Aalto University

IDBM
International Design Business Management

vol 2.

“We can’t solve problems by using the same kind of thinking we used when we created them.”

Albert Einstein

“Literature is the question minus the answer.”

Roland Barthes

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Forewords to vol 2.

Markku Salimäki
Toni-Matti Karjalainen

Dear Reader!

IDBM is a multidisciplinary research and teaching program that involves strong collaboration with the industry. Following the principles of an academic program, teaching also needs be based on state-of-the-art research. This is a challenge for our multidisciplinary effort, while the science is based on silos: The more one wants to go to the direction of basic research, the more focused the topics are. On the other hand, the closer one wants to get to the "real" life, the higher is the need for applied research and multidisciplinary approaches. There appears a growing body on applied and multidisciplinary research around the notion of design in business, and business in design, to which we in IDBM want to make a contribution. Our contribution is fulfilled through Doctoral and Master's theses, articles in scientific and popular journals, active participation in research conferences, organization of international meetings, as well as initiation and implementation of our own research projects. We also engage in active exchange of ideas with our domestic and foreign colleagues, which give us access to the relevant research in our field.

This book is a combination of many of these actions. IDBM Papers Vol 2 is both the final report of the EDEST research project of IDBM and collection of working papers from our staff, colleagues, and students. The book is the second in the "series" started by IDBM Papers vol 1. that was published in 2011 to celebrate the 15th anniversary of IDBM. And more will come! Enjoy your reading!

I want to thank Dr. Toni-Matti Karjalainen for his effort as IDBM's Research Director to lead our research and actively distribute its results.

Dr. Markku Salimäki

Program Director / IDBM

Note from the editor

IDBM Papers vol 2., "Emloyment of design strategies", continues the short tradition of the annual collection of IDBM research papers started by vol 1. in 2011. Like last year, we have put together papers of different kind; some are more finished pieces of research, while others are written in the format of non-polished working papers. The texts aim to provide the reader with an overview on our and some of our colleagues' research on design management. We hope the book will also generate discussion and new ideas that lead to further research advancements at the crossroads of business and design.

First and foremost, the book serves as the final report of the "Employment of design strategies" (EDEST) project of IDBM. The project was started in 2010 with the intention to analyze the practices and structures of design management and, as the title suggests, the employment of design strategies in selected Finnish companies. By doing so, we aimed to open new insights into the strategic use of design in business. EDEST was funded by Tekes, the Finnish Funding Agency for Technology and Innovation, and five partner companies in Finland: Marimekko, Sandvik Mining and Construction, Metso Paper, Globe Hope, and Fiskars. The project was conducted in collaboration with the Finnish Design Management Association (FDMA) coordinated by Design Forum Finland.

Moreover, the book is used as support for the 11th Nordcode seminar & workshop that IDBM hosts on June 11-13 2012. The event, titled as "Strategic design communication in business", marks the official publication of IDBM papers vol 2. and takes the book on an inspirational journey between Helsinki and Stockholm, during which its ideas will be further cultivated and supplemented by our international research colleagues and students.

Since the publication of vol 1., we in IDBM have been lucky to generate lots of new initiatives and meet many new faces

through our master program, exciting industry projects, and research endeavours. In terms of research projects, summer 2012 means a notable watershed for us. Two of our research projects, EDEST and BogFires, are ending and new initiatives are catching fire. Besides in design, we intent to carry out further explorations in the music industry, coupled with insights from the gaming field, as well as the ecosystems and business models of other creative industries.

And we are taking part in the kick-off of the DESMA project, an Initial Training Network in the area of Design Management funded by the European Commission's Marie Curie Actions. DESMA combines four leading universities within the area of design management: University of Gothenburg (Business & Design Lab), who is the coordinator of the project, IDBM from Aalto University, Politecnico di Milano, and Imperial College in London. The network also involves four leading European design consultancies and four complementary product and service organizations in an unprecedented cross-disciplinary effort to understand how design can be exploited as a driver of innovation and competitiveness in Europe. At the time of writing this, we are recruiting twelve new Early Stage Researches to the project, two of which will be positioned in Finland.

There are lots of other interesting developments going on in IDBM, in addition to our ongoing activities, which will no doubt grow our food print in the global research community of design management and creative industries. So please stay tuned and check our website regularly (www.idbm.fi).

The book comprises 14 articles around the topic of design strategy. The foreword is followed by a keynote article that Professor Mikko Koria and the undersigned put together to reflect our increasing research interests in creative industries, ecosystems, business models, and project management.

The remaining part of the book is divided into two principal chunks. The first part consists of eight texts from the researchers and students who participated in the EDEST project.

Enni Äijälä and I first discuss how the notion of design strategy and the strategic nature of design are approached in design management literature, ending the paper with a conclusive framework highlighting the "eleven strategic points of design". The topic and this framework is next briefly explored in the three case companies: Marimekko, Metso, and Sandvik. Due to confidentiality reasons, the findings are presented on a generic level in this book. Researchers delivered more detailed analyses and recommendations to each partner company during the project.

Following the cases, we have IDBM PhD researchers Daniel Graff and Johanna Nurkka writing about their particular research topics. Daniel shares insights from his profound literature review on the cross-functional NPD teams, and Johanna explores product development and design from the perspective of sustainable development. The first part ends with two essays from EDEST master students, Reetta Noukka and Annika Järvelin, written on the basis of their Master Theses conducted in EDEST. Reetta performed an extensive study on design management practices in Finnish companies and Annika discovered the responsible role of design using Globe Hope as the case in her thesis.

Professor Dirk Snelders from TU Eindhoven and Visiting Professor at IDBM starts the second part with his fascinating review of stories that construe and highlight the value of design in business. Marcus Jahnke, PhD researcher from the Business & Design Lab at the University of Gothenburg, presents a perspective on the concept of dynamic capabilities. An attempt to increase our understanding of the concept of design thinking and its implications of design strategy is next provided by Laura Mata García, a PhD researcher from Milano Politecnico and visiting researcher in IDBM. Docent Antti Ainamo from Aalto University School of Economics and IDBM, together with four IDBM students, writes about his experiences from the IDBM industry project on creative ecosystems and business models, conducted for Forum Virium Helsinki in 2011-2012. To conclude, Associate Professor Martina Keitsch from NTNU Trondheim discusses her FAITE model that functions as a tool for integrating the user perspective in NPD.

Altogether, I think this collection of texts from various different perspectives provides you, the reader, with many thought-provoking moments and hopefully motivation to dig deeper into the complex domain of design management and strategy.

Finally, I'd like to express the warmest thanks to all the authors of this book for devoting their time and energy to this effort. In the EDEST project, I warmly thank all the partner companies, and particularly Jan Wahlstein from Sandvik, Petteri Venetjoki from Metso, Laura Sinisalo from Marimekko, and Seija Lukkala from Globe Hope, for their support. Marko Ylikorpi from Tekes and Sirpa Fourastie from Design Forum Finland are also specially acknowledged. And essentially, big thankyous go to the EDEST members Enni, Daniel, Johanna, Reetta and Annika for the cool contents and ideas provided, as well as Juha Vaurio who acted as the main initiator of the EDEST project.

Dr. Toni-Matti Karjalainen

Editor / Research Director / IDBM

“ In complex ecosystems, learning is the way to success and no holds can be barred in making sense in design-intensive projects.”

Learning in ecosystems:

Design-intensive projects in the creative industries

Mikko Koria
Toni-Matti Karjalainen

Introduction

Today industries engage creativity and intellectual capital to create new wealth through innovative offering, often joining services, products and customer interaction ideally into constellations that are distinct and difficult to imitate for competitors. New, old and reinvented ideas are bundled together to design novel business models and opportunities, fueled by new ways of working and collaborating in complex ecosystems.

Operating within these collaborative networks, the creative industries have been seen to involve a mix of artisanal and industrial production, and have traditionally included advertising, arts & crafts, design & architecture, fashion, film & television, radio, toys & games, software and publishing (Howkins 2001, UNCTAD 2010). Many of these organizations have design built into their very DNA, using approaches, thinking, and processes that involve abductive reasoning and user-oriented problem solving.

These industries operate in an ecosystem of actors, made up both small and large organizations, private individuals and micro-enterprises, together with large multinational corporations. The business models involve in many cases knowledge intensive creation of mass-produced products and services based on transforming inventions into innovations. A demand for constant innovation is due to short life spans of product and services offered (as in case of music or movies). In this context, striving to diffuse design thinking often boils down into making collaboration work in practice.

Within these complex ecosystems, the design of new products, services, processes, initiatives or like ventures is often done through projects, set up on purpose to fulfill a need and to achieve a desired result (Shenhar & Dvir 2007). As the creative industries possess attributes that make them distinct it follows that projects should also apply proprietary strategies in their ecosystems. In this paper we explore some generic strategies that support management sense-making and learning in design-intensive projects in complex environments.

Complexity in projects

Projects have been around since the pharaohs, but essentially the discipline emerged with the grand defense initiatives and process industries after WWII (Morris 1994). With an initial focus on planning and control, quality through the identification of deviance and the management of standardized outputs, the organization of work had a strong emphasis on scheduling and work allocations (Brady & Hobday 2011). The early approaches largely ignored volatile operational environments and the impact of politics in organizations (Brady & Hobday 2011, Shenhar & Dvir 2007), and a rigid task focus (Smythe & Morris 2007), and overt faith in prescriptive rules and rationality contributed to massive project failures in the past (Brady & Hodbay 2011).

Subsequently, the perspective of projects as temporary organizations enabled a wider understanding of projects within their contexts (e.g. Packendorf 1995, Lundin & Söderholm 1995, Engwall 2003), with critical management studies perspectives adding to the understanding of projects as politically complex social undertakings (Hodgson & Cicmil 2006). As Brady & Hobday (2011) note, further empirical and incremental contributions were also made the areas of research and development, new product development and multidisciplinarity (e.g. Clark and Fujimoto 1991, Morris 1994, Chesbrough 2003, Flyvberg, Bruzelius & Rothengatter 2003).

As a more recent development, research into project business has joined previous streams of enquiry into strategic frameworks (e.g. Artto & Wickström 2005, Davies & Hobday 2005, Shenhar & Dvir 2007). It could furthermore be said that the management problems within the projects in business networks are wicked in their nature (Rittel & Weber 1984), and no single best practice or strategy exists.

As Artto et al. (2011) note, the management of projects needs to accommodate the degree of complexity, how work and learning is organized, the adopted management practices, and the evolution and adaptation that takes place in the projects as well as the host organizations. It is also important to have a solid understanding of the options that project managers have to execute corporate strategy through projects (Loch & Kavadias 2011).

Knowledge is the key fuel in projects, especially the tacit knowledge embedded in the professionals participating in the projects. This is why the strategic approaches to project management need to focus on learning in and through projects. The host organization is often thought of as the repository of the knowledge from the projects.

Freezing temporary organizations

Within the traditional creative industry ecosystems projects momentarily freeze the fluid relationships into temporary organizations that are formed on contractual platforms mediated through social control and long-term relationships (Lundin & Söderholm 1995). The rationale for projects is often justified through a perception that accountability can be planned for, that timeframes can be tightly framed (implying limited liabilities), and furthermore that clear sets of tasks and responsibilities can be assigned to identifiable parties (Morris 1994). Often the idea of perfect knowledge (needed to organize work and tasks before an actual engagement) underpins the task-oriented perspective of projects (Hodgson & Cicmil 2006).

The reality often shows, however, that design-intensive projects that aim for cutting edge novelty and innovation tend to be filled with ambiguity and unknown factors that we are not able to foresee and plan for – not to mention the unknown unknowns that may emerge as black swans at inconvenient times (Loch & Kavadias 2011). In the past, the creative industries seem to have managed this inbuilt ambiguity through trust and social control that is inbuilt into the industries through very personal sets of relationships that go beyond the limits of contractual engagements. This has been facilitated through the mobility of the workforce, transferring tacit knowledge and ways of working across organizational boundaries, diffusing best practice over time.

Wicked expansion of creativity

Today, it can be argued that creative industries are starting to lose their traditional boundaries. Creativity is no longer seen to be an exclusive domain of the limited actor group originally named by Howkins (2001), and "new creative industries" have emerged. As examples, these may involve manufacturing industries that use creativity and design as their core competence, such as automobile manufacturers, or apparel and tool producers. In many cases traditional manufacturing firms (both B2B and B2C) are designing services and customer interaction that both support and expand their offering. On the other hand traditional service industries, such as hospitality, travel, or food, are also designing enhanced offering, involving users in co-creation and in some cases crowdsourcing new ideas and solutions. In all industries, understanding complex customer needs has become a major challenge for creative minds, and in some cases designing the cutting edge has required going beyond the customer's understanding (Verganti 2009).

