

Euro design:

Some recommendations for creating value by design: measurements and recommendations

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Introduction:

Work package 4.2 explores a complementary approach to WP 1-3 and 5 creating value by design *processes* and *outcomes* in companies seen from a consumer/user or customer perspective. We want to explore how it can be investigated how and why the single individual allocates value to an item or service.

Lessons from work packages 1, 2 and 3

These work packages are devoted to show that design can be conceived as an economic factor of production seeking to give users functional, emotional and social utilities. Economic value creation results from the difference between "utilities" gained in a transaction and the economic cost of delivering that transaction. Since economic value creation depends on the utilities perceived by the consumer, such qualities are assumed.

The wording in WP 1 concerns integration of functional, emotional and social utilities is argued economically, as it causes substitution, it satisfies similar needs at lower costs or it satisfies higher/new functional, emotional or social utilities at the same cost, or when it satisfies substantially higher /newer needs at an increased cost.

The approach used to test alternative question forms was a concerned with the actual responses to questions and whether the informants understood the questions and to what extent they were able to provide a reliable answer. Thus, in gathering responses, we were explicitly concerned with determining whether respondents felt questions were based on concepts which were clear, whether wording was unambiguous and whether questions could be answered simply. This was felt to be especially important given the acknowledged challenges in providing definitions of design which

translate in a consistent way between nations and between firms of different types.

Using this approach, it is possible to gather rich insights into the viability of alternative question formats, with a small sample size.

As pointed in the introduction to this Work package 4.2 explores an alternative approach to WP 1-3 and 5 creating value by design processes and outcomes in companies seen from a consumer/user or customer perspective. We want to explore how it can be investigated how and why the single individual allocates value to an item or service. This means that we want an approach which gives the single individual opportunity to "perform his or hers own value creation" in a given context.

We may know what happens in the mind of an average person; however, we do not know what goes on in the mind of a single person (Damasio 2003). Therefore we must find ways to study what happens in the person's interaction with design.

Based on Austrian economics (Heskett 2009), which states economic value is dependent on the perception of value of the (single) consumer or customer and any value statement, can only be derived from there. The economic value of design is therefore - in the end - derived from the value a customer is willing to pay.

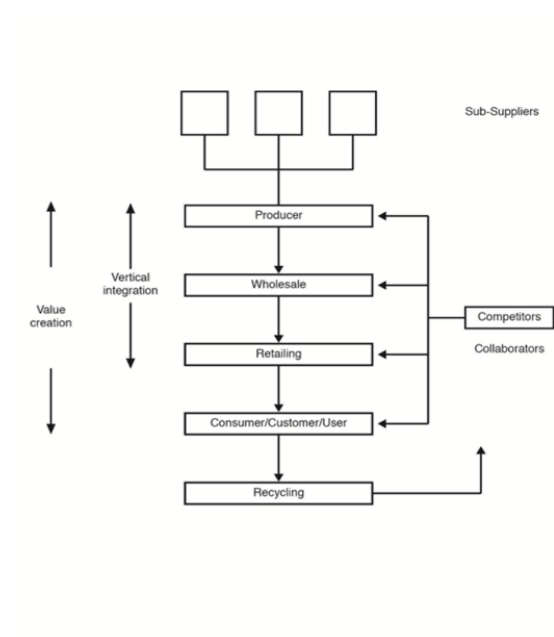
We may think that the value creation is created thru consumer surplus; however this is an average modelling. Concerning the individual person we cannot observe what is in the persons mind, we can only observe the value creation thru the person's willingness to pay.

This document advances the conceptual framework for measuring and analyzing design in an economic context by exploiting analytical approaches toward other intangible resources and capabilities.

This paper starts out with the general reasoning behind using case studies in the context of measuring the value of design to then develop the

case study methods employed. After describing the individual case studies we will present the results of the case studies and finish with recommendations for both further research and good practices. Thereby we will be contributing to the collective effort to increase economic value creation through design in Europe and exploit the competitive advantage design offers for the region.

A company is a part of a value system. That is, any firm is connected with sub-suppliers and direct business customers (if any), which form the vertical system (which in some cases is integrated). It is also negatively connected with competitors, as well as with end customers, and possibly by recycling organizations.



This is usually referred as mother model (see figure), which is similar to the much-quoted value chain- and systems models by Porter (1980). Design is integrated in such a model and one cannot see exactly what constitutes the contribution of design per se. Design penetrates everything (Dumas and Mintzberg 1989).

An attempt to measure value according to this model requires comparing the investment with

alternative investment for instant the return of the business with or without the new investment or the cost of capital. A good return on investment must match what one can get by other investments.

One can thus see design in economic terms from any position in the framework. In this WP we choose to see design from the perspective of the user, i.e. to consider the value creation generated by the single consumer as we show in a few experiments and while still portraying design processes as cases studies of individual companies.

The process of measuring the value of design at the individual level is far more complex (Simon 1962) that can be documented in a manual, and requires intuition and thinking as in dealing with crafts.

What about *best practices*? It is good practices. The so-called best practice approach was severely distorted after the famous studies "in search of excellence" by Peters and Waterman 1982). Only a few years after many of the companies were either broke or known for performing badly. Maybe the neighbour is doing better than the best, but may hide it from us. Also, as soon as one practice seems good, others will improve it.

What about a checklist? Because a checklist is supposed to be complete in the sense that if all elements are crossed out, then one should be safe. Here there is no such guarantee and the outcome is much more open. One cannot take the list of headings and use it as a checklist for evaluating a design procedure either. All starting points may differ, and it is vital to explore the local and idiosyncratic conditions before starting. Sometimes even *luck* gets into it (Barney, 1991).

Competitive business is about *differentiating* oneself from the competitors, not to imitate them. In a market in which there is a leader with a large market share, leading technology, design or whatever, the best strategy for others is rarely to follow (imitate) the leader, but to develop alternative solutions and strategies.

Sometimes it is asked if one could use conventional tools like intellectual asset monitor, German guidelines for intellectual measurement of intellectual capital in business or Danish guidelines for measuring intangibles. The answer depends on what one intends to use it for. The tools listed here are not intended for individual firms, but are a compilation of data to explore intellectual property at an industry level. As will be made clear later, the term intellectual capital and others are used by an analyst like an industrial economist, rather than a business decision maker or manager. There is a different toolbox for the manager, referred to as appropriability which deals with how the company can protect its exploitation of knowledge resources (March, 1993; Winter, 1991).

The tools are developed in a framework of the resourced-based theory of the firm and recent (20 years) advancement in strategic management. This document is too limited to deal with these issues in details, but we can refer to writings of David Teece, Sidney Winter, Jay Barney, and many others.

Case studies – aims

To explain how companies create value by design, we report four cases. The explanatory case studies were used to probe into underlying principles, in this case the principle of the value of design as seen by the management and the way it successfully can be translated into strategy. The customer hence only figures in the revision of the state of the art on tools, techniques to monitor the role of design in the relationship between customer perceptions and the economic value creation as well as in the perception of the management and their take on the connection between their product / service and the value creation of design. The case studies are based on the same target group as the questionnaire of WP 3.

The case study research presented here relies on multiple sources of evidence, and benefits from the prior development of the theoretical propositions in WP 1. The cases are all local knowledge cases as

they have been chosen with the help of €Design project partners in the respective countries. They were selected due to them exemplifying good practice and thereby providing useful knowledge for recommendations that can help stakeholders to increase the value of design. When referring to design it is understood that the term encompasses both research and development activities and innovation activities.

Case study – methods

As the case studies aimed at gaining a deeper understanding of the relationship between aspects of design and measurements of value creation, a mixed-method approach was adopted. The research employed interviews as the qualitative method of choice to comprehend subjective realities and multilayered dynamics of the relation between design and its perceived value. According to The Dictionary of Human Geography, "qualitative methods are concerned with how the world is viewed, experienced and constructed by social actors [and] provide access to the motives, aspirations and power relationships that account for how places, people, and events are made and represented" (Johnston et al.: 660). This is regarded as equally true for cultural artifacts and practices such as design. The empirical inquiry is grounded in (1) interviews and (2) the interpretation of publications on the topic of design value measurement.

More precisely, the methods comprised semi-structured interviews that were partly recorded and transcribed. The study contends that the relationship between design and its value is compounded through the interplay between functional, social, emotional utilities. The empiric data was hence complemented by literature on how to understand the value of design. This approach seemed fitting in consequence due to the above mentioned difficulties with measuring design through strictly quantitative studies

The fieldwork was conducted in September and November 2013. The participating companies were Dolle Nordic A/S, a global leader in staircase manufacturing in Northern Jutland, Zanier Gloves, an international sport glove developer and manufacturer, in Lienz, Austria, Wamsler, an international developer and manufacturer of heating systems, in Budapest, Hungary and Santa&Cole, an editor of furniture design, in the vicinity of Barcelona, Spain. These four locations were chosen in order to compare Europe-wide and to avoid interpreting national patterns as general ones. Access to the different companies was established through the partner network of the €Design project.

The interviews were all conducted at the head quarter of the respective companies, the majority of them in English, one in German (Zanier Gloves). Narrowing down the focus on the management level meant accessing the strategic side. The designer perspective has in most cases been neglected, with the exception of Zanier Gloves, where a second interview was conducted with both CEO and partnering designer. The customer, as co-creator thus constitutes a crucial variable in the creation of design value that needs to be explored much more in the future.

The method of qualitative interviews was chosen to gain insights into the emic perspective of managers about their practice regarding the use of design in the company, as well as their take on value design for both the company and the customer. The Dictionary of Human Geography states that "[t]he aim [of interviews] is not to collate typical responses to pre-defined questions from a random sample, or to generalize about the view of a population, but rather to record in complex detail the opinions and ideas of a relatively small number of individuals or groups who may have been selected systematically for the light they can cast on a particular area of [...] concern" (Johnston et al.: 660).

