and ornaments whereas other product categories tend to ignore the contribution

industrial designers can make to their projects. Large sectors of the Norwegian economy, including the development of maritime, oil and marine equipment, do not always recognise that design might have a role to play in their activities. One industry designer argued that:

> "*Rather than being focused on ornaments and styling, design should mirror the need of a country's major industries. For Norway, this would naturally be much more about equipment for shipping, the oil industry or the marine sector."*

Campaigns by *Innovation Norway*, *Norwegian Design Council*, business organisations and others that are intended to raise the profile of design in all sections of the economy are extremely important. In fact role models and success stories developed from a firm perspective may be as important as the products themselves in stimulating the development of design hotspots outside the larger urban areas. Managers should also receive formal training in the ways in which design can be integrated into the core competencies of a firm. This has implications for formal management training provided by business schools. Eventually this training should influence the ways in which design processes are organized in businesses. The design function is changing from being just about the product to being an integral part of the management as well as strategic planning of a firm. This transition is similar to that which has been experienced by information communications technology (ICT); ICT used to be considered as a supporting activity and it has now become increasingly integrated into firm strategy and performance.

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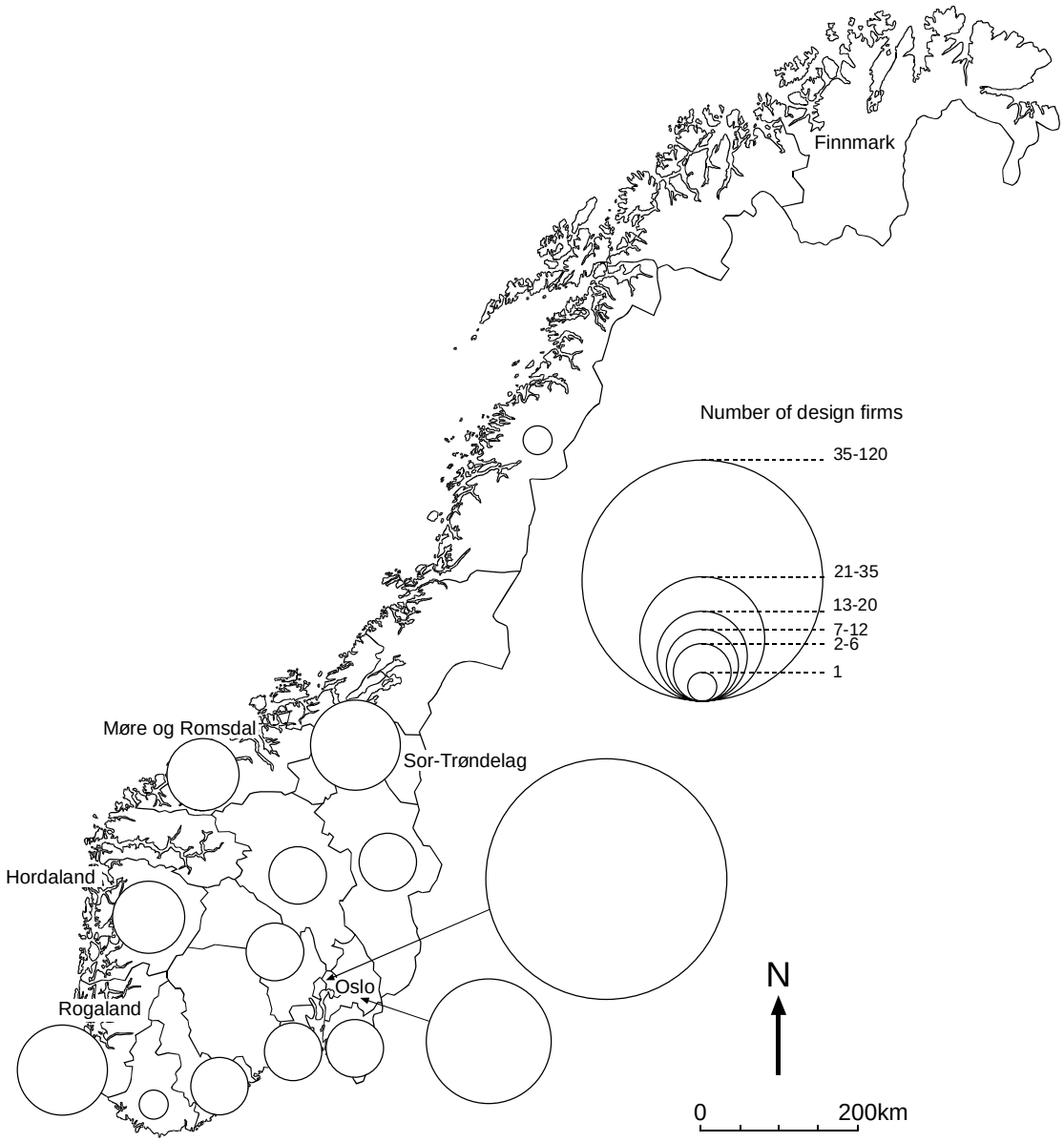

Figure 1: The Geography of Industrial Design Services in Norway (number of firms)