Challenges for design-intensive projects

Taking on the creative challenge and designing offering and solutions in the new creative industries poses some new challenges for projects. In the first place, the sheer size and complexity of the actors involved in the multiple industries implies that many new designers are involved. They are often trained outside of the traditional creative industry educational streams, and in many cases new skills and competences are needed in the design processes. What Peter Gorb and Angela Dumas originally coined as "silent designers" have always existed, but they have now acquired legitimacy and voice. This implies that the past social and collegial control and tacit knowledge transfer in projects has eroded and that projects need better strategies for both management and learning.

Secondly, a challenge exists in the expansion of the ecosystems into the global realm. What were previously local or regional innovation ecosystems of businesses in relatively stable administrative environments, with identifiable knowledge providers and users, are now messy global business networks where trust building requires extensive effort and where the evaluation of the ability of parties to perform is difficult. Competitor scanning requires extensive effort and disruptive technologies may emerge at any time. Designers brought up in one context may not find culturally sensitive (and thus easily adoptable) solutions in other contexts, and universal solutions may become counterproductive over time.

Thirdly, the global tendency is to organize extensive global business networks through projects. As such there is usually no issue with complexity when one talks about single projects (with the exception of megaprojects), but managing business networks where multiple projects meet multiple firms becomes complex. Within the ecosystem, individual parties may also shift their role at short notice – thus you have a network of collaborators, competitors, contractors and subcontractors, suppliers, service providers or even individuals that are engaged in specific roles all connecting to each other on multiple levels and with multiple objectives in mind. Everyone has a vested interest in creating proprietary value, and the common good rests on the idea that ecosystems only flourish when there are at least minimally equitable win-win situations for all involved.

There is a great degree of inter-dependency between the actors in these ecosystems; these usually involve long-term relationships that outlast individual projects, lowering transaction costs and increasing the reliability of partnering (Graebher 2004). While these business networks exist in the traditional creative industry ecosystems such as in IT outsourcing in India, or the Hollywood, Bollywood and Nollywood film industries, a really fundamental change is felt when the new creative industries engage in design-intensive projects, leading to design expertise becoming a commodity and part of a business-as-usual process. In these cases the diffusion of best practice and learning might also dilute and lose relevance.

Strategic learning in design-intensive projects

Overall, single projects can be planned, implemented and monitored through tried and tested, straightforward management approaches, techniques and tools. Most of the learning happens within the project itself; the key challenge to the host organization is linked to the transfer of knowledge from one project to another; this is very difficult to manage if there is a gap in time between the two. Often the project approach is based on existing best practices, with few unknown factors.

In cases where many firms operate within a single project (such as a new product or service launch involving many specializations), learning happens between the actors, and an orchestrator or integrator is needed to create a common vision for all. The individual parties that collaborate need to adapt to the overall aim, and the success of the whole is linked to the abilities of the orchestrator and the adaptability of the collaborators.

Moving into more complexity, the success in the management of a project-based firm (i.e. one that does multiple projects on a constant basis, such as a design consultancy) is highly dependent on the development of processes and protocols that are the result of learning from the series of implemented projects. The serial nature of the projects allows for an incremental development of knowledge and skills, and it can be said that the strategy of a company is firmly grounded on the "way things are done" in the organization. While this is a great tool for internal cohesion and social control, it is also potentially a significant inhibitor of change and evolution. Its can be argued that many of the organizations in the traditional creative industries are subject to this history and path dependency.

On the highest level of complexity and the lowest direct control sit the business networks that pose a truly wicked problem for project management. In these ecosystems it is not possible to foresee what the other actors are up to most of the time. There exists a constant threat of disruptive

technologies replacing old ones, and the threat of entry of new competitors is real. Business models can be eroded through emerging global trends, as well as local legislation. Ambiguity in the (new and old) creative industries is also high, as fashion and trends can both driven and undermine business. Unknown unknowns exist and a very real possibility exists that random happenings take place.

Parallel trial and error learning

In order to come to grips with the sense-making in design and ambiguity intensive projects in business network ecosystems, two main approaches have been identified: the first one is to undertake trial-and-error learning and the second one is to parallel experiments and to choose the most viable options for future development (Loch et al. 2006, Loch & Kavadias 2011).

These twin sense-making strategies need to be implemented through experimental, small, agile, and fast projects, so that firms can understand what works in the real world. Test-beds, rapid prototyping and modeling can support these processes on many levels. Through the experimental projects, one can start to understand the ambiguity, tease out the unknown unknowns, and start management processes with relevant and timely knowledge. There are many touching points in the methodology with scientific experimentation, and this is perhaps one of the few spots where design really meets hard science head on through a shared philosophy of reducing ambiguity through cumulative learning.

Conclusions

In this paper we looked at learning in design-intensive projects in the (new and old) creative industries. We note that learning in and through projects is a key enabler of success, but it was also observed that successful project management needs to adjust itself to the level of complexity of the environment, and also learning methods, aims, and processes need to be adjusted to the circumstances at hand. The expansion of the creative industries into new areas results in a need to understand new management practices and learning strategies.

Single projects are fairly straightforward and learning happens within the project framework, the key challenge being to transfer learning from one project to subsequent ones. Learning across a series of projects is a key strategy for project-based firms, and the hurdle lies in building up a cumulative knowledge base, together with processes and protocols that drive business. In single projects with many firms, such as major infrastructure projects, organizations need to adapt to each other, and an orchestrator needs to shows the way for the whole project. The design-intensive projects in business networks are the most challenging in terms of learning; the complexity is high and direct control is low, and it is suggested that iterative and parallel trial-and-error experimentation is a key strategy available to make sense in the ecosystem.

In complex ecosystems, learning is the way forward to success and no holds can be barred in making sense in design-intensive projects.

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“ Strategic design has to be managed. EDEST cases highlight the need for a clear design strategy that is properly communicated within the company.”

Design strategy and the strategic nature of design

Enni Äijälä
Toni-Matti Karjalainen

Introduction

In this article, we discuss the concept of design strategy and describe an analytical framework that was used to explore the employment of design strategies in the case companies of the EDEST project. The aim is to deepen our understanding of how design strategy is described both in the key literature if design management and in the three case companies: Metso, Sandvik, and Marimekko. In addition to such general conception of design strategies, the aim is to identify challenges that were perceived in implementing the strategies to explore different ways the organizations are using to enhance the strategic use and value of design.

The data of the research consisted of two sets that were simultaneously gathered: review of the key design management literature, and qualitative interviews conducted in the case companies. Altogether 21 interviews were conducted in the three companies. Interviewees were chosen from the CEO and top management levels, middle management, and among industrial designers. The selection was done in collaboration between EDEST researchers and the case companies. The purpose of interviews was both to obtain empirical material for our explorations on the topic, and also to provide company specific information for the EDEST partners. Some parts of the company-specific research results remained confidential and were directly reported to the companies. The results presented in this article, and the following three case descriptions in this book, describe the problematic and challenges on a more generic level and highlight some core aspects found in the cases.

In this article, we summarise our literature review on design management as well as present a generic summary and comparison of the cases. Each case is then more profoundly reviewed in the chapters 4-6 of this book, using the approach and framework of this article as the basis for analysis. The focus of the cases is mainly on two aspects: defining and describing the content of design strategy, and exploring the different organizational and management levels of design strategy in the companies. In particular, we focus on the use of design on the strategic level. Finally, the article presents conclusions through three challenges that companies face in terms of design strategy employment.

Design strategy in design management literature

Why, in the first place, do we need to keep the design strategy discussion, concerning its nature and terminology, active in the academia and industry? Chhatpar (2007) gives a brief answer to this question. He demonstrates that industries living in todays fast-moving environment need a different approach to the strategic decision making in order to succeed within the harsh competition. He claims that the way according to which decisions are made should be seen from a new perspective. Within this fast-pace lifestyle, companies have to use all available approached to foster their competitiveness, especially concerning various user-centric methodologies of design could bring something new for the strategic options. Chhatpar suggests a new role for the designer and suggests that we should pay special attention to the congruence of design with the business strategy of the company. This correlation marks another interesting sub-area for the EDEST research. As he continues, designer's role within an organization has traditionally been viewed to be distinctive from the corporate strategy process and therefore strategic planning has not been seen as a core field of design.

The terminology around the concepts of design strategy and management seems to be rather inconsistent (Joziasse 2000, Sanchez 2006). To start, Cooper & Press (1995) have found that there is little uniformity in the definition of design, while the notion covers many different disciplines, and our understanding of the concept also seems to be changing over time. And this applies to management as well, not to mention the integration of these two ambiguous terms. Although there appears a fair amount of research material and books around design management, the literature is still largely lacking commonly shared definitions for the key terms. This could also be viewed as a positive aspect, as a particular strength, as suggested by Hands (2009). He claims that the terminological inconsistency tells that design management and design are being used in a wide variety of fields and that it is creatively employed within the organizations.

As Stone (2010) points out, also practicing designers are using the notion of design strategy in different ways and contexts. It can can refer to a client brief, a generic guiding concept behind design decisions, a brand vision translated to designed solutions, a set of creative decisions serving to approach design goals, a competitive position, an action to narrow down design possibilities, an innovative use of design, or to actions of leveraging social responsibility, cultural relevance, technology, customer needs and others design-driven factors, to name a few.

Several scholars and managers, however, agree that strategy is a term that especially refers to setting a direction and a focus for the company; creating a plan in order to achieve a certain goal (Cooper & Press 1995, Joziasse 2000, Stone 2010, Lockwood 2010). Josiazze (2000) carried out interviews with design managers in six multinational corporations and four design agencies based in the United States and Europe. The study indicated that managers saw themselves having a strategic role in the companies as advocates of future consumer needs. Cooper and Press (1995) also see strategic design as a process that combines market needs with production capabilities and, by doing so, helps the organizations to meet challenges in different markets and competitive positions. Moreover, design is considered having a key role in visualizing and communicating the corporate vision and values.

Hence, design strategy is seen as interplay of design activities and the business strategy (Stone 2010; Canada et al. 2008). The notions of design management and leadership integrate design with business, and design strategy provides direction and roadmap for business within this integration (Lockwood 2004 & 2010).

As summarized by Best (2006): "Design management engages design thinking in the organizational strategy, identifies opportunities for design, interprets the needs of the organization and its customers, and looks at how design contributes to the business as a whole."

Design strategy on three levels

Design can be managed and utilized on three different levels: operational, tactical, and strategic (Borja de Mozota 2003, Joziasse 2000, Best 2006, Kootstra 2006). These resonate with the three levels of strategy within companies: corporate strategy, business strategy and operational strategy (Joziasse 2000). And design contributes to all these levels. Joziasse claims that if design manager desires to contribute to the company strategy, he or she must be able to create impacts on these three levels. Best (2006) also points out that the design strategy concerns the vision for design at every organizational level.

In sum, the strategic role of design on these three design strategy levels comprise (Joziasse 2000):

- At the strategic level, if design wishes to be involved in the operation of corporate strategy it could be utilized as a source of competitive advantage, and as well a catalyst for change to the scope and direction of the organization.
- At the business level (tactical level), design could be used as a creator of unique product concepts and as a tool to search new market opportunities. The focus is placed on the future customer needs and the objectives of the business unit.
- At the Operational level, design concentrates on enhancing the efficiency of individual projects, design processes and to managing the design team itself. For a business strategy to be successful it depends mainly on the activities that happen at this level.

According to Joziasse (2000), if design is wished to be beneficial and successful on the strategic level, design management skills are needed also on the tactical and operational levels. In the following sections, these three levels are discussed more in detail, however maintaining the main focus on the strategic level.

Design on strategic level

According to Borja de Mozota (2003), the companies first need to understand what the key strategic decisions are, and what strategy is all about, before it's possible to qualify the strategic importance or value of design. Borja de Mozota emphasizes that the design function must be understood as part of organization's general strategy; design can't take a role of a lonely cowboy, a satellite disconnected from the rest of the company. Strategy should create a tight fit between different activities within the company. Therefore, the success of strategic design depends on the integration of different activities into a logical entity, which is more important than a success of any individual parts of the organization.

The overall policies, missions and agendas are defined on the strategic level, and strategic design management ensures that design is connected to those agendas (Best 2006). Design strategy is the creator of direction and roadmap (Lockwood 2010. The focus of strategic design is hence placed on managing the design vision (Borja de Mozota 1998, Kootstra 2006), so that design methods and decisions are consistent with the company's mission and strategy. Design on the strategic level is a source of competitive advantage and is used as a catalyst for change that will have an effect to the overall goal and direction of the organization and business (Borja de Mozota 1998 2003, Joziasse 2000).

Design strategy should resonate with the core business goals; deal with differentiation opportunities, unmet client needs, existing problems and emerging ideas and trends (Stone 2010). These issues form the basis for the design strategy.