The interviews conducted were all semi-structured interviews. An interview guide was employed to spark the discussion and direct the conversation in

such a way that relevant aspects would be touched upon. However, compared to structured interviews, participants had the possibility to introduce the themes they found relevant and to do so in their own words (Fife, 2005; and Davies, 1999), which would allow for the investigation of attitudes and opinions in a more in-depth manner. The interview guide was thus assuring a certain amount of comparability whilst a general openness was guaranteed. As Fife states, "it hardly seems worth doing the study if we are already assuming that we know so much about the research situation before the actual research that we can reduce the potential results to a handful of possibilities in pre-formulated questions" (Fife: 94).

Questions in the interviews and the interview guide were prepared under three main themes, leadership, culture and implementation. The questions raised issues on how design is anchored in the company, the distribution of discretionary competences regarding design decisions, and the importance assigned to design in the overall framework of the firm. In this regard, the study did not attempt to address all aspects that might be relevant for measuring the value of design, but it tries to understand the involvement of the management and the importance they attach to design and the value they see design playing for their (economic) success.

Interviews were regarded as the most important source of information. The results of the preliminary analysis were then compared to or complemented with data gained from other methods, WP1, WP3 and WP4.1 in a hermeneutical fashion. The additional sources used here to gain further information focused on the company's internet presence and literature on design value.

Experiments

Experiments were conducted to explore the value of design seen from an individual customer perspective. They therefore complement the case studies where customers are seen from the perspective of the firms. In our experiments, we are

able to corroborate design value from the perspective of the individual customer. The procedure will be described in the sections on the experiments, but common for all is that they were built on a presentation of real objects that the respondents could see, feel, touch, smell or whatever sensory modularity they chose. Rather than asking the respondents to rationalize their evaluations by applying a semantic scale, we asked them to move a cursor on a computer screen between pairs of alternatives and thereby “indirectly” rating their relative preferences. By moving the cursor, the assumption is that the respondent reacts basically emotionally or feeling-based by just choosing, not giving “grades”. The experiments were performed under various sets of information, typically only objects, some information, brand information or storytelling and finally with additional prices.

Case 1: Santa & Cole: Designing as Editing



SANTA & COLE

History of Santa & Cole

Santa & Cole was founded in 1985 by Javier Nieto Santa, Gabriel Ordeig Cole and Nina Masó. The name was taken from the last names of its founders, and the symbol – two unequal eyes looking through a pair of glasses, the fertile eyes of the title of a collection of essays on design – symbolizes their vocation as editors and the importance of having their own point of view about the objects they design and sell.

Santa & Cole defines itself as *design editors*. Their function is to edit, that is, to select those objects in which they recognize themselves, and to manage the most suitable means for a designer’s idea (or an

existing design) to take shape and be put on the market.

“Our company’s reason for being has always been industrial design, an art consisting of finding the best in each object in order to offer a more pleasant user experience in our everyday lives,” explains Javier Nieto Santa.

“Our business is to seek out and choose from among an extensive number of objects, those with a great history which precedes them, or with a humble success to discover; a selection that contributes more than just matter: serenity, culture and wellbeing.”

In 1987, they started to develop the indoor collection with a series of lamps that shed a warm light, something totally opposed to what was in fashion at the time, the halogen with a twisted tube. However, their commitment to human warmth and visual comfort was received with great enthusiasm. The BASICA lamp, the first design signed by the Santa & Cole team, was the work of Santiago Roqueta, an indispensable figure for an understanding of the development of industrial design in Catalonia. In that same year, designers such as Miguel Milá and Beth Galí made decisive contributions to the first Santa & Cole catalogues with emblematic products such as the TMM standard lamp and the LAMPARAALTA street lamp.

Santa & Cole is the result of several takeovers (such as that of Disform in 1994) and distribution agreements that have gradually built the company’s history. Some significant examples of this are the agreements reached for distribution in Spain with two firms: in 1987, Bulthaup (Germany), a benchmark brand in kitchen furniture and USM (Switzerland), specializing in office furniture. In 1989, Santa & Cole became the agent for La Cornue France, a company dedicated to the manufacture of handcrafted top-of-the-range cookers. Likewise, five years later, in 1994, Ingo Maurer entrusted Santa & Cole with the distribution of their lighting products in Spain.

Their vocation as editors of design also came to be applied to the classical function of book publishing. In 1991, Santa & Cole started publishing design monographs, convinced that the books they published and the objects they edited were inseparable, and had the same objective: to foster a more sensitive and less banal material culture.

In 2005, the book publishing function was spun off and became a company with its own identity: Ediciones de Belloch. The publishing house continued its work with the same determination as in the early days, with four collections of books: *Clásicos del Diseño* or "Design Classics" (biographies), *Contemporáneos del Diseño* or "Contemporary Designers" (also biographies), *Los Ojos Fértiles* or "The Fertile Eyes" (essays on design) and *Biblioteca de Gestión* or "Management Library" (essays on management), the last of these in collaboration with ESADE.

In 1988, four years before the 1992 Olympic Games, Santa & Cole embarked on the development of street furniture, hand in hand with those who were to be the protagonists of the transformation of Barcelona: the municipal technicians, landscapers and architects in charge of the projects for the Olympic areas and the conversion of the city. The company assisted them and edited some of the elements that were designed for the event, which subsequently formed Santa & Cole's first catalogue of urban elements. The success of this work was due to the close communion that existed between all those involved and the trust placed by the politicians in the architects who led the work inside and outside the City Council, together with the companies that gave them support and believed in the world that was being built in that magical period. More than 20 years on, Santa & Cole's Urban Division represented 70% of its turnover. And they continued to work for a vocation: to contribute towards the harmonious development of cities. This was to influence their concept of design for all.



By 2009, Santa & Cole had become highly internationalized. The company started up in a small street in Barcelona called Santíssima Trinitat del Mont, and it was in this original workshop that they made the prototypes of lamps such as LA BELLA DURMIENTE and LA COLILLA. Two years later, after much remodelling and a visit by Gerd Bulthaup, it became the showroom for Santa & Cole lamps and Bulthaup kitchen furniture. As the company grew, with the various distribution agreements and takeovers, Santa & Cole's spaces also grew, with the opening of two shops in Barcelona and offices in Madrid, Bilbao, Valencia and Malaga.

Internationalization started very early. Santa & Cole had been present in the markets of California, Florida, France, Germany and the Netherlands since 1988, but it was in 2004, with the opening of their first subsidiary in Italy, that they reaffirmed their commitment to the international market. In 2006, Santa & Cole signed an exclusive distribution agreement with North America's leading company in outdoor furniture and landscape architecture, Landscape Forms. This provided an opportunity to build transoceanic bridges between Europe and the United States. Thus, in 2007, 35% of the firm's sales were exported to over 35 countries. In July 2008 a new showroom was opened in Frankfurt, and Santa & Cole France opened in 2009.

The S&C business group had acquired the Belloch site in 2002 with the aim of promoting a knowledge park linked to communication and design. By 2009, the park housed the headquarters of Santa & Cole and other enterprises such as Telefonica's Corporate

University. Parc de Belloch has a surface area of 125 hectares, including almost 45 hectares of agricultural land, and was the origin of Santa & Cole's Forestry Division. Belloch lies 30 kilometres north of Barcelona, and has ideal climatic characteristics for growing trees, shrubs and other plants for Mediterranean and continental climates. With their Forestry Division, S&C went beyond just extending their Urban Division catalogue, combining living elements (trees) with urban elements (street lamps, benches and so on), and thus providing architects and landscapers with a more balanced range of possibilities, with the aim of improving the material quality of life in cities. The following mission statement can be found on Santa & Cole's web site:

"We are concerned by the sustainability of the environment and good relations between nature and the city. We want sound and freshness, shelter and seasonal variation, changes of colour and of shape, small formats and big individuals. Because the combination of urban elements, lighting and trees is the best to help us to humanise our cities. We are thus planting our seed of responsibility with the future, convinced of the enormous value of the natural design of social spaces, where trees, shrubs and plants again occupy their refreshing space between the asphalt and the cement."



Santa & Cole's activity had been recognised with the National Design Award (1999), the Prince Felipe Award for Business Excellence (2006) and the Design Management Europe Award (2007) in the medium-sized company category.

Santa & Cole's policies are organised around four core themes: (1) structure, strategy and knowledge, (2) editing policy, and (3) the importance of design.

1. Structure, strategy and knowledge

For Nieto Santa, clearly the only way to earn more (the end objective of any strategy that seeks to ensure survival) is to have asymmetric competitive advantages that are not easy to obtain. And if these are exclusive, then so much the better. Considering that the only legal monopoly which is socially admitted is that of intellectual and industrial property (brands, designs and patents), Javier was of the opinion that these so-called intangible assets are so relevant that it is far more worthwhile to be the owner of the knowledge (i.e., the editor) than to be the (subcontracted) physical producer of the products or services based on this knowledge.

However, if protectable knowledge (in the sense of intellectual and industrial property) is the key to developing one strategy or another if strategic exclusivity is increasingly focused on whether or not we hold certain knowledge rights, then it is also true that a company's human structure is decisive.

"Knowledge is generated by people... and a structure that generates knowledge makes it possible to implement a strategy altogether different from one that doesn't generate it," argued Nieto Santa. "We like to declare that we're proud of the people who form Santa & Cole."

This explains why Santa & Cole defined itself as a knowledge industry. They strove to generate, contract, protect and spread knowledge, expressed through physical products with good design, the "*gute Form*" of the Bauhaus and Ulm: constructive solidity, aesthetic sobriety and functional quality, a trilogy which becomes even an ethical rule, especially in these times of such material waste on a planetary scale.

2. Editing policy

Santa & Cole lent their brand name to the editing of: (1) lighting products and indoor furniture, (2) urban elements, (3) books and (4) plant elements for urban reforestation.

They also defended the interests of certain leading manufacturers in Spain (amongst others, the German Bulthaup in kitchen furniture, the German Ingo Maurer in interior lighting, the French La Cornue in cookers, and the American SubZero in cold appliances). Product groups that were very different from each other, but which had a shared sales network and a common prescriber: the professionals involved in the project, interior specialists, designers, architects, urban planners and landscapers interested in contemporary design with original quality.

Santa & Cole contracted out 100% of its production to a large portfolio of suppliers, mostly in Spain (but also in other countries).

“We don’t manufacture with our own hands. We’re editors. Our task, in terms of catalogue products, not special or one-off products, can be summed up as follows: selecting what should be included in the catalogue (new products) by reviewing both the proposals of our designers, who are our authors, and our original commissions, developing those proposals technically, contracting out and financing the production of the various components, and then storing, selling and collecting payment for the finished products. And throughout the process defending the ownership of our edition rights against any intrusive third part, and also our authors’ creative value.”

3. The importance of design for Santa & Cole

The best protectable industrial design, plus whatever related knowledge is required for its reasonable commercial development: this was the essence of Santa & Cole’s strategic worldview. As editing was its reason for being, registered design was not just an aesthetic choice but the basic pillar of their differentiation strategy. Santa & Cole worked only with protectable original design, either registered by its authors or generated in their in-

house departments. To define their criteria for selecting designs, we use their own words:

“Our philosophy of taste is eclectic and modern rather than futuristic and postmodern. We are interested in rationality and balance, silence as opposed to stridence. And we are particularly motivated by the fact that we are the standard-bearers of a fine range of Spanish design throughout the world. For the most part, the creators of the objects we edit are internationally renowned designers and architects from Spain. This is because we value their ability to contribute ideas, new reflections and attitudes toward the objects, new perspectives on the world that, together, we help to project.”

It is true that the beginnings of Santa & Cole followed the pattern of the product centric editing company that edits in order to enlarge a catalogue, in the hope that the products will later be of interest to its target market. However, in later years the company had gradually undergone an internal transformation of its organisational culture towards a project-centric model, in which its mission was to contribute knowledge to its clients’ specific needs and help them solve their project problems: anything from how to light up a seafront promenade to how to lay out a kitchen, furnish some offices or a home, qualify and humanise large public spaces, or integrate trees into an urban fabric. However, they did not sell projects as such, but the elements that might be used to make projects a success, not architecture but rather materials: their knowledge merely sought to back up the common sense of the professional advice they gave to their clients.

The Parc de Belloch project was to be seen in this context of the importance of knowledge as an essential element of Santa & Cole’s strategy. It consisted of the creation of an innovation campus linked to a new top-rank academic institution promoting the best expression of the talent of contemporary Spanish and Hispano-American designers.

“Design for all is a requisite. When we started up, we paid a lot of attention to people’s surroundings,

that is, their home, their office, even the most intimate family space. Then we took a step towards greater abstraction by turning our focus on the city, where the language changes completely – like so many other things. The city is one of the most interesting milieus you can work in. The UN has conducted studies that say that by 2011 more than 80% of the human population will live in cities. In other words, we're all urban. And now at Santa & Cole we're entering our third area of reflection, which complements and broadens the previous ones: that of the planet. Designing with the planet in mind, means reflecting a lot about materials, about production location, about encouraging or discouraging certain uses and also about design itself. Design for all is clearly present when we design for the city, but I think it can go one step further and include design for the planet. Design for all is also about using sustainable, recycled and recyclable materials, and doing so at sustainable price levels, not just for the enlightened bourgeoisie. We've gone pretty deep into this. This planetary vision accounts for the whole idea of the Forestry Division, although it also has a lot to do with the level of the city, and perhaps less so with that of the private individual."

Santa & Cole was on the Board of Trustees of the Design for All Foundation, whose motto was *working to ensure that everyone can enjoy open spaces, products and services with equal opportunities*. This would indeed include people who were challenged by handicaps. The company considered that its actions affected most of all the level of the city.

"I think it's very interesting to think on a planetary scale, although it might seem ridiculous for such a small firm as Santa & Cole," affirmed Nieto Santa. "The approach is different, and it's not a matter of disabilities, because we're all disabled. In planetary terms, there are a lot of things that don't make sense. For the oil economy, the concept of transportation is critical... One of the things I think is going to be revolutionised is the concept of transportation. We are hearing more and more about 'fab labs' (fabrication labs) that promote 'do it yourself,' 'do it there.' I provide you with the know-

how (software) and you make it there, which is more than what IKEA proposed. IKEA was 'transport it and assemble it yourself.'

Javier Nieto's idea was very logical:

"If you design with the individual in mind, your focus is very narrow and you leave a lot of people out. If you design with the city in mind, the question is then: Who's going to use this element in the street? And the answer is: Anybody. So you're widening the focus," he argued. "If you then go on design with the planet in mind, you include everybody, you don't exclude anybody."

Santa and Cole fulfil the concept of design to the fullest. It is concerned with the sorting and mixing, which is partly marketing, partly enabling design and in the process even the meaning comes as an important issue. In this sense, this case is perhaps the most complete design case in our context.

(Partly reprinted with permission from: Isa Moll and Jordi Montana-formal source...)

Case 2: Dolle Space Creator



Dolle is a company aiming at using design for smart solutions which are also low-cost for their customer. They are design driven in the sense that new solutions are based on the study of users to fast be implemented in new concepts. Of these, some will be put into later production and distribution.

The History

Dolle used to produce stairs for houses.

They used sub-suppliers in Asia and assembled the products in Frøstrup, Northern Denmark. Their space creator idea came as a broad selection of issues from space creation in the form of access to lofts as well as terraces and balconies.



The idea of an innovation concerned thinking in three dimensions rather than two and to integrate the walls and dimension of the space into the functions of the room.

An example of Dolle's design approach is their concept *From Space-Creator to Deck*.



Leadership and design are seemingly the core competencies of the company. The CEO considers innovation and product development as a core competence. Design is considered as part of this competence. The company sees design in the broad perspective covering all aspects of use from the need arousal to the disposal of the product. Innovation and product development is seen as an investment in the future and a necessity for survival.

The CEO is passionate about design as an integral part of innovation as materialised in products, artefacts, systems and services.

The regular biweekly meetings among CEO, Sales and Marketing Manager, and Development Manager are primarily related to NPD (New Product Development) and design issues.



The concept, illustrated by a model was actually made in full scale and is still only a prototype aiming at being tested for its market potential in the new future (2014). The concept is based on relatively low price and aiming at the DIY people who may buy the set in a local building market and install it themselves or by using a local craftsman.

Design is regarded as on par with technology, strategic operations, production and logistics, and financial management. This is according to interview data acquired in the company.

The skunk cupboard concept is another prototype aiming at making better use of roof space.

This is another concept intended to solve space problems. It concerns how existing roof space may be done applicable.

Design

The products developed are primary for single family household – some products have focus on aesthetics and others on function. Banisters made of aluminium marketed in USA are classified as contemporary. The same would apply for some of the modular staircases.

The company has invested in computer-based design tools such as SolidWorks. They use a cheap 3D printer for quick prototyping. Prototypes where fine tolerances or surfaces/materials are needed are externally sourced.

Design is part of NPD and some of the projects responsible in the NPD teams are industrial designers. Part of NPD is to perform user studies and map competition – tasks which in some companies are considered marketing tasks.



Implementation

Design has major impact on marketing as well as predictability of the products. As such, design matters gain increasing interest in the management team.

Product decisions are strategic and are taken by CEO as well as by design responsible using a business case as a way for organizing materials and setting the stage.

Dolle distinguishes between end user, DIY stores, and distributors – all have their own interest which is to be taken into account. Investments in design are decided at all levels across the organization. First new design has implications on both marketing, purchasing and production – meaning that new design could imply investment in new forms of marketing, new tooling and suppliers or new machines for production.

A possible next step for Dolle can be the staging of stories and good examples of how customers have used their designs and realised the value of these solutions in creating additional space for a small py-out.

Case 3: Zanier Gloves



Zanier develops winter sport accessories in close cooperation with the customers-to-be, among them outstanding athletes and the Austrian mountain rescue service. After 45 years in business the company from East Tyrol is today brand leader in Austria and, with up to 500.000 gloves sold per season, one of the four leading glove manufacturers of Europe.

The company was selected for the study on advancing good practices to empirically investigate how cooperation with customers influences the design and innovation process.

Background

The company was founded by Werner and Gabi Zanier in 1969. Werner got inspired to building his own business through his work as a salesman for the sporting goods company Gold Glove. Formerly a professional skier himself he had passion, intimate knowledge of target group needs – and excellent contacts to many winter sport stars such as the Olympic champion and exceptional athlete Franz Klammer. Some of these sports professionals were on hand with help and advice for him in the innovation process of his collections. The vision to create top products and reliable quality and seeing the customers as partners was put into practice right from the start. Initially, the company produced only for the Austrian market for 35 years. Around the time that Werner's son Markus entered into business the company Zanier Sport GmbH started their global distribution which today comprises 26 countries. Since 2008 Markus has been owner and chief executive officer as well as product manager and development leader of the company that comprises 11 employees.

In the German-speaking world Zanier's closest competitors on the glove market are Reusch and

Ziener, while internationally they are competing with Burton, Dakine and Black Diamond.

Design

As Zanier is positioned as a brand, not a trading company, design and innovation are the key strategic leverages to diversify a product like gloves. The company launches about 100 new models every season. The black basics stay on the market for about 3 years, while the lead products change every year. Their design aims at allowing perfect function and the expression of lifestyle and



quality.

Leadership and Implementation

Of the same tenor as his father, Markus' unwavering objective is to capture the market by ensuring top quality through innovation in close collaboration with end users. Zanier is a family business with a decision-making committee of 4-5 people, with Markus as CEO being finally responsible for marketing and design question.