Then, design management functions as a tool for change, impacting the strategic core that can reposition the company. Design strategy is a plan that helps to diffuse design throughout the company, and one of design's key jobs is to make the business strategy visible (Borja de Mozota, 2003) and, vice versa, all design-related decisions should be consistent with the chosen business strategy (Salimäki & Väkevä 1998).

Design-driven organization culture

But how can such a strategic position be achieved within the organization? The commitment and attitude of the top management plays a major role in terms of employing design into business processes (Kootstra 2009). To be able to create a real impact, design should be present on the board level of the company (Borja de Mozota 1998, Kotchka 2011). As Blaich & Blaich (1993) argue, design can be brought to a new level if the CEO implies an enabling role. Design and creativity needs to be empowered by the organization to function and enable a favourable culture to evolve (Lockwood 2010).

Kootstra (2009) suggests that design is positioned on the strategic management level, and design management seen as corporate culture, typically in companies that aim to reach the market leader position through design innovation. The companies on this level are normally highly design-driven, in other words, having design at the core of their differentiation strategy. For companies on this level, design can be described as a way of life. The senior management, as well as the employees, are aware of the importance of design and seriously committed to fostering it. If design is made the essential part of the corporate culture, the company is probably utilizing it in the most successful and broadest manner (Kootstra 2009, Cooper & Press 1995).

Interviews that Lockwood (2004) conducted also supported the idea that "the stronger an organization's culture for design is, the greater its commitment for using

design as a resource is". And further, he claims, in order for design to be perceived as a business resource, as central means of reaching business objectives, companies need to develop their own design culture. He admits that building a design-minded culture is a hard task, but by applying design leadership and effective design management practice it becomes possible to produce effective design operations and thus achieve good business results.

Role of design manager

Strategic design does not just happen; it has to be managed (Lockwood & Walton 2008). But what kind of a role does the design manager then have? If design management is seen as the way to integrate design at the corporate, business unit, and operational levels (Lockwood & Walton 2008), design manager is the person who coordinates design resources at every level of the company (Borja de Mozota 2003). Furthermore, Borja de Mozota (2003) continues, design manager should create the relationship between design, strategy, identity and culture of the organization with the objective to keep the design work consistent. Design management could therefore been seen as a link between design, corporate communication, and top management. Design management should be understood as a function that identifies and communicates the ways design can contribute to the strategic value of the company and its long-term goals.

In strategic design, the aim is to manage the integration of design as well as involve design into the corporate strategy formulation process and structure (Borja de Mozota 2003), in other words, to involve design manager in the corporate strategy process (Joziazze 2000). Borja de Mozota (2003) presents the idea of Seidel (2000) that, on the strategic level, design management has four duties or roles to achieve the company goals: (1) to visualize the business strategy, (2) to search for the core competency, (3) to gather market information, and (4) to innovate in management processes. As conclusion, the tasks of design manager at the strategic level involve:

- Enabling the design culture to evolve.
- Encouraging creative thinking and planning for the future.
- Distributing design resources within the organization.
- Enhancing innovation in management processes.
- Visualizing the business strategy.
- Transferring future visions and corporate strategy into products and services.
- Being the advocate of new products and services.
- Keeping the business, target market, and customer in focus, and gathering relevant market and customer information.

Design on tactical level

Design management on the tactical level (Joziasse 2000; Best 2006; Kootstra 2006), also called the functional design management (Borja de Mozota 1998 & 2003), concerns creation of a management structure within an organization (Cooper & Press 1995). At this level, the organization has already a broad understanding of design, on strategic level that is, and uses design to foster innovation and product development and there exists a person or department with a formal responsibility on the design process issues (Kootstra 2009). Design has thus become a function that is organizationally independent. The design manager acts as an interface between different functions and coordinates the design strategy with marketing, innovation and communication functions (Borja de Mozota 2003).

Tactical level is, first and foremost, about managing and organizing the design function and the design process on the level of a single business unit (Borja de Mozota 1998, Joziasse 2000, Best 2006, Kootstra 2006). Design manager has tasks related to the organization and the management on a higher level as well, but specific product and service related aspects are also on the agenda. Tactical design is pro-active (Kootstra 2009) and design management concentrates on generating unique product concepts to search for new market opportunities (Joziasse 2000). To be able to develop and leverage design to tactical level, support from the higher level of management is needed also here (Borja de Mozota 2003). Tactical design management thus functions as a mediator between the strategic level goals and the operational level strategy implementation (Noukka 2011); it communicates with other functions of the company, and on different management levels, and creates a structure for design.

Design on operational level

The third level of design management and strategy comprises two different perspectives: (1) The design maturity point of view (Kootstra 2009) and (2) the implementation point of view (Best 2006). The former view is also called design management as project (Kootstra 2009). This approach to design management is typical in companies that make limited use of design, in which design actions primarily relate to product improvements and product line extensions, projects where the only goal is to meet direct business needs. Design is primarily used as a marketing tool, adding value to the existing product offering through appearance, styling, packaging, marketing communication, or visual identity. Since design steps in only at the end of the NPD process, it is poorly integrated with other business processes, and there is limited or no collaboration between design and other departments such as marketing or R&D. On the operational level coordination of design activities is minimal. (Kootstra 2009)

In the second view, also called operational design, design strategy is implemented on the project level (Borja de Mozota 1998, Joziasse 2000). The focus is placed on design as action (Best 2006). On this level, design concentrates on creating physical and tangible products, services, and experiences (Best 2006). Operational design management is mainly responsible for the employment of the design strategy and policy of the company into the everyday design activities. This concerns companies that already have design placed on the strategic level, and operational design is hence seen as a stage of implementing the strategy.

The EDEST framework: "Eleven strategic points of design"

On the basis of the key design management literature, we can thus see that design has specific a role on three organizational levels: strategic, tactical, and operational. Based on our literature overview, and to serve our company cases, we derived eleven different ways to analyse and describe the design strategy and strategic nature of design within the organizations:

1. Design strategy is the interplay with design and business strategy (Stone 2010, Best 2006, Borja de Mozota 2003, Salimäki & Väkevä 1998, Canada et al. 2008).
2. Design helps organizations to meet challenges in different market areas (Cooper & Press 1995).
3. Design strategy is a plan that helps to diffuse design throughout the company (Borja de Mozota 2003).
4. The effective use of design can be an enabler and a source of competitive advantage and thus gain strategic importance (Borja de Mozota 1998 & 2003, Joziasse 2000, Chhatpar 2007, Cooper and Press 1995). Design strategy should clarify the differentiation opportunities (Stone 2010).
5. Design has the tools to visualize and communicate the business strategy and corporate objectives and thus make the vision and values visible externally as well as within the organization (Borja de Mozota 2003, Cooper & Press 1995).
6. Design needs to be placed on the board level of the company and thus have the commitment from top management. (Borja de Mozota 1998, Kotchka 2011, Blaich & Blaich 1993)
7. Design must be seen as a catalyst or tool for change (Borja de Mozota 2003, Joziasse 2000, Lockwood & Walton 2008).
8. Design contributes to the overall goal and direction of the organization (Borja de Mozota 1998 & 2003, Joziasse 2000, Lockwood 2010).
9. Design is seen as a part of the organization culture and the way of life (Kootstra 2009, Blaich & Blaich 1993)
10. Design tools can solve and interpret client or end-user needs, which brings new insights into strategic options (Stone 2010, Best 2006, Chhatpar 2007, Autere 2011).
11. Design strategy takes into account new emerging ideas and trends (Stone 2010).

This framework was used in investigating the employment of design strategies in the case companies. It was used to assess whether design is treated as a strategic issue within a company and whether there is a coherent design strategy in action. We argue that these points are the key ones to consider when creating and maintaining an effective design strategy for the company.

Design strategy in case companies

Marimekko, Metso, and Sandvik cases will be briefly discussed in chapters 4-6 of this book. The interviews that were conducted in these companies are compared and contrasted with the issues that arise from the design management literature presented in this article. The aim of the case studies was to widen our understanding of how different organizations see, understand, and use design strategy, and how it is described within these organizations in general. Our objective was also to help the companies to understand where they stand in terms of using strategic knowledge in design. The focus of the interviews was on questions such as: Is there a design strategy in use? How is design strategy described? What kind of challenges could be found in implementing design strategy? How to promote the use of design on the strategic level? Hence, the study aimed to explore whether there is an actual design strategy in operation in the case companies and whether the design strategy is really strategic in nature.

The results of the study were connected with the wide review of Finnish design management practices performed by Noukka (2011), and also summarized in chapter 9 of this book. In all of the companies, design was found to be part of the new product development process. In some design-driven organizations, such as Marimekko, design was integrated more deeply into the organization as well as to other functions like branding and marketing.

The ways of communicating design strategy inside the organization also varied and were related to the organizations' overall culture. There were three primary approaches to design strategy communication found in the cases: "literal design strategy" (e.g. Metso), "verbal and visual design strategy" (Marimekko), and "learn-by-doing design strategy" (Sandvik). The literal approach emphasizes the role of design function as a communication tool between design and management. The Verbal and visual design strategy aims to decrease the level of bureaucracy in the strategy employment. The learning-by-doing method implies that there is no formal design strategy, design is rather utilized merely through project-by-project mentality.

When it comes to the strategic aspects of design, there were also many similarities found within the three case companies. Regardless of the cultural, organizational, and industry relevant diversity (differences in the nature of product and service offering, for example in the cases of Marimekko and Sandvik, naturally require different approaches to design strategy), the companies shared many similar challenges in terms of enhancing the strategic nature of design and improving the employment of the design strategy in the companies. We conclude this article by summarising the key challenges highlighted in the interviews, organised in three categories.

Challenge 1: Defining the terms and the contents of design and design strategy

As it was noted also in the literature overview, the practise of design is broad and it takes many forms within different organizations. The wide variety and incongruence of the terminology was also perceived in the interviews. In terms of design, for example, some interviewees predominantly addressed issues of engineering design while some others instantly talked about industrial design. Design strategy was also differently defined in the case companies. As an interesting note, employees of the same organization often referred to different aspects when talking about design strategy, and many referred to only some specific parts of the strategy in their description. This suggests that the interviewees were not properly informed about the strategy, its contents and implications. Quite often, design strategy, and the business strategy as well, were communicated in ways that did not particularly stresses the strategic nature of the issue. In all of the companies, design related issues were communicated (within the design function and NPD) mainly in an informal way and mostly in a verbal manner.

As a result of lacking explicit descriptions or their communication, some respondents were unsure if there is a design strategy in action, also in companies that had one. Others in turn were sure there is a design strategy in use, also in companies that did not have one, but did not know how to describe it. There were also persons that acknowledged that they were not receiving enough strategic information and therefore could not really state what the design strategy entails. However, interviewees could not clearly state what are the relevant issues that should be included in the design strategy, and what is the suitable format to communicate the strategic knowledge of design.

Challenge 2: Top-down communication and employment of the design strategy

The gap between strategy and its implementation seems to be a general challenge in companies (Lockwood & Walton 2008). That was obvious also in our case companies. The person in charge of creating the design strategy and maintaining (or trying to leverage) design on the strategic level was the one that normally had the broadest understanding of what design strategy is all about. The design strategy, or the way design was used, is often created by (and is the responsibility of) a manager or director on the higher management level. They may have an excellent understanding of the ways design can benefit their company, organization, and the particular business field but, as our interviews clearly stated, the processes of communicating strategic design knowledge down from the top to middle management and further to designers and NPD team are not used in the best possible manner. Some respondents stated that strategy seems to be clear for the creator but is not communicated well enough within the organization.

Regarding communication, some particular challenges were brought up in the interviews:

- There is a lack of sufficient verbal, written or visual presentation of the design strategy.
- The communication route is not managed or is broken, resulting from the lack of resources, mainly time. As a result, the design strategy wasn't explained and decoded to different organizational functions and individual job positions. For example, more possibilities to face-to-face meetings, coffee table discussions and other informal chats were missed. They were deemed important to spread the tacit knowledge of the design strategy.
- There appeared some confidentiality restrictions that hindered communication. Not all strategy issues could be shared within the organization and particularly not with outsourced designers.
- Design strategy was seen as a threat by some; a formal procedure that might restrict creativity. It was pointed out that a formal design strategy could block the organization's ability to create new innovative products and visions, if the strategy is not flexible enough and does not meet the objectives of different organizational sites, product lines, functions, and so forth.

Challenge 3: Acknowledging and enhancing the strategic nature of design

In fact, the final point above seemed to create a major challenge for the employment of design strategy. When interviewees were asked if there is, in the first place, a need for a more formal, written and documented design strategy, the response was often two-folded. Primarily, they acknowledged that there certainly is a need for the design strategy and that the current communication needs to be improved. But at the same time, too formal strategy description was in some interviews described as restricting the creativity; creation of innovative products and future visions. Two main reasons were mentioned for this. Firstly, interviewees in a company that has several product development centres saw that the organizational culture (due to the history of company acquisitions, for instance) can be so different that a too tight overall design strategy was seen as an obstacle. If the design strategy would aim to create streamlined appearances and guidelines for the different product portfolios these centres develop, it could restrict the creative work and in the worst case prevent the development of experimental future visions and product concepts. Secondly, the interviewees noted, because design is a function that requires a creative and open atmosphere to flourish, it is reasonable to keep the rational business side and the creative design side apart from each other. In other words, it was suggested that if design's role is to enhance the creativity within the organization, it should be protected from formal strategic thinking.

So these are clearly two sides of the coin. A strategy is yet needed, and it has to be clearly communicated within the organization, but it should remain flexible enough. In order to overcome this challenge and to enhance the strategic nature and position of design within the organization, there were some particular issues that were highlighted in the interviews:

- **Creating a design positive culture**: In general, it was agreed by many interviewees that if they want to enhance the importance of design within the organization, it must be embodied in the organizational culture. For example at Marimekko, some of the interviewees at the top management and CEO level noted that the creation of design-driven culture is a key challenge and, when successfully implemented, one of the most important tools for employing strategic design within the organisation.
- **Convincing the organization by communicating early victories**: According to several interviews, it is possible to gain trust and overcome the sometimes even offensive attitudes towards design over time. Whether the target is to convince shareholders, management level, or development team, a well-implemented communication plan is highly important. The design manager and others need to communicate early victories that have been achieved by utilizing design. These victories can be products, concepts, services, or happenings that have been successful from the design point of view.
- **Creating trust and understanding, letting the designers convince others with their skills**: Especially in those case companies where the organizational culture was described to be engineering-driven, the interviewees brought forward that it is important to let the industrial designers convince the R&D team with their designerly skills. This leads to a mutual respect that enhances the use of design.
- **Recruiting design messenger(s) to the organization**: Companies need to have a person, typically the design director or manager, who is clearly responsible for design management issues and has the necessary implementation power given by the higher management and board level. Also, in some of the interviews at the third case company it was mentioned that even if there wasn't a need for an in-house design team there should be a design facilitator or manager in the company. This person should have a deeper understanding of design so that he or she could be able to coordinate the design function. Moreover, convincing and finding a messenger(s) from the top management with a good understanding and belief in design, and placing a design representative on the top management (board) level, were seen as the means to increase the strategic significance of design in companies.

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“ Design is a highly valued asset within the entire organization, creating value for the shareholders of Marimekko.”

Case Marimekko

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Introduction

Marimekko, established in 1951, has for decades been one of the design flagships of Finland. The company designs and manufactures high-quality clothing, interior decoration textiles, bags and other accessories. Marimekko is particularly renowned for its original prints and colours. In total 9 interviewees were conducted at Marimekko including the CEO, Creative Director, Product Director, Product Line Managers (3 persons), Design Manager, Product Development Manager, and a Freelance Designer.

According to the interviews, when they are analysed in light of the literature presented in chapter 3 of the book, it can be stated that Marimekko has a design strategy in action and it is very much strategic in its nature. Some challenges were found related mostly to communication issues. This article concentrates on describing the current situation at Marimekko from a design management point of view and creating an overall image on how design strategy was described and utilized within and for the benefit of the organization. The case sample highlights some cultural aspects that have influenced design becoming the way of life within the organization and brings out the close connection between design and business functions.

Design-driven company

Since 2008, when Kirsti Paakkanen, the CEO of that time at Marimekko, left her place to the current CEO Mika Ihamuotila, the company has invested both money and strategy on product development and design substantially more than before. According to some of the interviewees, the company is more than ever in its 60-year-old history a design-driven consumer brand. The target for the company is to implement and integrate design to all its functions and bring design and business strategy closer together, as allies. It was brought up in the interviews that changes were needed when the new CEO era started. The Marimekko brand did not take full advantage of design, and design did no longer support and represent the true identity of Marimekko.

Also, the mentality and visual identity of the design heritage was to some extent underutilized. Therefore, to get the brand back to its original design roots, to clarify the image of design and to become an even more design-driven company there has been done changes towards it. At the moment, the re-organization process is still ongoing and the management has searched for the best business practises to apply at Marimekko. These changes affect mainly four aspects: design and the brand, product portfolio, distribution strategy and the organizational culture.

Towards more systematic and organized management

Management skills and methods have been under a shakeup and have been developed towards a more systematic and effective way that still will fit the organization and the culture of the creative house of Marimekko. During the past years all company functions were re-evaluated and re-organized to gain a modern and efficient but still not bureaucratic way of working that suited the original spirit of Marimekko.

Throughout the time, low hierarchy and relatively small degree of bureaucracy had been characteristics of Marimekko, and this approach has been embraced even more extensively in the recent years. The importance and the challenge of finding a successful way to combine the professional use of management practises and the creative corporate culture was recognized at the interviews of the top management level.

Design highly valued within the entire organization

The importance of design for the organization and the value it is given was stated as being self-evident by the respondents, regardless of their educational background and work experience. It was stated that the most significant strategic and tactical decisions are based on and influenced by the design function. According to the CEO, the current aim of the company is to conduct business in a more systematic and controlled way; hence, this must be executed in a manner that enables freedom to do the creative work. The shop environments, marketing material and appearance of products are based on and created around design.

One indicator to prove that design has a central role within the company was said to be the fact that it is mainly the design team that initiates new product development projects (NPD). However, it must be noted that sales, product managers, collaboration partners, as well as the CEO, were also mentioned as project initiators.

The value of design for the Marimekko brand seemed to be self-evident as well. According the interviews the Marimekko brand manifests itself through design and therefore it was said that they have to have a close connection with each other. The current product portfolio model is built to support the brand identity and a consistent visual identity of products. Marimekko portfolio consists of old classics and of seasonal products that together bring the cash flow in, and as an addition, there is a product group that has primal focus on keeping the brand attractive and its image fresh. These products have the potential to become the new classics but are initially designed more from the creative and adventurous point of view with intent to nurture and develop the versatile design language that Marimekko wants to create for its brand.

Design in strategic role within organization and for business

Design was described in the interviews to guide the organizational and business goals of Marimekko, to create a competitive advantage and to effect the brand image. One interviewee said that design is clearly on the strategic level in the organization since all actions and decision-making is reflected against the unique design work they do and that the brand manifests itself trough design.

Design was also described to be Marimekko's soul, above everything else. Brand and design are closely linked together. From the strategic point of view, Marimekko has in the past years invested a lot of effort to create an image of a lifestyle brand that has one distinctive and unite look. In the earlier days the focus was placed more on the designers and on the separate product lines: clothing, interior and bags. These product lines still exist but the coordination between the lines and season collections is improved to create a coherent look and identity for both design and the brand.

It was addressed that the NPD process is (and will be) based on teamwork between the product lines and other functions to enhance design to function. Therefore, the scheduling procedures not only between the lines but also between different functions are synchronized. In addition, for now on product lines share a same goal for the seasonal collection, which design function addresses quarterly for each season spring, summer, autumn and winter.

According to the interviews, product lines seemed to have a shared view on the design strategy and the way in which design is utilized, even though practical reasons require some differences for example in working methods. The great deal of similarity within the strategy viewpoint was not a surprise because pattern design is the key element of design and business strategy for all product lines according most of the interviewees. Even though these changes presented are already in execution, it was recognized within the interviews that there is a need for organizing the ways in which product lines and other functions are working together with design.

Close connection between design and business

Design has with no doubt a strategic role at Marimekko and it can be said that design supports and guides business functions, and vice versa. Business has been given the task to transform design to a profitable business for its shareholders. Furthermore, the business strategy and vision for the company "to be the world's most prestigious pattern designer and one of the most fascinating design brands" speaks on behalf of design's priority and position within Marimekko.

Even though the link between the business and the design strategy was seen as obvious on a general level by most of the respondents, there were some indicators within the responses that the practice is still finding its place and the actual link is rough. The company has adopted a long-term international growth strategy for business development, which has a focus on selected export markets. The ways to actualize what design can do for the benefit of, for example, the internalization plan, was not described to be clear.

There seemed to be a need for developing ways to bring the strategy to the operational level, actualize it in the daily work. This would hint that the company has not created a process to evaluate the consistency between the business and design strategy, although the actions towards enhanced scheduling and meeting processes between the product lines could be seen as one.

Design strategy in action

According to the Creative Director, design strategy at Marimekko consists of four different aspects:

1. Visual aspects such as colour, pattern and form.
2. Ways to enhance the design culture and attitude. Possibilities for interaction are encouraged and a right kind of atmosphere for design is enabled.
3. A plan for employing freelancer designers. Star designers, established designers and promising talents are outsourced to create a suitable design and designer mix.
4. A model for the product portfolio with three product group classics, season oriented and brand imaged. These all have a specific task of creating the identity of a lifestyle brand like was figured earlier on.

Design strategy communication through "verbal and visual" method

Despite of the changes towards a more managed organization, the communication of design strategy was characterized to be informal in its nature. It is based on verbal and visual communication, and it could almost be described to ground on a tacit knowledge sharing. As one interviewee stated: "The strategy is clear to me since I'm like a twin sister of the Creative Director, we discuss these issues all the time" (translated from Finnish).

When interviewees were asked would there be a need for a formal written document, some replied that any written documents are not part of the organization culture. Still it was emphasized in the interviews that communication should be improved. Most of the interviewees believed that the strategy was not clear to the lower level of the organization. Also on the management level, there were comments that referred to the fact that information about design strategy was communicated piece by piece, and there were some challenges in creating a coherent picture of it.

Moreover, some of the interviewees were not able to describe the current design strategy of Marimekko. For some it wasn't clear that there is a strategy in the first place. These opinions might tell more about of the culture aspect in the organization, not necessarily referring to a lack of knowledge. Since information flow is informal, it might cause the interviewees not to recognize the knowledge they possess as strategic in nature. There was a real need identified to more strongly communicate about the strategic design issues as well as business goals and visions. Not everybody had a chance to a constant conversation and discourse with the Creative Director.

The reasons for communication challenges were believed to relate to the overall changes that are on-going in the organization as well as to the general lack of time. It was seen by some that if communication would be improved the information gained would be used for the benefit to enhance and improve their daily design work. The current situation was

described to create lack of trust within the organization. Even though there have been efforts to enhance communication flow by developing synchronized schedules and meeting procedures, more actions were welcomed. One of the interviewees highlighted that developing to enhance the open communication could be understood as a gesture of trust and respect given from the top management.

Creation of the influential role and strategic importance of design

The heritage of the company was a fertile ground for design to grow; its roots are in the history and it has an innate nature using design as a strategic factor. But the importance of support given from the current board of directors and the management should not be underestimated. It was the Board and the current CEO who in 2010 saw the importance of designate the position of Creative Director to one person and to establish a place in the company's Management Group. The empowerment of the Creative Director was in the interviews seen to be a relevant move in a strategic sense. The place offered in the Management Group seemed to be a valued factor for the Creative Director. She described the interaction with other members of the Management Group enhancing and stimulating the strategic use of design. The Creative Director has the responsibility to create the design strategy, and report to the CEO. The operationalization, the implementation, of the strategy is divided and managed under each of the product lines by product line managers and design managers.

Already on the top management and CEO level, culture was recognized both as a challenge and an important tool to infuse design into the organisation. Since 1951, when Marimekko was established, the company has based its business on design, creativity and knowledge of pattern printing on cotton textiles. The design culture has been strong from the first day of the company. When respondents were asked to describe the organizational culture, these three aspects were still considered essential. Regardless of the benefit of the existing design heritage, it was stated in one of the interviews that it should be remembered that these types of cultural changes that has been described take time to happen also in a design driven brand.

Conclusion: "Eleven strategic points of design"

To sum up the case, table 1 highlights the eleven design strategy points, presented in chapter 3 of this book, applied to the case of Marimekko. When comparing the strategic issues perceived at Marimekko to the statements from literature, it can be easily agreed that design has a strategic role and position in the company. There is an obvious interplay between design and business, and the goal for business is to support design, not only vice versa. It is not too much said to argue that design has great possibilities to effect on the organizational goal-setting and direction of Marimekko. Under the current CEO, it seems that design is a highly valued asset within the entire organization, creating value for the shareholders of Marimekko.

"Eleven strategic points of design" at Marimekko	
Argument from literature	Observation at Marimekko
1. Design strategy is the interplay with design and business strategy.	Design and business strategies have a link to each other, business is there to support design function and strategy, not only vice versa.
Challenges:	Practical knowledge of implementation possibilities was needed.
2. Design helps organizations to meet challenges in different market areas.	Design and sales regions have regular meetings. Trust was placed in the designer's ability to observe the world.
Challenges:	It was recognized that design could help the organization to meet challenges in different market areas (internalization is the one of the key business strategy components) but the methods and tools are not in action yet.
3. Design strategy is a plan that helps to diffuse design throughout the company.	To maintain a right kind of atmosphere for design is the goal.
Challenges:	Communication is extremely informal and verbal in its nature.