Culture

As a family business the company boasts low fluctuation and long-standing cooperation with its partners. Markus describes it as a relationship and a communication based on trust and respect. Furthermore small management and company staff facilitates interdisciplinary communication and lived brand identity. While the staff retention is high, market challenges are constantly demanding an openness of mind and resilience habits hardly have time to get entrenched. Most importantly the challenges keep the passion alive and the joy of playing with and improving the product, always with market demands and the individual customer in mind. Details and design are proudly cherished and frequently a topic of conversation in both formal and informal settings, for example when new prototypes or salesman samples arrive. The collective aspiration is to always find a superior solution compared to the most commercial answer.

Brand

In pace with the brand becoming more and more global Zanier partnered up with Zoom productions, a full service advertising and communication agency, a full service advertising and communication agency focused on the sports, lifestyle and youth target group in order to rejuvenate and redesign their brand. A new logo was followed by a series of striking ads, catalogues and communication tools. The new, dynamic image and its staging made Zanier the ISPO Award Winner 2013 in the category "Foto". To develop a unique design language was mentioned as one of the ways to strengthen the brand.

Products

With regards to design language it is not only in relation to the communicated brand image but as well as through the product itself. One of the company's big successes are the heated gloves and mittens, appreciated not only by high performers but also by customers suffering from Raynaud's phenomenon (excessively reduced blood flow in extremities in response to cold or emotional stress). The first HEAT.GTX was launched by Zanier in 1999 and for the 2013/14 season the heating technology had been fully revised to help the company to maintain pole position as a manufacturer of heated gloves.

With the Dolomite Alps as the backdrop of their activities it seemed only natural for Zanier to slowly extend their cooperation and their range of products beyond skiing to other mountain related activities, such as speed riding, cross-country flying, climbing and mountaineering. All of these activities demand high standards of the equipment as one is exposed to extremely cold conditions and depends on optimal grip to handle rocky surfaces and/or equipment. The mountains are thus both an inspiration and unyielding test track.

The Alpine Pro collection is being considered the kick-off for the mountaineering segment which was developed 2012/13 in cooperation with the Tyrol mountain rescue service. Today these gloves are being used by the Austrian mountain rescue service throughout the country. The gloves are equipped with many convenient features, such as touch function to operate mobile phones or GPS, wiper on the thumb to clean the glasses or in an emergency the nose-hooked carabineer for attaching to a backpack or a harness.

Furthermore, Zanier's strategy to work with outstanding athletes does not only provide them with credibility, but also with valuable feedback in order to make gloves that combine function and fashion cool. Professional athletes have very high demands on the quality while also cultivating individual preferences regarding their demands for gloves to fit their style and routines, thereby

potentially covering a large (potential) user group's affectations.

While professional needs with regard to keeping extremities warm under intemperate climate, maintenance of tactility and long product life span are basic needs to be met, the implementation and diversification demands differ greatly in the two target groups, mountain rescue service and professional athletes. In consequence, part of the knowledge and detail that informs high performance gloves trickles down to lower price range products.

Collaboration with Designers

Zanier has two designers involved in the development of their product lines. One is working in-house designing gloves suitable for the masses. The other one, Lukas Jungmann co-director of the design agency Aberjung is responsible for the more elaborate lead models.

The in-house designer has been with Zanier for about 22 years. Since the company sees itself as a young and international business, however, they are also keen on working with young talents. They have had cooperation with both young French and Italian designers until they started their successful and satisfactory cooperation with Lukas two years ago. Lukas is working with a huge variety of companies on a contractual basis. Aberjung only agrees to projects where their design can impact both function and form, and their contract commitment is current until all the involved parties are satisfied with the final product. Lukas is exclusively designing gloves for Zanier. In the idea-generation phase he is working closely with Markus, while at the development and operative level others are involved as well.

The designer stresses his appreciation for the openness with which Zanier treats innovative product design, as compared to other companies that still regard price as the only parameter thereby often nipping innovative design in the bud. He also emphasizes that through working in so many different areas of product design, like medical products, clothes and forestry vehicles, he stays

alert to new ideas and finds creative satisfaction in translating them into his work.

As mentioned earlier, the lead product prototypes are being tested by potential end-users during the production phase. After the product has been launched the sole measurement for the value of design is, if it is being accepted by the market as reflected in the volume of sales and possibly in the media.

Closing

Design is very much embedded in the company through the direct involvement of the CEO and owner Markus Zanier. Both Lukas and Markus express high business ethics and commitment to delivering first class quality products. Innovation and brand communication are at the heart of the business. Design is not seen as a separate aspect but one that permeates both processes and products.

Case 4: Wamsler



Wamsler SE is one of Europe's longest established solid fuel stove and cooker manufacturers, with more than 135 years of experience in renewable heat energy systems. With production facilities based in Hungary and a prestigious affiliate in Germany the firm is today market leader in Hungary in most of its products, and one of the leading solid fuel stove and cooker manufacturers in Europe. *Wamsler* energy systems are represented in approximately 6.000.000 households in 23 countries, of which the majority in Europe, namely Germany, UK, France, Hungary and Italy.

The company was selected for the study on advancing good practices as continuous investment

into research as innovative design and product development have been playing a large role in the firm's success. Until very recently, however, the focus had been more on technological advances. During the last years few years *Wamsler* has adopted a more holistic approach toward design. It was expected, that their recent experience and results thus could contribute with valuable insights regarding the measurement of (economic) value creation of design.

In Budapest the interview was conducted in *Wamsler's* Home Product Center, a focal point for Hungarian sales and consulting, as well as encompassing the areas of service, marketing, training and logistics.



Background

Wamsler SE's parent corporation was established by Friedrich Wamsler in Munich in 1875. Ever since, the company has been a leading innovator in the field of kitchen and heating applications. The invention of the "Bavarian double flue system" in 1880 ignited a huge boom for the company, and not long afterwards *Wamsler* acquired the coveted title "Purveyor to the Royal Bavarian Court". In the 1950s the company developed the very first washing machine to incorporate an integral spin dryer and, in the 1970, *Wamsler* introduced a series of flat-packed gas fires. Today, *Wamsler* is primarily synonymous with the manufacture of solid fuel cookers and heating products.

In 1992, following its privatization, the Munich based *Wamsler GmbH* formed *SVT-Wamsler Co.* with the majority share owner being the Hungarian State Property Agency. On the Hungarian side, the company also boasts a long tradition with the

establishment of a factory and iron foundry in 1894 where stoves, ovens and rail blocks were manufactured. Following a series of alternating acquisitions, respectively from German and Hungarian sides, the majority of the group was bought back by a Hungarian group of investors in 2005 and the company's name was changed to *Wamsler SE Household Equipment European Company* in 2008.

The lion's share of product development, technology transfer and innovation is still handled in Germany and approximately 80% of the products manufactured are still being marketed by the German subsidiary. Internationally *Wamsler SE* is today counting 800 employees.

Wamsler values against both function and aesthetics of their competitors. While French producer are rivals for aesthetical leadership only, the company's fiercest competitor is the high-quality German manufacturer *Wodtke*. *Wodtke's* founder is a trained designer himself and the firm's products integrate both the functional and meaningful design aspects. Their product assortment counts fewer pieces than *Wamsler's* and are exclusively high-priced. Due to its smaller size, the company is also better equipped to cater for individual preferences.



Product Design

Wamsler SE has successfully combined and made use of innovation with state-of-the-art manufacturing and strict quality control to become one of the key players in the solid fuel stove and cooker manufacturing sector in Europe. As their experience shows that it is difficult to enforce

patents, the company hardly makes use of registering their design. Instead, they point out to prefer focusing almost exclusively on innovative product development.

In 2009, roughly a year after the company was rebranded as *Wamsler SE*, the company broadened their approach on comprehensive technological innovation and design. At the head of Prof. Stefan Lengyl, chair of the industrial design, a fruitful collaboration was established with the University of Art and Design in Budapest. *Wamsler* benefitted hugely by collecting a number of studies and drafts, of which some were being launched as product series. One of them, *Metropolitan*, won the Hungarian Design award in the student category in 2011. This cooperation laid out the foundation for *Wamsler* increasingly working holistically design oriented.

Leadership and Implementations

Andrea Tölgyesiné Szamosi, general manager at *Wamsler*, regards innovative design as the answer to the economic crisis in Europe. She also acknowledges, that the company has been able to increase profit on products by about 20-30% by means of putting more emphasis on a holistic design approach. Moreover design added value to the brand *Wamsler*.

On these grounds design is seen as a core competency that is interdisciplinary embedded in the company. The final design decisions are being taken by the sales and marketing director, Eva Wikonkál.

Culture

As a large company, *Wamsler* maintains an in-house research and development laboratory which includes an affiliated design laboratory. This is where new technologies and products are being developed while materials and prototypes undergo rigorous quality testing. For rapid implementation of the serial production of new products, *Wamsler* relies on their in-house tool shop. The company has a total of three production plants, of which one is

exclusively for high class products. For the workers this means better working conditions and higher wages.

The team working in the design laboratory includes engineers, technicians, and designer. A team of 5-6 representatives from technology, production and sales convene for regular concept meetings every two weeks. These meetings are based around briefs on what to look for in their market(s), competitors, target customers, target prices and estimate the demand.

In the beginning of the cooperation with designers, the engineers had a hard time accepting their approach and the same was true for the designers vis-à-vis the engineers. It was the direct involvement of the CEO as well as the now evident financial results that convinced the sceptics and today the collaboration is characterized by mutual appreciation for the work every part plays in order to launch a successful product. In this respect both of our interview partners agreed, that it is not only about the skills a person brings to the project, but also about his or her personality and eagerness to learn from others and hence how they fit into the corporate culture of the firm.

Brand

Wamsler's motto is "a Tradition of Innovation" and from the start the company has relied on incorporating sustainable development of future-oriented technologies in their products. In modern times of resource scarcity and climate change the company emphasizes renewable heating technologies. As they see it as the dominant trend in their sector, they do so, even though that part of their branding strategy is not yet being fully embraced by their target group(s).

Following the string of numerous acquisitions of *Wamsler* over the last decades the focus on design and the cooperation with young designers has not only influenced the product range, but also the brand *Wamsler*. In the course of the interview it is being underlined, that the benefits are not only measurable in economic value, but also in terms of

brand value, in terms of value for partners, for partner's good-will and for the firm's reputation as being committed to co-creating the future through innovation.

Wamsler furthermore posits that the company measures success not only in monetary value but also in customer satisfaction. Being able to consistently charge a higher price for the products developed in cooperation with designer, shows that both aspects are being effectively linked at present.

Products

Wamsler's product range encompasses around 200 different products that range over central heating cookers and boilers, solid fuel range cookers and solid fuel stoves, one of the largest ranges of fireplaces, stoves and cookers available.



In addition to the development and research of new combustion technologies, the design management is seen as a key factor of product development focus. Regarding burning chamber technology no landmark innovations are being expected in the near future while the further development of the products overall functionality and value can profit of the designers input. Moreover, it helps *Wamsler* to create multiple price-ranged products and to broaden their luxury range. As production costs are similar it is the integration of functional, social and emotional utilities that creates additional value justifying a higher price.

Around 100 design ideas are being developed per year through trend and market research as well as intensive discussions with our customers. Roughly 30 concepts proceed into prototype production and

of those approximately 20 are launched in serial production which equals circa 10% of the collection.

Wamsler emphasizes sustainability in their endeavor to develop the most efficient renewable heat energy systems, which translates into all *Wamsler* solid fuel products being manufactured under the internationally recognized ISO 9001 Quality Management System and also inspected to Germany's renowned DIN standards.

Collaboration with Designers

Following the successful first design competition for students of the University of Art and Design in Budapest, *Wamsler* started a contractual collaboration with two of the students involved. Today, there is only one designer left working on a three-year contract. The development of new products works with feedback from customers, but not explicitly with end-consumers. A lot of inspiration is gained by keeping an eye on the general fashion trends and exhibitions are being used as testing grounds before launching large scale production.

Learning from the cases

cases

	dolle	Santa and cole	zanier	wamsler
Problem-solving	Creates better utilization of scarce space	Offers complete lights and sitting arrangements	Offers hands on tools to steer in down slopes	Heating of the room
Meaning creation	Exchanges dead to living space	Editing the private and public environment	perfecting of commanding skiing situations	The feeling of the datcha in the modern space
Integration	Not fully developed	Editing in perfect harmony	Total absorption in downhill	Uncle Vanja is (still) with us

The cases all show different aspects of design. Following Heskett (2005) we may explore what the products provide of problem solving and mean for the users. Dolle has a strong building expertise and is able to find smart ways to exploit the unutilized

space of peoples' home. The engineering and building aspects work well and an abundance of new concept appears. However, the meaning of the additional space is not well told yet. Better storytelling or intrinsic meaning may be very helpful. Santa and Cole have found a unique niche. They design furniture and light for both private interior and public outside space and the concept of design as editing is really a strong one. It blends (Fauconnier and ...) problem-solving and meaning in a strong concept. Any designing company could learn from this. Zanier uses are technical design expertise to design high quality gloves for skiing, especially downhill. With the meaning of total absorption in the experience, they are able to conceive of a luxury product in a field where most competitors provide relatively identical and simpler products. Wamsler has a lot of expertise in traditional heating with wood, oil and gas. By keeping the signature of old fireplaces they are able to bring a historical dimension into the current and future. One may say "the memories of uncle Vanja from his old Dacha" is still with us. We can feel his warm atmosphere.

The cases therefore show various degrees of well integration of problem-solving and meaning. Together these issues create value. In the next sections we shall discuss further how value is created and look at some experiments of how we may measure the value from the perspective of the customer or user.

What is design in the context of business?

In this section, we will identify commonalities between business and design. The reason is that design often refers to the business functions marketing and to engineering. It means that designers work often intensively with such experts and that the exchange between marketing and design is often seen as a reason for success. To do this, we will first explore the meaning and partly the origin of design, and relate it to marketing theories. In marketing research, it is quite common to regard design as merely the execution of creative and sensory action in branding (Keller, 1993).

Marketing and business has its etymological origin in physical markets and trade roads, such as the Silk Road, where goods were exchanged between East and West. But trade has existed for much more than 12000 years going North-South and East-West (Diamond 1996). This happened in the form of patterns of migration as well as links between several physical markets. They were often specialized according to the local customs and expertise, such as pottery, weapons, or particular types of food. These markets were locally embedded in links of crafts people with ample access to regional resources. The traders and crafts people communicated and interpreted needs and wants with solutions of design and materials that were locally available. Marketing's role was to communicate the needs of the users through buyers to the producer. The role of each market was to sort and mix the goods coming in from far away with local products, and forward goods to other locations (Bartels, 1970).

Design has been in service for the making and shaping of our environment for a long time (Heskett, 2005).

Examples of this would come from the furniture industry where many producers would ask marketing people to explore the need for and size of the market for new furniture. Often this may lead to a discussion, where marketing assume that the market is smaller than it later turns out to be or that the price is seen as too high, but when the design is appropriate, a higher price may be charged. There are often tensions between design and marketing because they would apply different methods and language. Marketing methods are used both in the fast moving consumer goods business and durable goods. In the fashion industry, the Catalonian Company Zara has explained how they would use marketing data from its outlets to decide which new models of designs to set in production. Similar examples are found in Nike, where the rule is that a shoe that has not been sold from a Niketown in a week is taken out of production.

The following table indicates some commonalities and differences between concepts of design and concepts of business

	business	design
Cognitive elements	Knowledge of demand and supply Suggesting concepts	Seeing what is and what ought to be Creating concepts
Emotional elements	Customer and provider (Brand) loyalty	Empathy with the user
Operations	Identifying elements of demand Identifying competitors Proposing a concept Calculating demand Proposing an overall business plan	Identifying needs Comparing alternative solutions Sketching a concept Prototyping Creating a user concept/business concept
Tools	Analysis and calculation	Sketching, drawing and modeling
Management today	In-house managerial positions	In-house or consultancy

Today, due to increasing ambiguity and the lack of knowledge by customers about what they want (Gladwell, 2008). The foundation of design has

often been exploring how existing solutions work. Designers would observe, interview and send questionnaires to customers and users. Based on this and using the creative powers, new concepts emerge. Today, the empathy for the user is an important competency used by designers to get the feeling of the need (Leonard and Rayport, 1997). Business, on the other hand, makes concept in a more formalized way, based on marketing research and conversations with purchasers, customers, designers and suppliers. Also data from distribution, sales and other available accounting data is normally used by business.

Both business and design necessarily assume emotional issues. In marketing, this deals with loyalties. From early history, the issue has been whether a supplier or customer could be trusted when a competitor comes up with better or less expensive solutions.

The tools differ widely. A business school education is verbal and based on theory, case studies and calculations, because this is what is demanded of the candidates. The recent concept design thinking (quotes) attempts to translate and explain how designers work in verbal terms. It seems to be a folly to believe that marketers can learn to design by reading books, but it might help them to understand a little of how designers work. Design work is one of the few surviving master-apprentice educational models. A concept emerges by combined intellectual and hands-on manipulation with seeing, sketching and crafting in various materials.

Summing up, design deals with user needs and preferences for particular solutions. Above all, they are a result of designer's personal vision, empathic communication and sketching and modeling alternative solutions. Marketing, on the other hand, deals with demand and with customers. The overall question is to provide good solutions to a user. The overall purpose of marketing is to predict demand which is how many can the company in question sell within a particular timeslot. This information is

given to top management, production and logistics to size up further operations.

What do businesses expect from the designer?

A designer is educated in a design school or sometimes at a technical university to be able to create the artifacts of design. They are educated to look at the challenges of the user and therefore one often uses the term user-centered design in contrast to designer-centered, which would mean an artist or company-centered design which would mean a company relies more on its own competencies than its users and customers.

Designers are educated in sketching and modeling in various materials, using both traditional pencils and paper and various computer aided design techniques. Particularly distinctive element of design education is its reliance on crafts-based techniques and intuition. Some design schools are even adamant about their teaching as the teaching of artistic approaches. The logic may be that by emphasizing what they call art and what we may call crafts, intuitions, emotions and feelings the designers are educated to use cognitive abilities beyond rational ones.

Designers also are experts in diagnosing and predicting what will happen if they choose a certain action. Simon (1996) defines design (see WP 1) as “aiming at *changing existing situations into preferred ones*” (p. 109, emphasis added). A designer is supposed to take into account users’ existing situation and create ways to improve it at a reasonable cost. Cognitively, this means much more than it sounds. It also means the designer has to use different capacities of seeing, asking, probing, etc. before even considering what a solution or improvement might look like. The first phase is often referred to as registration, where existing conditions are registered on paper. This leads to a design brief, in which some directions or models are documented in a contract-like verbal document (see below). At the next stages, an important tool is the designers’ capacity for sketching—typically with the

hand. It is both an analytical and a creative assignment at this stage, because it is vital that the designer considers alternative ways of grasping the challenge or problem. A good designer will never just accept a problem statement as given. Considerable amount of time and effort must be devoted to *problem finding* or *need finding* as it is sometimes referred to (Rolf Faste http://faste-foundation.org/publications/perceiving_needs.pdf).

To find the need, a designer has to grasp, grab or conceive of the totality of the users' situation and context. This is sometimes referred to as empathy or empathic design (Leonard and Rayport, 1997). The process resembles systematic processes and techniques often used by ethnographers to study people.

It is essential for designers to use creative approaches to identify challenges of the user which are often not a conscious thought held by the user. The user may feel nothing or maybe some inconvenience, but when asked about what they need or want, they are often unable to tell. The story of automobiles as horseless carriages is an example. The understanding of the concept automobile rested on the understanding of an older concept.