4. The effective use of design can be an enabler and a source of competitive advantage and position and thus gain strategic importance. Design strategy should clarify the differentiation opportunities.	Pattern design was seen as an effective and a main source of competitive edge and an advantage when reaching higher and wider positions in a global market place. With design the prizing level can be jacked up.
Challenges:	No significant ones.
5. Design has the tools to visualize and communicate the business strategy and corporate objectives and thus make the vision and values visible externally as well as within the organization.	Design visualizes strategy and objectives trough collection drawings and prototypes within the company. Design is involved in the external communication since it's the visible manifestation of the brand identity trough products, events, shop environments etc.
Challenges:	No significant ones.
6. Design needs to be on the board level of the company and thus have the commitment from top management.	Design has the empowerment from the Board of Directors since Creative Director is the member of the Management Group.
Challenges:	No significant ones.
7. Design must be seen as a catalyst or tool for change.	Most of the NPD ideas are initially evolved from the design team. The top management level encourages risk taking by allowing developing new product categories and leaving a certain percentage of the portfolio for conceptual products.
Challenges:	No significant ones.
8. Design affects the overall goal and direction of the organization	Design affects the overall goal and direction of the organization, which can be seen from the resemblance of and link between the business and design strategies.
Challenges:	No significant ones.
9. Design is seen as a part of the organization culture and the way of life.	Design and creativity were described to be the way of life.
Challenges:	There is a need to reduce the amount of comments given for Design (during NPD) within the organization.
10. Design tools can solve and interpret client or end-user needs, which brings new insights into strategic options.	Design can help to understand different cultures and needs of various age groups in different market segments.
Challenges:	The full capacity of design to solve and interpret client, market or end-user needs is not utilized. User-centric methods were not applied.
11. Design strategy takes new emerging ideas and trends into account.	The benefit of using freelancer-designers brings new and fresh insights to the company. The planning of a new season collection starts with a kick-off meeting of several designers. The management level decision to include certain percentage of experimental products to the product offering enhances the possibility for innovations and success.
Challenges:	No significant ones.

Table 1: Design strategy and design on the strategic level in Case Marimekko. Arguments are adopted from the literature overview, see chapter 3 in this book.

“ The aim of the design strategy is to guide the way by which the organization can take the best advantage of design.”

Case Metso

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Introduction

Metso is a global corporation that supplies technology and services to customers in the process industries including mining, construction, pulp and paper, power, and oil and gas. In the EDEST project, we investigated the employment of design strategies at Metso Paper Inc. that produces pulp and paper machines (and services) in Järvenpää, Finland. At Metso Paper, the study involved in total 4 interviewees: Chief of Industrial Design, Product Development Engineers (2 persons), and Industrial Designer.

According to these four interviews conducted in June 2011 at the product development unit and design centre of Metso Paper, it was concluded that Metso Paper has a design strategy in action. There are both formal and informal ways of communicating strategic issues in use. As an example of the former, the company has developed a formal strategy document that is primarily targeted at Metso management, R&D professionals, and product owners. The latter refers to face-to-face meetings with development teams and designers. In this article, we briefly explore the current state of design management at Metso Paper; how design strategy was described and utilized within (and for the benefit of) the organization.

Business context of Metso Paper

Metso Paper has a vision to be the technology and market leader of its sector, and able to effectively respond to the emerging changes of the market. The long-term business strategy aims at a profitable business and growth by enhancing service businesses, creating new process technologies, decreasing costs, regarding environmental issues, and maintaining close relationships with global customers. From the beginning of 21st century, improving the knowledge of the global customers and market areas has been one of the key success factors within this segment.

The paper segment competes at a B2B market that is formed by well-established businesses of competitors and rather conservative clients. The investments in new machinery (not to mention entire factories) are costly, and therefore, clients are lacking the will to take risks, even when the benefits of a new product or solution would be quite obvious and well presented. This is something that industrial design needs to take into account when participating in the NPD projects. The company is a true multinational placing a lot of importance on product development and high tech products, and as a consequence, the corporate culture is seen as rather conservative, technology-oriented, and risk-averse.

There exists high complexity in the systems and products manufactured. To reduce the complexity, Metso Corporation has a shared goal to unify business segments, product groups and products in order to enhance more coherent offerings and be able to create streamlined, distinct and comprehendible solutions for clients. This goal also sets the ground for the design strategy of Metso Paper. In overall, the importance of maintaining a strong link between the business strategy and design strategy was well understood. Some of the respondents argued that the main value of design results from the customer-oriented approach and improved manufacturing performance, and further, increased revenues that this generates. These are issues that are embodied in the business strategy as well. There also appeared a clear will to put more effort on the customer and market research through design. “Designed” products had responded much better to customer needs when compared to the “non-designed” ones.

Design strategy and culture at Metso Paper

The current design strategy of Metso Paper, called “the industrial design guidelines”, was established a few years ago. It was created partly on the grounds of the strategy from the mid 90’s by the design team in collaboration with the R&D function and business management. According to the strategy, the goal for industrial design is to generate added value for the client, improve customer understanding, and enhance competitiveness by developing solutions that lower manufacturing costs. When implemented, these values create consistency between business and design strategy. From the design management point of view, the aim of the strategy is to guide the way by which the organization can take the best advantage of design, and to highlight the relevance of joint development work that reaches beyond usual organizational borders.

Metso Paper design strategy is well formed in a literal way. According to the interviews, design strategy is predominantly created for the benefit of the higher management level and not so much targeted to product development teams that implement industrial design. Design had set its own policies for industrial design use, specifying the roles and responsibilities with regard to the other functions on a general level. And this role is not always understood outside design. There appeared critical attitudes towards design having any kind of a strategic role in the organization. Some respondents noted that design is like any other competence within the company; its strategic role should not be emphasized. This seemed to highlight the lack the appreciation for other potential sources of differentiation, innovation or strategic competitive advantage than the ‘regular engineering work’, typical for such technology-driven organizations.

The communication process of the design strategy for the design team was portrayed as an informal face-to-face approach. This was possible since the team itself had only a few people. The absence of more formal communication did not seem to be any challenge for the design function. The official strategy document was seen, as mentioned, as a communication method on the management level, not really as an operational tool. In general, the ability of understanding how different functions can work together and what is the mutual impact on the organization were deemed more important as reading the formal strategy document.

Design within engineering-driven environment

Despite some critical notes, the general impression from the interviews was that design is a valued skill within the organization, also by the people outside the design function. The respondents with an engineering background associated design mainly with the appearance and the usability of the product. Whereas designers saw that there could be potential for much wider use of design within NPD projects than currently. But the lack of resources was seen as the key hinder. Some interviewees highlighted that the small number of designers employed by the company, when compared to the number of engineers, reveals the true appreciation and strategic weight given to design. Moreover, the position of design within the organization hierarchy was also seen as a sign of lower rank. Due to the scarceness of design resources, design takes part only in the most significant NPD projects and is often involved in the process only at a later stage, with the focus on surface styling.

The R&D function is usually the main source of NPD projects. Design-driven development was characterized as having a relation to projects that mostly require product improvements. At Metso Paper, innovations are mainly seen to emerge from technological advancements; design is not really seen as a potential source for new ideas and innovations.

Designers, however, saw themselves as challengers of extant conceptions, new ways of working, and innovative product designs. And yet to some degree, design was referred to have the competence to implement the organizational vision for customer-orientation, usability, and cost-effectiveness in NPD projects. Therefore, it was seen that design could be more widely utilized for the benefit of different functions within the organization. The design team had already been more actively involved in different marketing projects, service development projects, innovation process development, and development of in-house functions. Interestingly, in many cases the involvement of a designer in such projects was based mainly on personal relationships. The further involvement of the design team in other projects outside product development was then more limited, again, due to the resource scarcity.

Nonetheless, the design management at Metso Paper aims to enhance a more design-pro culture within the company, to supplement the technology-orientation with business and design thinking. Design strategy is very visible in the end products, but there appears lots of work to be conducted, for example, in terms of streamlining the visual brand identity, products and product lines. But greater involvement requires effective and delicate communication of the value of design. It was mentioned in the interviews that even small changes, for example, towards better streamlining, need careful consideration, communication, and convincing work towards other in-house partners. The rigid nature of the corporate culture that is geared towards technology and technological innovations is seen as the main challenge for design at Metso Paper.

Conclusion: "Eleven strategic points of design"

In conclusion, design has a strategic role within the organization but the emphasis is on the operative part. The strategic work of design is mainly connected to creating material and input for future visions, scenario building, and concept creation. Table 1 highlights the eleven strategic points of design drawn from the design management literature and presented in chapter 3 of this book. The table also summarises the main findings of the interviews in the light of these strategic issues.

In sum, it could be described that in Metso Paper, design supports business strategy but the support from business strategy to design is not reciprocated. The general impression is that there appears high potential within the product development unit and the design team, through which even drastic innovations could be achieved, but this would require more risk-taking in the organization and by the management. In order to be truly innovative, one should also take risks and allow failures.

"Eleven strategic points of design" at Metso Paper	
Argument from literature	Observation at Metso Paper
1. Design strategy is the interplay with design and business strategy.	The design strategy and business strategy have a shared contact surface: client needs, cost effectiveness.
Challenges:	There was no mention of business strategy taking into account the strategic possibilities that design can offer.
2. Design helps organizations to meet challenges in different market areas.	As part of the design strategy there is a goal for design to help the organization to meet challenges in new market areas.
Challenges:	How can you help the organization if design is not appreciated as a potential solution for understanding different markets and customers better? Limited resources, the design team does not really have time for market research at the moment.

3. Design strategy is a plan that helps to diffuse design throughout the company.	The design strategy emphasizes the role of design to promote a joint development model in the organization and this way diffuse design throughout the company. The design strategy helps to communicate to the top management.
Challenges:	The design resources are scarce. Conservative, technology-driven culture is seen as an obstacle.
4. The effective use of design can be an enabler and a source of competitive advantage and position and thus gain strategic importance. Design strategy should clarify the differentiation opportunities.	It was mentioned that B2B customers have appreciated the high tech and designed- look of Metso Paper's products, and there is a company wide strategy to transform complex systems more user-friendly, which is a key success factor.
Challenges:	Still needs more work on streamlining products and product lines. Design often taken in only at the later phases of a project to design the exterior.
5. Design has the tools to visualize and communicate the business strategy and corporate objectives and thus make the vision and values visible externally as well as within the organization.	The design strategy guides how to manage design and the design vision. Design has a strategic role and the tools to visualize and communicate the business strategy and corporate objectives by creating future visions, scenarios, concept families and analysis of user needs.
Challenges:	Design not mentioned in the internet pages of Metso Paper as one of the key elements (writers remark, issue not brought up in the interviews).
6. Design needs to be on the board level of the company and thus have the commitment from top management.	Commitment from the corporation was strongest during the Muotoilu 2005! Program. Design was integrated to the innovation process of the corporation 2003-2004, but it needs to be reformulated as is not successful currently in unifying the product and product lines.
Challenges:	Design is not on the board level, and the highest title for management is the Chief of design. Thus the organizational level is not high.
7. Design must be seen as a catalyst or tool for change.	Design has a role to create visual presentations of future visions but since the organization is technology-driven, NPD projects are initiated mostly from that perspective.
Challenges:	NPD projects are initiated by R&D, not specially by design. Design participates only to a small percentage of NPD projects.
8. Design effects the overall goal and direction of the organization	The design team provides future scenarios, but it was not mentioned how much impact those have on the direction and strategies of the organization as a whole.
Challenges:	Design does not seem to be in a truly strategic and impactful role at the moment.
9. Design is seen as a part of the organization culture and the way of life.	Design is one of the key elements for the organization but the culture was described as technocratic.
Challenges:	The culture was seen conservative, engineering-oriented, no mention of design being part of it. Attempts to instil design thinking, but challenging because of overall company culture, (middle) management lack of risk taking and lack of resources.
10. Design tools can solve and interpret client or end-user needs, which brings new insights into strategic options.	The goal for design is to generate added value for the client and improve customer understanding.
Challenges:	The user-centric approach of design is underused.
11. Design strategy takes into account new emerging ideas and trends.	It was mentioned as one of the important tasks for the design management.
Challenges:	Resource constraints prevent wide utilization of this design capability.

Table 1. Design strategy and design on the strategic level in Case Metso Paper. Arguments are adopted from the literature overview, see chapter 3 in this book.

“ Do we all understand the design the same way? I don’t think we do.”