Meeting the challenges and creating solutions therefore does not occur directly through intellectual work. This is not surprising, as we know many insights from science appear in bathtub, under a tree, in bed or strange places and situations where the researcher, inventor or design for a time is in a changing physical state, using processes of insight to reach new solutions (Sternberg and Davidson, 1994).

Needless to say, designers also accumulate insights during their experience and an experienced designer is a valuable expert in the understanding of living conditions. That is why they also work as advisors.

Strategic design orientation

What kind of design orientation do we find? There are several ways of characterizing this. Heskett

(2006) suggests focusing on whether the company (operations) currently undertakes innovation or not and whether design is concentrated to the products or if it covers all corporate operations and business functions. Doing this gives the following four positions:

	Product focus	Corporate focus
Innovation	Differentiating existing products	New concepts and systems
Regular business	Interpret product specifications	Creating systemic connection

Source: Heskett 2006

The lower left position is currently the focus of many companies both in Europe and Asia. The challenges and possibilities for design are restricted to interpreting the assignments given by customers. These challenges would typically be documented in technical drawings and may provide options for simplification, modularization and small aesthetic improvements. Economically this may not have major impacts for organizations. Therefore, some countries like China have made policy decisions to escape this situation in order to increase value creation.

The simplest way of doing this is by innovating, for instance, to develop new products. For an Original Equipment Manufacturer-based company, which operates in the lower left corner, this can be challenging because it has to imagine how the product can differ from today and create new concepts, models and products. Compared to New Concepts and Systems situation they also, in most cases, must consider new logistics and marketing strategies.

New products often are directed towards the needs of different customers and the company may become a competitor of its previous customers. All this requires considerable strategic reorientation

and resources-- especially knowledge resources in a broad sense.

Companies may also find that new products or innovations are too static or do not provide the momentum they need. One strategic solution is then to rethink design in a corporate perspective, as in the right side of the model above. In such a case, all business functions would have to engage in coordinated action, and drive towards a continuous innovative design process.

Economic value creation in this modus may unfortunately be less than optimal because this is a way of investing in technology and design that itself does not require sufficient income. Companies would therefore take a break from the innovative activities and consider how branding may enhance their capabilities in marketing and how to get a loyal and stable demand.

Many technology driven companies perform their operations in this way. Big companies with a divisional structure would typically have a portfolio where some divisions or departments work on creating new systems and concepts while others work on improving connections in the market by branding and marketing activities. Design specialties would often means that various product,- interface,- material,- designers would work with the new concepts while graphic designers, web designers and other design performing communications and network solutions would work with the latter.

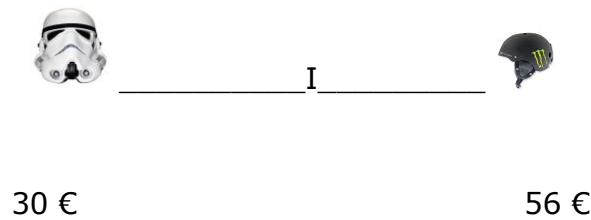
Experimenting with design: A conjoint analysis

Conjoint analysis is a quite common experimental approach for testing and trying out concepts and prototypes as well as materialized design. As the term suggests, it is a trade-off setup, where various offers or concepts are compared to prices seen as sacrifices.

Product scales

The basic way of comparing design, quality, product, and price is to use a bipolar scale with no

numbers, but movable cursor and ask the respondents to move the cursor to the position that reflects their relative preferences between two products.



This scaling can be done with hidden brands, with open brands, with or without price, and will therefore have the potential to create various utility functions. Mostly these scaling exercises are done with users or customers. In principle, they can also be done with the producer. This could reveal discrepancies between various company functions (e.g., marketing, development, production, logistics and finance giving rise to fruitful or constructive discussions integrating different perspectives.

A typical research design will consist of 3 – 5 objects compared in a systematic way that enables individual transitive preferences.

There are multiple alternative ways in which the data can be conceived of. A common way is to ask the respondent to use the so-called hedonic scale, where they would attribute a number to the individual item. This approach has the drawback that the respondent must intellectualize from a pure choice to attribute a number – an intellectual operation. Such an intellectual operation may bias the whole research. Whereas the scales we use in our study require users to make real life-like comparisons of two products.

The actual content or dimensions of a scale depends on what the researcher wants to know. There are no standard scales usable for any purpose. One may even experience that no scale works particularly well for a specific problem. Typically one will try out dimensions that seem meaningful for the design challenge faced, for instance to focus on problem

solving vs. meaning. Various design principles may be tested to see if the user minds. It may also be choice between different materials or levels of quality. Then perhaps a very different approach may be needed.

Implementation

The first product scales are best used in places where the respondents have the opportunity to experience the compared products in real life. This could for instance be a warehouse like Silvan, Bauhaus, XXL or similar where many potential customers would explore the ways in which they might find inspiration. They would see, touch, smell a new product, or space and get both inspiration and advice.

It is not totally impossible to use only pictures in a pure web based questionnaire, but there will be loss of important experiential aspects of the products, and maybe also loss of context aspects. A conjoint setup also means a simulation of a shopping situation. For example, the prospective customer is asked to think which product they prefer in a choice situation. Therefore, sometimes the test is made with actual objects that people can touch and hold, smell etc. In other cases there are only pictures on a screen. The first is preferable when there is a matter of real objects of which the experience is important. The pure screen based setup is sometimes used for services or experiments where the concept or an experience is abstract.

An alternative is to use paired comparisons where the respondent is only asked to reposition the cursor between the objects to indicate how strong the preference is for the selected object. In case of no decision of equal value, the cursor is left in the middle of the objects.

Example 1 Watches

The first case was conducted as a teaching case and consisted of four watches:



Watches are as the picture shows of very different formal expressions. They may be appealing to people of different age, culture, or generation. Some cultures, for example, prefer very expressive watches, other minimalistic ones.

The first comparison was conducted without showing the prices, only the watches labelled A, B, C and D:



First: Comparisons without prizes

The next pictures show how the setup was made:

Each respondent was asked to take the place by the computer loaded with our comparison software. We placed the four watches (or other objects we tested) on the desk besides the computer.



Each respondent performed 4 comparisons, each corresponding to a comparison of 2 watches.

The outcome of the first round is a scale of all respondents' total e.g. aggregated preferences:



Obviously this is an average rating over the total population, which in this case were 15 respondents.

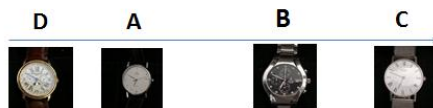
The data shows a high between-respondent diversity. This can be expressed as variation:

Source of variation	df	SS
Watches	3	25 %
Individual watch preference	42	72 %
Error	15	3 %
Total	60	100 %

R-square = 97 %

In this study, the individual differences between the respondents were reported as 72%. The general or mean differences of watches can only explain 25% of the variation. This means that keeping the data on an individual level is sometimes needed. People are different and to aggregate the data to a market level may cause considerable error in the inference from the experiment. What do the differences really mean? The next picture shows the result of the comparisons of respondent number 14.

For Id = 14 the preferences look like



Only one of the watches is located in the same sequence, while the other watches are assessed very differently. This serves as a warning not to rely solely on averages thereby ignoring information from the single respondents

If we include the prices, seen as sacrifices, the results look like this:

Sources of variation	df	SS
Watches	3	14 %
Prices	3	39 %
Error	106	47 %
Total	112	100 %

26 % of the preferences is mediated by Watches

74 % of the preferences is mediated by Prices

If we show a visual of the price vs. watch, i.e. the marginal effects, the results look like this:



In this setup looking at the marginal implication of products and price only 26% of the accounted preferences are accounted for by difference of the watches, while the remaining 76 % are accounted for by differences in the prices. This shows that, in the case of watches, price is a more important driver of preferences than the objects per se.

If we, however, look at this from an individual point of view i.e. allowing respondents to have both different preferences of watches and having different price sensitivity, the diversity among individual account for the total of 41%, 31% for the diversity of watch preferences and 10% for the sensitivity to price.

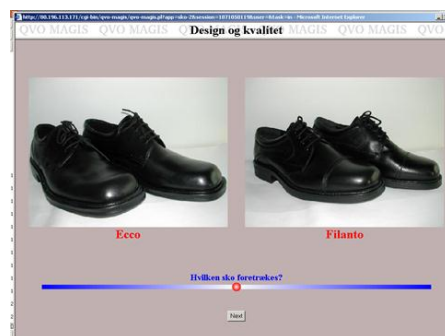
Including individual differences

Sources of variation	df	SS
Watches	3	14%
Prices	3	39%
Individual watch preference	39	31%
Individual price preference	39	10%
Error	28	6%
Total	112	100%

The additional insight of this study is therefore, that it matters whether we look at a market from a traditional top-down approach or take an individual bottom-up approach. In the latter we get more information, showing that individual differences may matter quite a lot. What we see here is an opening for the future and very different design approaches and business models. In fact one could say this is going back to the time before the industrial revolution, when the craftsman undertook to design and produce products for the individual user. Each users particular, their bodily dimensions, style and preferences were taken into consideration when making various tools. This is again possible using the new tools of 3D printing and other productions concept we will see in the future. The crafts are back-now with new technologies.

Example 2 Shoes

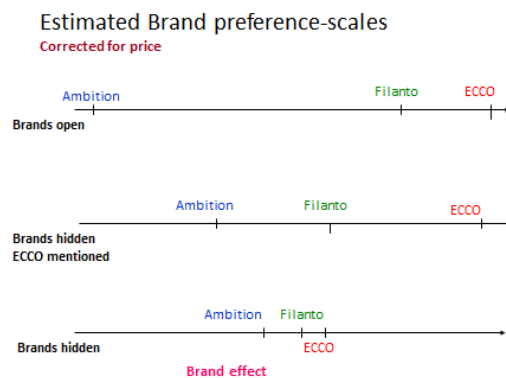
In the next study, we analysed preferences for black shoes for men.