Case Sandvik

Daniel Graff
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Toni-Matti Karjalainen

Introduction

Sandvik is a global high technology and engineering group that has representation in more than 130 countries. In EDEST, the focus was on the Sandvik Mining and Construction (SMC) division and its sites in Turku and Tampere, Finland. SMC offers the world's widest range of equipment for rock drilling, rock excavation, processing, demolition and bulk-materials handling.

The aim of the Sandvik case was twofold. The first objective was to provide Sandvik with an overview of their current level of knowledge and practice of design management and strategy. And secondly, to deliver actual recommendations on how design could be further strengthens Sandvik's business model. For this purpose we reviewed the current literature and interviewed employees in all participating corporations. Eights interviewees were conducted at SMC: Global Technology Platforms Manager, Global Product Line Manager (3 persons), Engineering Manager (2 persons), and freelance Industrial Designer from an outsourced design office.

The Sandvik Mining and Construction (SMC) division has employed industrial design since the 90's. The first far-reaching experiment of using industrial design in the new product development (NPD) was in the Ranger project, a surface drilling machine. In some of the interviews it was estimated to be one of the most successful product in the company's history. Today the project is often used as the prime example of the potential benefit design can bring to NPD. Some of the design processes developed throughout the Ranger project have been adopted in later NPD projects. Yet, the existing project model that incorporated design in Sandvik Tamrock site in Tampere has not been operationally standardized in other NPD projects within Sandvik. Based on the interviews, this is partly due to the organizational culture, organizational structure (different development centres) and differences among the product offerings. And in the end, it's like one of the interviewees put it: "Do we all understand the design the same way? I don't think we do."

In the following section we will discuss the main findings of our research. First, we will discuss the strong engineering culture within SMC. This engineering culture affects the understanding of design, which we will discuss in the second part. SMC's employees do not have a coherent perception of design and its value. Next, we will examine how this various views on design influence the operationalization of design. Design in SMC is used inconsistently on project-by-project base. This operationalization of design provides some future opportunities within SMC. These opportunities are discussed in the last chapter. The article is concluded by application of the case into the EDEST framework that highlights the key strategic points of design

Engineering-driven culture

The organizational culture at the SMC seems to be highly engineering-driven. This can be perceived throughout all interviews. For example, one employee answered to a question whether the organization values design: "I don't think we do, because it's an engineer thing, rather than design." Similar answer pattern was discovered throughout the interviews. Such a strong culture can have many positive effects, yet it can cause challenges in collaboration across disciplines, in particular if engineering is involved. One of these challenges can be observed in the Ranger development. In particular during the start of the Ranger project the team experienced some collaboration challenges between the in-house engineers and the outsourced industrial design agency. The engineers felt that the designer took away responsibilities of engineering. The engineers thought that the designer was more an addition to the project instead of an equal team member. However, this attitude shifted somewhat during the project. Now a day design is accepted moderately by some parts of the SMC. This being said, design is not yet part of SMC's culture.

The strong engineering culture is also reflected in the description of the values and key success factors for the SMC in the interviewees. Also the current NPD process structure is reflecting an engineering thought world. This being said the culture of the SMC cannot be described as negative towards design. The interviewees described that the development projects that used industrial design have proven the added value of design. The experience of collaboration between engineers and designers has changed the attitudes of engineers to a more positive direction and has led to an appreciation of design. In one of the interviews it was stated that industrial designers are nowadays regarded as highly skilful professionals in the eyes of the R&D team. This change is particular strong in the R&D department. Like one interviewee commented: "We couldn't imagine of developing any products without industrial design."

In terms of different locations it was brought forward that the operational culture might not be so different between these sites but since the products differ in their complexity and with their application (underground mining vs. construction). An interviewee commented on the strategies of the sites: "I guess in essence they are different, 'cause we're making different products, but there should be a more globalised view."

Perception of design

The strong engineering culture clearly influences the understanding and perception of design at SMC. The interviews showed that there is not a single understanding of what design is. Often participants started to talk about engineering design and only after directed towards industrial design the interviewees recognized different meanings of design. According to the interviewees, the core benefits of design in NPD projects include:

- building unique products,
- creating value for both customer and the company,
- increasing product sales,
- improving product safety,
- achieving a lower cost structure,
- enhancing manufacturing ability,

- building a streamlined product interface, product look and product family appearance,
- enhancing modularization capability,
- upgrading energy efficiency,
- making appropriate material choices,
- creating easy to use products,
- constructing easy to maintain ergonomics (also for interface design),
- improving safety factors,
- creating a convincing concept and future visualizations,
- building high quality products, and
- modifying products to different market areas.

Although the list is long, none of the interviewees mentioned all these benefits. In fact, there was little overlapping in terms of benefits mentioned by individual interviewees. This suggests that there exist quite different perceptions of design in the organization. In particular, Turku and Tampere sites appeared to have surprisingly different perceptions of design. This is partly due to the separated processes of the sites, as noted by one interviewee in Tampere: "I don't get involved in anything, what they do in Turku, and Turku doesn't get involved in what we're doing here."

Several respondents saw the main benefit of design to be related primarily to visual aspects. These aspects were related to branding guidelines, streamlining the product portfolio, visualizing concepts and future visions and in general to product aesthetics, such as achieving a robust outlook. Moreover, many interviewees highlighted that these benefits were mainly achieved as a result of a multidisciplinary teamwork, not by the designer only.

Some of the interviewees' answers highlighted the challenging attitude towards design. "Machines that are used underground are not "designed". The reason for this is that the customer won't see the benefit of designing it because it's placed in a mine under the ground for all of its lifetime. "Why pay extra for something that is out of sight", commented one respondent. These kinds of comments reinforced the view that design is seen mainly as a visual resource, not so much as an enhancing factor for the product.

Design strategy

For some interviewees, the design strategy of SMC was seen as more or less the same as Sandvik's brand strategy; the manual or guideline for colour, and font and logo usage. For others, the design strategy had more to do with the streamlining of the product portfolio. Again, these answers mirror the inconsistent understanding of design within the SMC. If coherent understanding is missing of what design is and what benefit it can bring, there cannot be one single understanding of the strategy either. Consequently, design has not been leveraged on the strategic level of the SMC.

According to the interviews there was no designer involved in the creation of the organizational vision. However, there is a specific department, which concentrates on future trends in the mining industry. They determine what type of product visions should be created. The department then uses the outsourced design agency to illustrate and communicate the vision to top management. The outsourced designers also create material for communication and decision-making purposes.

The level of commitment from the top management was stated to vary between the SMC sites and within the entire Sandvik Group. In general, it was discussed that the SMC management is seeing primarily the visual aspects of design. This is, again, strongly affected by the fact that the current SMC had been formed from a series of company acquisitions over the years, and that the Group operates through in several countries. All product development centres, like surface drilling and underground mining, have individual product portfolios that have different design needs. In the interviews it is argued that this makes it difficult for the management of the entire product portfolio to create a coherent design strategy. One of the interviewees remarked that a design strategy would require a top down approach.

Yet, design strategy supports the strategic goals of the SMC's business strategy for example trough product modularization. According to one interviewee, the surface drills have a design strategy with the focus on modularization. The effective use of design is understood by some as an enabler and a source of competitive advantage. The viewpoint is not, however, shared by the entire SMC segment or the Sandvik group. This is partly due to the differences of organizational culture.

We can summarize that the SMC has no design strategy partly due to the lack of a coherent understanding of what design is and how it can benefit Sandvik. The strategic importance of design is not similarly understood or generally shared within the organization. In addition, top management seem not to support the wider perception of design. Design is more extensively used only on the project level.

Use of design in projects

Within Sandvik, project manager is in charge of the design process in NPD and the involvement of design on the project level. The project managers' background often lacks design training, as is the case with many other team members involved in the NPD process. If the project team decides upon the utilization of design, the design assignment is always outsourced. In overall, however, the approach of outsourced design is seen as a positive issue. According to interviews, the outsourced design allows flexibility and ensures creativity of the designers.

This fact illustrates a particular challenge of the SMC. Because of the lack of consistent knowledge about design, as described earlier, design is employed in various ways. The need for utilizing design is decided on a project-by-project base, and a formalized design process is lacking. This leads to inefficiencies, partly because learning is not shared on the SMC level, which can further lead to process losts. For example, the guidelines of writing a design brief need to be built up again and again.

One of the interviewees explained that he created a "design manual" in the 90's, but when the economical recession at Finland started at the same time, it was put on hold. Recently, the development work has started again, but the manual is not yet on

the implementation phase. So there are currently no explicit guidelines on how to employ design in NPD processes and teams. And obviously, there is currently no person in the SMC with responsibility to create a guideline for the strategic use design.

There are also no formal standards for the support processes. Design is controlled and co-ordinated by individual experiences. It is evaluated mainly through aesthetics in NPD meetings, and design is further developed only through some individuals. This has several potential affects. Design could be used too much (e.g. too much money spend, money spend wrongly) or too little (e.g. money saved on the design work which results in higher costs later on), depending on the project. Experiences of the projects are not systematically shared, which reduces the potential to introduce design throughout Sandvik.

Building initial design capabilities

The SMC business strategy focuses on the customer and services. This is reflected in the NPD project structure that is described to begin with a customer need. As stated by one of the interviewee: “It’s building a good brand. It’s building a good brand with added value for customer, and we don’t do anything that doesn’t add value or the customer has got no use for.” It was also brought up that design has a role in creating value for the customer when it is involved for example in the modularization and standardisation of platforms.

Even when there does not exist any SMC wide targets to identify and unify the use of design, there are some individual projects in action. For example modularization has been lately taken into closer consideration by one of the product units at SMC. The unit has started to compose material regarding design related issues to benefit the product portfolio of their unit.

According to the interviews, design supports the business strategy of the SMC. Due to the nature of the current business strategy, design can support to achieve its goals. At the moment, design supports the business strategy by streamlining product offering through modularization, standardisation and creating a distinctive visual product identity. Also, the user-centred approaches of design such as human interface and ergonomics benefits and add value to all customer groups and therefore enhance the business. However, if the strategy is to serve the customer’s needs, as found out in the study, the SMC should consider building internal design capabilities. A designer can assist various functions to better understand the underlying needs of a customer.

Conclusion: “Eleven strategic points of design”

To sum up, there remain many challenges in a more profound employment of design in the processes of Sandvik. According to the interviews, a formal SMC wide design strategy would be a welcomed improvement, as long as it is flexible enough to cover different needs of product portfolios. It was acknowledged that clear directions for – and a deeper understanding of – the utilization of design, as well as its support to business strategy, should be developed within SMC. Table 1 highlights the key design strategy issues in the Sandvik case.

"Eleven strategic points of design" at Sandvik	
Argument from literature	Observation at Sandvik
Design strategy is the interplay with design and business strategy.	Design strategy supports the strategic goals of SMC business strategy quite well mainly through product modularization.
Challenges	No mentions during the interviews that business strategy takes into account the strategic possibilities that design can offer.
Design helps organizations to meet challenges in different market areas.	The need to create directions of how to utilize design as a tool, and gain a deeper understanding of different cultures and market areas was recognized. Design helps to meet challenges in different market areas by creating visualizations of products that are modified and transformed to suite different market areas.
Challenges	There isn't enough understanding of cultural aspects and needs of new market areas.
Design strategy is a plan that helps to diffuse design throughout the company.	There isn't a SMC wide design strategy created but Surface drills have one with the focus on modularization.
Challenges	Design has been utilized on a project-by-project base without any specific manuals to utilize it. There isn't a design management level or a facilitator for design related issues. Design resources are outsourced.
The effective use of design can be an enabler and a source of competitive advantage and thus gain strategic importance. Design strategy should clarify the differentiation opportunities.	The effective use of design is understood by some individuals as an enabler and a source of competitive advantage. The viewpoint is not shared by entire SMC segment or the Sandvik group due to the differences of culture (country, PDC centre, background in engineering) and thus the strategic importance of design is not generally understood or shared.
Challenges	Currently competitors are creating much more streamlined product looks. Although the SMC was once ahead of its competitors when it comes to utilizing design in product development.
Design has the tools to visualize and communicate the business strategy and corporate objectives and thus make the vision and values visible externally as well as within the organization.	One of the tasks for industrial design is to create internal decision-making material. Visualizations enhance the communication (and feedback) of long-term strategic issues and product strategy visions.
Challenges	The product portfolio of SMC is wide; therefore streamlining the appearance of products and total offerings is difficult.
Design needs to be on the board level of the company and thus have the commitment from top management.	The level of commitment from the top management varies between the sites and the segment. At Tampere design has the support of management and at Turku the product line management was described to value design.
Challenges	Design is not on the board level, and the SMC management is not open for design, sees the value in visual aspects.
Design must be seen as a catalyst or tool for change.	Design is utilized project-by-project base and therefore its role varies. In some NPD projects, such as at Surface drills, design participates in the concept creation of products.
Challenges	Design is mainly used to improve visual aspects of products, not to guide the whole SMC.
Design effects the overall goal and direction of the organization	No mention of this type of link.
Challenges	-
Design is seen as a part of the organization culture and the way of life.	Design has not been seen as a part of the organization culture in the sense of whole Sandvik or SMC but there is a design culture at Tampere centre. The culture at Tampere site encourages using design in every NPD projects of surface drills.
Challenges	Organizational cultures within segments and Product development centres differ because of products and the organizational history. The culture was described as engineering-driven.
Design tools can solve and interpret client or end-user needs, which brings new insights into strategic options.	The goal of design is to generate added value through modularization and by streamlining the design philosophy to product looks and human interface issues.
Challenges	Cultural and market area issues are not taken into full consideration.
Design strategy takes into account new emerging ideas and trends.	There is an Offering Development Team that concentrates on searching knowledge on where the mining industry is going but in some cases outsourced design offices bring new insights and visualize the future plans.
Challenges	Design is mainly utilized to improve product aesthetics. NPD projects are initiated by project management, not by design.