The figure shows the software interface and how the respondent is asked to move the cursor according to what they select. Here is another choice:



The experiments were conducted giving participants various amounts and types of information. For example, in addition to product images, they were given information about branding and price in various combinations. Having worked through three sets of shoes, the following scales show the outcomes:



The outcome shows that given the existence of brand information, the stretch between the objects widens. The lowest scale shows only the objects, the middle scale includes brand names mentioned in general terms, and the upper scale shows when the individual objects are identified with the brands. The scales are constructed given price correction, but the prices may also be subject to the test.

Some reflections on the value (s) of design

When measuring the value of something as complex as design, one has to keep certain dimensions fixed while alternating others.

We can at the individual level measure the following issues by standardized measures:

1. The value of the object can be tested by a conjoint analysis where various objects' sensory qualities as well as price can be compared in a paired, bipolar set up. This can be done in real surrounding (shops, showrooms, shopping malls, public space). The setup is an advance from Urban and Hauser 1980, in particular the use of bipolar scales without explicit numbering. The advance of that is to avoid the respondents intellectualizing process by attributing numbers to their feelings.
2. Tests of services and transformative experiences can be done by an extended conjoint analysis where the objects, graphic designs etc. are replaced by scales expressing certain qualities of services or experiences. These can be accounted for by subjective aspects of feelings, cognitive issues like acquired knowledge, etc.
3. Social network analysis can be used to follow how individual users and customers are influenced by peers, how they connect (e.g. bridges, end nodes) and where the density in a heterogeneous market is found. The reason for examining the market density for producers is to keep the costs of distribution lower.
4. The reach through the market is how well a message in the form of a logo, meaning is attributed to an objects design, a mission statement, or brand value reaches end-user. It can be tested by using an analysis of variance. This will show whether the market is fragmented or unified. The test can be made on both individual and market level.

Common for these ways of measuring is that these studies take a *bottom-up approach*, starting with individual users or customers and only at the end look at aggregate effects. This is contrary to a traditional marketing or economic approach, which would focus on the mass market (implying an average consumer), or at least a market segment, using a top-down approach. Obviously, an approach to deal with network externalities also needs to work in a bottom-up way.

How can we measure the impact of design as a problem solving and meaning creating activity? It is possible mainly by looking at the outcomes, i.e. the artefacts, and what they can do for people individually and an aggregate level.

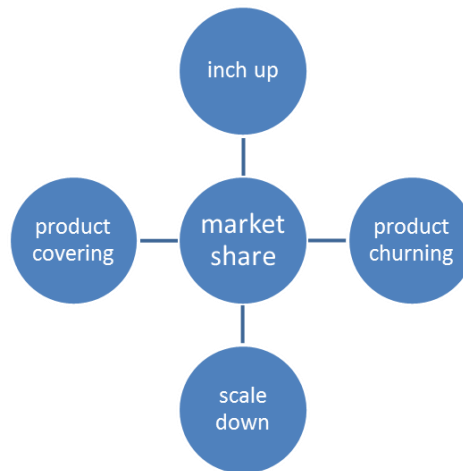
How can this be interpreted in monetary terms at individual user level, at company level, and at aggregate market level? At the individual level it may be looked at as the customer's willingness to pay. This is a well-recognized form of economic value. Customers' willingness to pay depends on their perception of the design as well-being, feeling of beauty and comfort. Adopting neuro-scientific approach, this would be measured in terms of balances of fluids in the brain such as serotonin, adrenalin, noradrenalin (Edelman 2001).

The Company and its design

Assessing competences of the company can be done in a variety of ways. It can include various approaches to describe the knowledge of the company. It is commonly believed that for best results design competency should exist at a top management level, because otherwise many strategic decisions which require design competencies will be of less than optimal quality. In his book on design, Blaich (1986) explained in some detail how he made sure the financial director of Philips in Eindhoven understood the meaning and necessity of design for Philips. Well-documented stories show a passion for design by the founders and important managers of Ford, SONY, IBM and Apple, which no doubt was developing and consolidating the companies. It is easy to see that

many companies fail to have this kind of in-house design competencies. Also, when design-passionate leaders leave, such competencies are often lost, and the whole company existence becomes threatened. Examples of this are SONY, that suffered considerably when Akira Morita, the founder retired. The company still exists, but has never recovered the losses. Other examples are IBM, which suffered considerably after Tom Watson, son of the founder, who built the company and its design during the 1950 retired, IBM lost much to the marketing who thought the universal solution would be branding. Finally, we may see what happens to Apple after Steve Jobs. It is too early to say. The source for such insight, however, is not research contributions, but rather biographical data from auto- and other biographies that give deep insights into the the passionate and sometimes even obsessed care these leaders took for design in the detail. When one compare this with the analysis of Angela Dumas and Henry Mintzberg (1989) that "good design is an indication that everything else works fine", we see an emerging pattern of design as a cultural force penetrating the organization, shaping and making an order, which technology alone could never have created.

What is more often used is the distinction between in-house vs. available as a retainer, a consulting or other basis. The so-called retainer contact is rarely seen today. Many companies believe that reading a book about so-called design thinking helps them to manage design. We suggest being very careful with this assumption. The following model from Heskett (2006) shows how design competencies relate to the position of the firm in the market. There are differences depending on whether the company mainly competes horizontally or vertically. The term vertical vs. horizontal competition is standard economic terms (See Lancaster (1971) for many variations of this theme). The following figure categorizes firms according to their typical strategic market challenges:



Horizontal strategies are the most common ones. A *product covering strategy* is found in many industries. The typical configuration is a differentiated oligopoly where the leading companies compete with similar basic concepts. The automobile industry is a good example. Peugeot, Citroen, Fiat, Ford, Volkswagen/Skoda/Seat, Chevrolet and Huyndai/Kia are the major players in family market for cars in Europe. They all compete with similar products. When one tries a new design solution, like hatchback, 5 doors, changing position of the engine, etc., the others watch closely. If the new design is successful, the logic is often that the other follows to cover a possible hole in their offer. This form of competition is exactly about design, both as problem solving and meaning. Technologically, the cars are very similar, but marketing wise there are few differences.

Designers work intensively with engineers and marketers. The role of designers is multiple. They follow the developments and trends in the market. They study existing designs and users' habits. This includes people, home and work relations, holiday options, shopping behaviors, etc. Are the cars comfortable, do the users change their use by driving more or less, shorter or longer, how about children in the car, options for electric or half gas/diesel and electric? In other words, design is as much about behavior studies, as it is about creating marginal improvements in the products.

A major competitive issue is lead-times. How long does it take from a market change to a new solution? The winner will be the one that is fast and adequately adjusts to the changes, whether they come from the demand side and competitors, or from public regulations.

Product churning is a common strategy in industries where lead-times are too short to study competitors, demand and other changes. Common examples are toys, fashion, and communication devices.

Some companies, the often-cited example being ZARA, use their shops to study what happens in the market. They are known to have developed a system to quickly change their designs when shopping data suggest so. In Nike town, for example, in order to consider whether a particular design is sustainable or not in the market, shopping data is studied in short intervals.

Designers may also use fashion shows, exhibitions, and lifestyle experts as sources to improve and create new designs.

An inch-up strategy is used in companies where a horizontal product improvement is desired. The best known example is perhaps Toyota Lexus. However, there was no incentive to redesign what was actually working very well for the company. Since cars were Toyota's major area of competency, it wanted to continue in that business rather than diversify into other areas. The choice was to create a totally new design of an automobile, which resulted in the establishment of a new luxury car and brand named as Lexus. Lexus hardly competed with Toyota. It rivaled the European producers Mercedes, BMW and Audi. This is an ultimate luxury strategy, and it requires many resources at all levels for integrating design, engineering and business functions. In our cases, Zanier Gloves are an example of a company taking the long way to establish a luxury design. The integration of designers in this strategy is very important. Obviously, it requires highly specialized design which is often strategically located close to CEO. Also, since executing design assignments is crucial

for the market results, luxury companies are known to prefer in-house design.

A scale-down strategy sounds simpler than what it actually is. There are several examples like the Canon OES cameras starting with the professional version, but later scaling down to the experienced amateurs, average amateurs and then to simpler versions and all the way down to disposable camera. Similar developments have been seen in shaving equipment, personal computers, mobile phones, etc. This strategy is clever in the sense that it seeks contact with the upper end of the markets first, then when that market is saturated, it moves to the next one, and then to next, until it covers all profitable segments of the market.

Tools for strategic management

The balanced scorecard (BSC) is a performance management tool. It is not a tool of value measurement. It is a semi-standard structured report, supported by design methods and automation tools. It can be used by managers to keep track of the execution of activities by the staff within their control, as well as to monitor the consequences arising from these actions. It is a well-known framework and it was the most widely adopted performance management framework reported in the 2010 annual survey of management tools (see Bain & Company, 2010). Since its original incarnation in the early 1990s as a performance measurement tool, the BSC has evolved to become an effective strategy execution framework. The BSC concept as put forth by Robert S. Kaplan and David P. Norton is now seen as a critical foundation in a holistic strategy execution process that, besides helping organizations articulate strategy in actionable terms, provides a road map for strategy execution, for mobilizing and aligning executives and employees, and making strategy a continual process (Kaplan and Norton 2005).

Managers may develop strategy by selecting strategic objectives, and then define the cause-effect chain among these objectives by drawing links between them. A balanced scorecard of

strategic performance measures is then derived directly from the strategic objectives. This type of approach provides greater contextual justification for the measures chosen, and is generally easier for managers to work through. Its applicability concerns the measurement of design solutions for choice. Also one can follow up the developed design by applying a balanced scorecard.

For the company managing design, the picture looks different from that of the consumer. The product is a matter of functionality in value delivery. Several business functions in coordinated action are responsible of the value creation and must work accordingly. For this to take place, issues like the choice of design principles, materials, marketability and manufacturability usually must be considered (Heskett, 2005). In going back to our initial question of whether good design influences performance, an implicit assumption is that customers are willing to buy and pay a higher price for well-designed products than for not well-designed products.

Design principles concern manufacturability and marketability (Heskett, 2005), concerning both the costs of the product and the price it may take. Firms use modular design and mass-customization in order to satisfy smaller segments of consumers with products close to their preferences, while at the same time seek to reduce the number of parts and produce to economics of scale. A flexible product platform may open for a very large number of combinations of product configurations, finding an optimum between simplicity of construction and flexibility in assembly (Sanchez, 1999).

It has been claimed that design is a frontier of competition because other factors such as logistics, production, technology and marketing are easily available for companies (Design Council, 2002). The assumption is that superior design requires business operations which are not easy to imitate. Design may be difficult to imitate for many reasons such as legal protection. If the design is original and distinct, the owner can get it protected from imitation by law. Surely there are limits and burden

of proofs involved, but legal protection can work. Internal operations of the company are another way to protect a design. Is the copycat able to reverse engineer and to bring their product to look like the original and presumably to a lower cost? Casual inspection of imitated products shows that this may be the case, but in most cases we find the perceived quality of imitated product is lower. In general, companies using good design get some legal protection in form of design patents and trademark protection, in addition to patents granted for technological innovativeness. They are also able to create some protection by keeping some parts of the manufacturing process unique, although the products of such companies may also be subject to copying.

What Rumelt (1984) called *causal ambiguity*, is another important reason why design may yield competitive advantages. The complexity of the operations combined with little direct information may inhibit the prospects for reverse engineering. Anyone can see the artifacts, but not how they were developed. Furthermore, good design is fragile due to the demanding task of balancing form, color and materials and it takes a long time to get it right (Dirieckx and Cool 1989).

Finally, the ability to extract a profit should also be taken into consideration. The term business model, which is a description for how a firm makes profit out of its operations, must satisfy the criterion. Business model covers different things, but could include the Dupont briefly explained above and also procedure for matching the company competencies with the needs of the consumer to get the best match between them. The match signals value creation assuming a competitive market and that the best solution for the customer wins. Design is then two different things. It is the solutions or products itself, and also a sort of indication that everything else is working well.

To support these issues design is judged according to its expressivity. An assumption stated by Dumas and Mintzberg (1989) is that good design is an indication that everything else is working well in a

company, enabling it to signal value to both consumers and to the financial markets - a peacock's tail effect. The credibility of this is that the design immediately reflects the essential qualities, values and positioning the firm seeks. To signal this to financial markets also requires a visual representation of firm's products, because a prospective shareholder does not necessarily use the product, but will judge its quality as an indicator of the expectations of the firm. A logo (Janiszewski and Meyvis, 2001) is such a signal of the intentions of a firm. A logo is used as an integral aspect of corporate communication both for internal organizational purposes such as corporate identity, and for signaling of values to other stakeholders (Hatch and Schultz, 2003). The expression of values depends on the use of types, colors and symbols. Even a simple symbol may embody considerable complexity and associations as a means of getting through an increasingly rich media landscape. It must therefore be distinct, easy to recognize, and not confused with other signs. The credibility of a logo is recognition of the company past and the integrity of its intentions for the future. A company uses logo to provide new directions and to raise a question of credibility.

Another visual form of communication of a firm's values to its stakeholders is through the web. The web design must be functional in the sense that it allows stakeholders, including consumers and users to interact with the company at a low cost. A computerized response to frequently asked questions is one path that has been used by many companies. To work, the web-design must offer convenience and fluency in operation as well as expressivity in reinforcing the values of the firm. Since stakeholder may be impatient, the credibility of its interactive communication is a measure of its perceived reliability.

Appropriability strategies

We refer to WP 4.1 for a legal report on the matter.

When dealing with intellectual properties of design, it may be a better strategy to adopt a language

from business rather than the legal. Legal and public talks will focus mostly on the regulation in the form of laws and regulation. These should not be neglected. However, there are other options too, including lead time, secrecy, complexity, embeddedness, patents, and originators' rights.

Lead time was indicated in connection with churning out and covering strategies, when rapid changes in the markets and competitors design push for quick responses. In general, it is not a dominant form of protection of intellectual knowledge in design because design is expressive and needs to be visual.

Secrecy is for the same reason often not an option. We see some smartphones that are cast in a material form that impedes any insight into how the technological solutions are materialized in the phone. Whether this is a good protection of knowledge is not clear. Secrecy mostly concerns the technological aspects and not the expressive or meaning creation aspects of design. Therefore, it seems to play a minor role.

Complexity may be used in technologically refined devices, but usually is limited by the same causes as secrecy.

Embeddedness and industrial standards are also solutions that mainly deal with technological aspects of design. An operating system may be legally protected or kept as a secret. This was earlier seen mainly in highly specialized computer systems that solved very particular problems and were not intended for a general public. For systems intended for the general public, the opposite strategy is usually a better strategy as seen in the battle between Betamax (SONY) and VHS (Philips) in the 1970s. Even though Betamax according to many was a superior system, the Philips owned system won the contest because Philips took a strategic attitude and went to the market with their solution in a faster pace.

Patents cover infringements if there is a question of a technical solution. Patents are granted by national patent authorities, and they must take into consider

action whether the invention is really novel. The term inventive step and the ingenuity of the solution will be judged according to what is known at the time. If the solution seems novel, a patent can be granted, and it will protect the owner for 20 years. If there is an infringement, the owner may go to a court of law. The court of law must decide whether the infringement is serious, and may judge the criminal to severe penalties and compensations. This may take a very long time, and the cases may be costly as in the case of Dyson vs. Hoover in England.

Originator's rights are a legal right the designer, artist or originator always has. In most countries, it lasts 25 years with the exception of Denmark and Italy where it is 75 years. The right gives the originator an option of going to court for infringement. There is usually some uncertainty involved around infringements because the question of when two designs are considered as infringement does not have a clear-cut answer. Many designs are similar for a variety of reasons without any infringement by any designer. In a court of law, the judges therefore call experienced designers as expert witnesses.

A registered right resembles a patent but is less strong. It is sometimes referred to as design patent in the US, and "mønsterbeskyttelse" in Denmark. Again, the court of law must call expert witnesses to decide, and this form of protection must be renewed on a regular basis.

The cost of appropriability may be a serious expenditure, and often prevents SMEs and individual designers from seeking legal protection. For designers, this is a serious issue, and it has been seen that big businesses take advantage of the fact that designers and SMEs are not able to pay for their rights. We refer to WP 4.1 for further comments on appropriability.

Conclusion: How can we understand and use design?

Design has many definitions and just to compile them would not be productive for our purposes. We refer to WP 1 for many definitions of design. They were mainly descriptive. The purpose of this chapter 4.2 has been to focus on the varying involvement of the single users and thereby work out a bottom up approach, aiming doers to make better use of design in their pursuit of business. Heskett's (2005) definition was the following: "Design, stripped to its essence, can be defined as the human capacity to shape and make our environment without precedent in nature, to serve our needs and to give meaning to our lives". This is a useful definition because it integrates the two elements of problem solving and meaning creation in an actionable way. Since the early tools of humans a hundred thousand years ago, this integration was essential.

Some may object – as discussed earlier in section WP1 - that the designs of Milanese Memphis Group or later Philip Starck's Juicy Salif were not really problem solving designs, but rather objects of art. In these products the meaning was emphasized. It is still discussed whether this is design at all, since the meaning dimension has been so strong and the utility less so.

What do we mean by design being both problem solving and meaning creating? It means that these issues cannot be separated but are integral to design. It concerns the embeddedness and embodiment of design as tools for human beings. By embeddedness we mean that it comes from local conditions physically, materially, technologically and culturally. The history of design shows how a large number of designs emerged in a certain place at a certain time to solve particular problems faced by the population. Henry Petroski's (1992) book *Evolution of Useful Things* explains how a number of everyday artefacts like paper clips, knife, and fork and cans for drinks were designed because they were needed. The embodiment is concerned with

how human beings perceive things in the environment as tools, often just grabbing and using them without much deliberate consideration. A good design is often a natural extension of the hand or other part of the human body.

Design that deliberately includes both problem-solving and meaning-creational functions is getting more and more embedded in the running of the company as a multidisciplinary team both learns to work together and sees the results this synergy creates, both in economic and immaterial value for the company. The immaterial assets are thought of as potentially enhancing further economic value creation (Dumas and Mintzberg 1989, Petroski 1994).

Leadership, culture, and implementation are the fundamental in this context. Together they influence the design orientation of a company. It is a highly complex issue and rarely articulated. Sometimes an attempt is made to express values (Heskett 2009), but often that is only a rationalization of what actually goes on. Nonetheless, it is often the easiest and most direct way to interpret values. These elements are best identified through interviews with organizational members. Also, longitudinal observations may be a good way to capture data about culture and implementation, although it may be costly. However, such insights are vital for setting the stage for design work. Without the necessary competencies, culture and implementability, it is very risky to try radical or even high quality design projects.

Leadership is a vital capability when considering design as an asset. The biographies of Steve Jobs, Akira Morita, Tom Watson and others suggest that some CEOs are more inclined to understand and use design. When they left their respective companies, in many cases design also left. The biographies reveal that these are complex personalities, so it may be difficult to build on a few examples.

Robert Blaich (Blaich and Blaich 1993) tells his story of being a Director of Design in Philips. His first important self-chosen assignment was to educate

the financial vice-president that design was not a cost, but an asset. Having done that, he got established that the design competency was on par with technology, finances and production.

Design that deliberately includes both problem-solving and meaning-creational functions is getting more and more embedded in the running of the company as a multidisciplinary team both learns to work together and sees the results this synergy creates, both in economic and immaterial value for the company. The immaterial assets are thought of as potentially enhancing further economic value creation.

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