Table 1: Design strategy and design on the strategic level in Case Sandvik. Arguments are adopted from the literature overview, see chapter 2 in this book.

“ In diverse projects, team members must possess strong functional expertise and team working skills, as well as knowledge in more than one function to be able to overcome cultural world thoughts and social categorization.”

Best practices in cross-functional new product development teams:
Review and analysis of literature

Daniel Graff

Introduction

In the last 20 years we saw a growing trend towards the utilization of cross-functional new product development teams (CF-NPDT) in multinational enterprises (MNEs) (McDonough 2000). In fact, 97 percent of MNEs choose functional diverse teams to develop new products (McDonough, 2000). Through the use of these CF-NPDTs MNEs are trying to respond to an ever-increasing competitive environment. This fierce competition requires from MNEs, among other things, to quickly develop highly innovative products and services (Takeuchi & Nonaka 1986, Cooper & Kleinschmidt 1994, Kozlowski et al. 1999). To do so the MNEs are employing CF-NPDTs (McDonough 2000). According to theory, the higher the level of functional diversity in NPD teams is, the more skills and knowledge are available to them. The increased viewpoints are expected to enable NPD teams to access more information and consequently improve the team's outcome (Bunduchi 2009, Nakata & Im 2010, Slotegraaf & Atuahene-Gima 2011). Yet, companies are struggling with the employment of functional diversity in NPD teams. Research studies of CF-NPDTs show positive, as well as negative outcomes (Ancona & Caldwell 1992, Dougherty 1992).

The purpose of this literature review is to identify and provide an overview of the barriers and enablers of CF-NPDTs. To do so we chose to start the search of relevant articles through the electronic databases of Business Source Premier (EBSCO) and ABI/ INFORM ProQuest.

The main benefit of EBSCO and ABI/ INFORM ProQuest is that these search engines cover journals from various disciplines. New product development is a multidisciplinary research area, and it would have been easy for the authors to miss an important journal by focusing on a certain academic discipline. We examined the electronic databases with relevant keywords related to functional diversity and new product development. The search resulted in over 100 articles from the last 20 years of functional diversity in NPD teams. By reading the abstracts and introductions of the journal articles the authors eliminated and added articles. Articles were eliminated from the list, if the focus or context was not CF-NPDTs (e.g. focus on functional integration, which level of analyzes is the department). On the other hand article previously not found through Business Source Premier (EBSCO) and ABI/INFORM ProQuest, but cited in articles were included in this literature review. This led to the final outcome of 54 articles dealing with CF-NPDTs. However, to keep this article brief, we decided to refer only to the most important articles and the main findings.

Although there are many ways on structuring this literature review, we chose to first highlight the direct effects of CF-NPDTs on the performance outcome. In this part we will identify and discuss journal articles, which focus on the degree of functional diversity in NPDTs and its effects. The review will show that the effects of functional diversity in NPDTs are inconsistent. We then discuss what the potential challenges of CF-NPDTs. The main barriers of CF-NPDTs are the different cultural thought worlds, social categorization, and similarity/ attraction paradigm. After this discussion, we will have a look on how companies can potentially overcome these barriers. Within this part we will analyze factors related to organizational and team structure, as well as leadership.

Before we can start we have to define teams. Teams have been defined in many ways (Cohen & Bailey 1997). Cohen and Bailey defined a team as (Cohen & Bailey 1997, 241) "a collection of individuals who are interdependent in their tasks, who share responsibility for outcomes, who see themselves and who are seen by others as an intact social entity embedded in one or more larger social systems (for example, business unit or the corporation), and who manage their relationships across organizational boundaries". There are many different types of teams (work teams, parallel teams, project teams, or management teams) (Cohen & Bailey 1997). This article will focus on CF- NPDTs, which consist of members from several functions such as Marketing and Research & Development (Olson et al. 1995).

Direct impact of CF-NPDTs on performance

Although most researchers hypothesize a positive relationship between CF-NPDTs and performance outcome, the empirical findings show both, negative and positive effects of functional diversity (Haon et al. 2009). These inconsistent results might be explained by the variation of conceptualizations and measurements of functional diversity used by researchers, but also affected by contextual factors which are not controlled for (Haon et al. 2009). Many studies in NPD conceptualize individuals as mono-knowledgeable (Park et al. 2009). Through this conceptualization, the authors assume that the team members are specialized and knowledgeable only in one function (Park et al. 2009). This conceptualization has been used by various researchers (e.g. Cooper & Kleinschmidt 1994, Ancona & Caldwell 1992, Henke et al. 1993, Lovelace et al. 2001, Sethi et al. 2001).

Within this conceptualization researchers often rely on the current position of the individual team member for operationalization. The researchers then calculate the degree of variety through a diversity index: e.g. Blau's heterogeneous index (Blau 1977) and Teachman's diversity measure (Teachman 1980). Within the studies using this conceptualization the effects of functional diversity are inconsistent. Some researchers find no effects on innovativeness of a product (Sethi et al. 2001), some find that diversity has a negative effect on perceived product innovation (Ancona & Caldwell 1992) and others discover no significant correlation towards innovativeness (Lovelace et al. 2001).

More recently, researchers investigated the effects of multi-knowledge individuals in CF-NPDTs (Park et al. 2009). The authors found that the degree of multi-knowledge individuals in CF-NPDTs had a direct effect on time efficiency and an indirect positive effect through information sharing on product innovativeness. However, until today there are only a very limited number of

studies in CF-NPDTs that are focusing on multi-knowledge individuals on team level (Park et al. 2009). In the management literature, Bunderson and Sutcliffe (2002) found that the proportion of multi-knowledge individuals in functional diverse teams has positive effects on information sharing, which in turn is positive related to performance. Other conceptualization of multi-knowledge individuals has been earlier arrived in managerial press. Iansiti (1993) refers to this multi-knowledge individual as "T-Shaped" professionals, whereas Leonard-Barton (1995) crafted the term "A-Shaped". "T-Shaped" professionals have a strong expertise in one function, but also knowledge of another function (Iansiti 1993). On the other hand "A-Shaped" individuals have educational and work experience in more than one discipline (Leonard-Barton 1995). One discussion among multi-knowledge individuals is the operationalization of this concept. The question is, if one should only look in to the working background of the individual or also include his or her education (Park et al. 2009). So far, we are not able to say if there is a difference and because of this the operationalization of multi-individuals are inconsistent, which makes it difficult to compare the research outcomes.

Besides the various conceptualizations of individuals in research, scholars are also challenging functional diversity as a proxy for knowledge diversity. For example, Haon et al. (2009) develop the measure of competence diversity. The competence diversity measure contains four individual dimensions: educational, functional, experience, and expertise diversity (Haon et al. 2009). The authors concluded that competence diversity is a superior measure on information sharing than functional diversity (Haon et al. 2009).

The various conceptualizations and measurements in CF-NPDTs make it difficult to build a consistent literature stream. Yet, it seems that multi-knowledge individuals are important to CF-NPDTs. However, scholars need to agree on a consistent measure of multi-knowledge individuals in CF-NPDTs. In the next section, we will discuss the underlying reasons on why so many CF-NPDTs fail.

Barriers of CF-NPDTs

Several barriers that possibly hamper functional diverse teamwork to achieve their full potential have been identified by research. According to the literature the main barriers are: cultural thought worlds (Lawrence & Lorsch 1967, Dougherty 1992), social categorization (Tajfel 1981), and similarity/attraction paradigm (Byrne 1971).

Cultural thought worlds in organizations refer to many dimensions highlighting the differences between subunits of an organization. The concept was original established by Lawrance and Lorsch (1967) and focused on the differences of members' goal and time orientation, formal departmental structure, as well as inter-personal orientation between Marketing and R&D. For example time orientation in Marketing is short term compared to the long-term perspective in R&D. One reason for these differences among departments is the distinct external environment of these sub units (ibid.). Another is the educational training of professionals (Griffin & Hauser 1996). For example, Marketing professionals are often trained by business schools, which focus on problem solving through data collection and intuition (Griffin & Hauser 1996). On the other hand, R&D professionals are often educated by engineering and science schools, where the focus is on scientific methods (hypothesis generation and testing) (Griffin & Hauser 1996). The differences in cultural thought worlds can cause to interpret overarching company goals and objectives in a different way, which in turn can lead to misunderstandings and conflict among the various sub units members (Griffin & Hauser 1996). These different thought worlds may also lead to a different use of language and words within different functions (Griffin & Hauser 1996).

Another barrier to CF-NPDTs is social categorization and similarity/attraction paradigm on individual level. According to social categorization (Tajfel 1981) and similarity-attraction paradigms (Byrne 1971), individuals are more attracted towards others with similar traits, and hence experience less cohesion and social integration in functionally diverse teams (Mannix & Neale 2005). The social categorization perspective states that an individual tend to categorize her and others in to similar trait groups. According to the trait the individual then judges other people as in or out group members. Members outside the own group will be assumed to be less trustworthy (Tajfel 1981). The similarity/attraction paradigm dealt originally only with dyadic relationships and has been recently extended to teams. According to this perspective people like to work with people who are similar to each other (Byrne 1971). This leads to a preference of working with individuals who are similar to us (Byrne 1971).

Cultural thought worlds (Lawrence & Lorsch 1967, Dougherty 1992), social categorization (Tajfel 1981), and similarity/attraction paradigm (Byrne 1971) generate barriers for CF-NPDTs to reach their full potential. It is argued that multi-knowledge individuals are able to overcome some of these barriers through experience less strict boundaries of their social group as well as better understanding other function's language and thought world (Park et al. 2009). But this is only one potential way to overcome these barriers in CF-NPDTs. In the next section, we will discuss other potential factors supporting CF-NPDTs to overcome these barriers.

Best practices in CF-NPDTs

In the functional diverse team literature we can find on the one hand that diverse teams can be more innovative (Bantel & Jackson 1989). On the other hand, the higher functional diversity in NPD teams broadens opinions and perspectives within the team, which can lead to increased conflict and reduced effectiveness (Pelled et al. 1999). An organization must enhance the opportunities and reduce the barriers to enable CF-NPDTs to succeed. Yet, this is not as easy as one would believe. To identify and discover these enablers of CF-NPDTs we look at the following categories: Organizational support features, team

structure and leadership. These types are most commonly studies within the context of CF-NPDT.

Many scholars have studied the impact of organizational factors on CF-NPDTs (Nakata & Im 2010, Sethi & Sethi 2009, Dayan & Di Benedetto 2008, Im & Nakata 2008, Boyle et al. 2005, Bonner et al. 2002, Sarin & Mahajan 2001). Nakata and Im (2010) developed a model of functional integration analyzing internal and external factors effecting functional integration in the context of CF-NPDT. The authors found that external factors like market-oriented reward system, managerial encouragement to take risk and planning process formalization improves functional integration, which in turn leads to improved new product performance. Reward system is a common way for organizations to motivate individuals in teams (ibid.). Yet, a reward system can be structured in many ways and can be more or less motivating. Nakata and Im (2010, 559) analyzed market-based reward system in which "all employees are recognized for advancing the firm's understanding and fulfillment of customers needs". Also Sarin and Mahajan (2001) studied reward systems. Yet, they examined different reward systems, namely equal rewards, position-based reward, outcome-based reward, and process-based reward. Whereas in equal rewards each team member receives the same bonus, in position-based reward the compensation depends on the position of each team member within the organization. Alternatively, an organization can decide to reward the outcome or the process of the NPD (ibid.). The authors concluded that the right type of reward system depends on the NPD project; for example outcome-based rewards had a strong positive effect on the outcome for long and complex projects.

In another study, Sehti and Sehti (2009) examined the effect of quality orientation and encouragement to take risks on novelty and appropriateness of the outcome. The research showed that quality orientation leads to better product appropriates and encouraging of risk taking improves product novelty. However, encouragement to take risk has a negative effect on product appropriateness, which is mitigated by quality orientation (ibid.). Another researched area within organizational support features focus on justice in organizations (Dayan & Di Benedetto 2008). The authors studied procedural and interactional justice perceptions and the effect on CF-NPDTS teamwork. Procedural justice refers to the perceived fairness of the decision-making process and interactional justice relates to the quality of interpersonal actions during the decision-making procedure (ibid.). The authors found whereas procedural justice has strong effects on six dimensions of teamwork: coordination, balance of member contribution, communication, mutual support, effort and cohesion, interactional justice has only significant relations to coordination, balance of member contribution.

Another importing organizational support feature is control. Bonner et al. (2002) studied formal and interactive control systems in NPD and the effect on project performance. The authors found that CF-NPDTs have the need of formal process control, yet too much of control has negative effects on project performance.

Besides of studying the impact of organizational support features on CF-NPDTs, scholars are also interested in the effect of team level factors on process and performance outcomes in NPD (Nakata & Im 2010, Dayan & Basarir 2010, Gerwin & Moffat 1997, Sethi & Nicholson 2001, Sethi 2000). Nakata and Im (2010) tested the effect of three internal team factors (social cohesion, superordinate identity, and group autonomy) on cross-functional integration and found that in particular social cohesion and superordinate identity have a positive effect on cross-functional integration. Social cohesion denotes "the degree to which individuals experience interpersonal attraction and maintain collegiality within a group" ((Nakata & Im 2010, 557). Superordinate identity on the other hand refers to the degree to which individual team member associate with the team and the team goals (ibid.).

In another study Dayan and Basarir (2010) analyzed three team related factors (transaction memory system, goal clarity, and team empowerment) effecting team reflexivity. Team reflexivity, which refers to the capacity of the team to adopt their goals and strategies towards the external environment, is positively affected by all three team factors. Also Gerwin and Moffat (1997) studied a team related factor. The authors investigated the effect of withdrawal of team autonomy on team performance and found that removal of autonomy is negative related to team performance. Furthermore, Sehti and Nicholson (2001) examined how charged team behavior effects the successful development of new products. Charged team behavior describes the extent to which the team is excited and committed to the purpose of the team. Charged team behavior has a positive effect on the project outcome (Sethi, & Nicholson, 2001).

Besides of organizational support features and team structure, researchers are interested in to the effect of leadership on CF-NPDTs (Sarin & O'Connor 2009, Qiu et al. 2009, Sarin & McDermott, 2004, Valle & Avella 2003). One interest of researcher has been the characteristics of leaders and their leadership styles (Sarin & McDermott 2004, Valle & Avella 2003). In one study, Sarin and Dermott (2004) examined various factors effecting team learning. They found that a democratic leadership style, the position of the leader within the organization and his or her initiation of a goal structure, is positive related to team learning (Sarin & McDermott 2004). Also Valle and Avella (2003) found that an effective leader has positive effects on the team outcome. Organizational support, team structure and leadership are all important enabler for successful CF-NPDTs. A successful utilization of CF-NPDTs requires from MNEs to manage all this three categories successful. In the next section we will suggest when to employ CF-NPDTs and how to structure CF-NPDTs.

Conclusion

CF-NPDTs have great potentials, yet they require much support from their organization to be successful. This organizational support cost the MNE money and time. Yet these costs might not be justified for all projects. Consequently, an organization should careful think what degree of functional

diversity is required for the NPD. Some incremental product improvements might not require a full fletch CF-NPDT. It might then be more sensible to employ a more homogenous team. Once this decision has been made about the functional task requirements the management needs to carefully consider on whom to put in to CF-NPDTs. The higher the degree of functional diversity, the more difficult it is to manage the processes within the team. In a very diverse project the individual team members must not only possess strong functional expertise and good team working skills (e.g. collaboration skills, conflict management abilities, etc.), but should also have knowledge in more than one function to be able to overcome cultural world thoughts and social categorization.

Yet, this is not enough to enable a successful CF-NPDT project. The management needs to carefully establish organizational support features and team structure. Team structure refers to the extent to which the team can build and maintain its superordinate identity and social cohesion, but also has a clear understanding about the requirements and responsibilities. This can be achieved in many ways. The successful CF-NPDT requires autonomy, yet this does not mean that management should be complete hands off. In terms of organizational support features, the organizational reward structure must be flexible enough to allow for different rewards for different projects. All in all, an organization must adopt its team composition, organizational support features, and team structure towards the aim and requirements of the NPD project. If the organizations do so, there is a good chance that CF-NPDTs will be successful.

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“ It is clear that a short-term mindset of business-as-usual will not lead us to a very bright future and long-term business vitality. Ideally, the current industrial corporate model would be supplemented with a sustainable form of enterprise.”

Towards a sustainable form of enterprise

Johanna Nurkka

Introduction

"We cannot afford another century like the last one", stated the Wildlife Conservation Society's George Schaller (Senge & Carstedt 2001, 25). It is clear that a short-term mindset of business-as-usual will not lead us to a very bright future and long-term business vitality. As a result in recent years corporations have begun to experience heightened expectations of corporate responsibility from stakeholders and society overall. Many companies are embarking on various corporate responsibility efforts in order to legitimate themselves and align themselves with the current institutional frame, which now increasingly incorporates issues pertaining to corporate responsibility. But what are these efforts in particular? Also, what is corporate responsibility at the end of the day? And, finally how would corporations be best equipped to operate sustainably through this century?

This chapter discusses corporate responsibility and sustainability. It starts by briefly describing the roots of corporate responsibility (termed initially as corporate social responsibility, CSR). Next, it will provide an overview of how the different concepts of corporate responsibility (Corporate social responsibility, corporate responsibility, corporate sustainability) have evolved over time in order to give some clarity to the rather proliferated literature. The chapter also highlights, along the lines of Halme and Laurila (2009), how responsibility is demonstrated in practice in corporations drawing examples from the EDEST project participant companies, Marimekko, Metso Paper and Sandvik. Then the chapter will discuss the current prevailing industrial corporate governance model and how it is at odds with sustainability, give illustrations of a more sustainable form of enterprise and argue why it is necessary for all companies to move towards this form. Finally, the chapter looks at how companies might achieve sustainability and presents some sustainability approaches that companies can learn from.

Background: Corporate (social) responsibility

Authors such as Carroll (2008) postulate that the Industrial Revolution of the late 1800s was the starting point for corporate responsibility (CR). With the industrial revolution the organizational form of doing business was created and the first large-scale business organizations were established. A major shift in business governance occurred "from small, owner-operator style of "free market" capitalism advocated by Adam Smith to the industrial corporate model in the 19th century – a model that still predominates today" (Sharma & Lee 2012, 164) The first large-scale business organizations were established and these multinational enterprises (MNEs) have since then become major actors not only economically but socially, culturally and politically as well (Epstein 2007).

Blowfield and Murray (2008) meta-analysis of the evolution of Corporate responsibility research is summarized the following table starting from the early corporate responsibility texts of the 1930s (see figure 1). They find that in the 1950s interest rose regarding corporate responsibility and the term Corporate Social Responsibility became established in the academic literature by Bowen (1953) (Carroll 2008). Yet, the most cited definition of Corporate Social Responsibility is a statement by Carroll (1979) whereby "the social responsibility of business encompasses the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time" (Carroll 1979, in Montiel 2008, 252). However, Carroll credits Bowen as the father of CSR and refers to his definition of CSR of

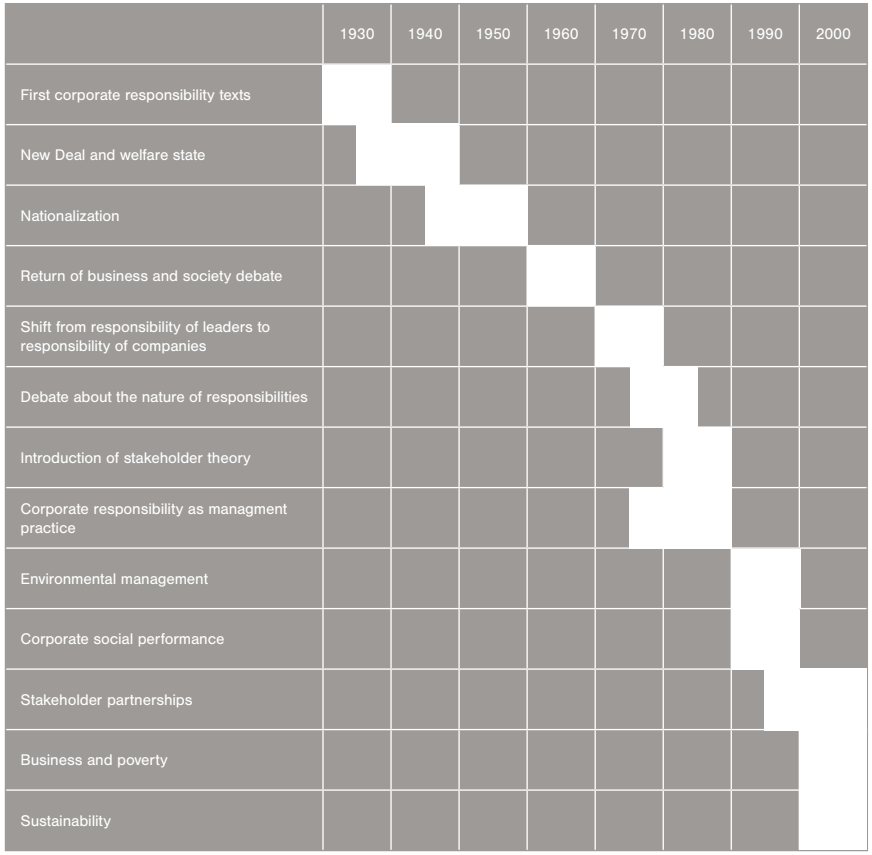

Figure 1: The development of corporate responsibility (Source: Blowfield & Murray 2008, 57).

"the obligations of businessmen to pursue those policies, to make those decisions, or to follow those lines of action which are desirable in terms of the objectives and values of our society" (Bowen 1953, 6). Nevertheless, the CSR literature did not take off until the 1970s and 1980s as most of the references to CSR in top-tier management journals can be traced back to those decades (Montiel 2008).

Since the 1960s there has been a continuous redefinition of corporate responsibility practices that have reflected the rapid structural, technological and cultural changes that have occurred throughout the rest of society (Hoffman 1999). For instance, the corporate environmental practices in the 1970s focused on "end of pipe" treatments, 1980s on waste minimization and pollution prevention (Hoffman 1999). In the 1990s the attention shifted "to include concern for product stewardship and life-cycle analysis, leading industries to reduce pollution by altering raw material and product choices" (Hoffman 1999, 354). Finally, in the 2000s the focus has been mainly on sustainable development, sustainable management, and business opportunities in the bottom of the income pyramid to alleviate poverty.

One of the greatest challenges associated with the corporate responsibility field is the number of definitions (Carroll 1999). Also Halme and Laurila point out that the complexity associated with the phenomenon of CR "has led to a proliferation of concepts" (Halme & Laurila 2009, 327). The following are just a few of the most common terms in the literature: corporate social responsibility, sustainability, corporate responsibility, corporate social performance, environmental management, environmental responsibility, and philanthropy. Also, responsibility structures and associations (e.g. the UN Code of Conduct for Transnational Organizations, various responsibility labeling schemes, environmental management certifications) have multiplied expansively (Meyer et al. 2010) and, as a result, corporate responsibility associations, initiatives and consultancies have boomed and a whole sector, with its underlying institutions of its own, has been formed (Meyer et al. 2010). To further complicate the field the conceptions about corporate responsibility in different national, cultural and social contexts vary depending on the type of responsibility they are demanding from companies (Midttun et al. 2006, in Halme & Laurila 2009).

McWilliams and Siegel (2006) note the lack of consensus on a definition for corporate responsibility (CR), which in turn makes comparisons across studies or companies difficult and hampers an understanding of the implications of CR activity. Historically, social issues research has been grounded in corporate social responsibility (CSR) and environmental management (EM). CSR literature however has a longer history than environmental management literature in academia. CSR articles began appearing in greater numbers in the 1970s after the initial interest of the 1950s whereas the corporate sustainability (CS) literature only emerged in the 1990s (Montiel 2008). Corporate sustainability, which includes both social and environmental considerations, is a newer concept in the corporate responsibility literature that has further blurred research boundaries (Bansal 2005, Montiel 2008).

Corporate sustainability is essentially composed of the "triple bottom line" of ecological, economical and social responsibility as a its measure of success (Elkington 1997) The idea of sustainability can be traced back to the World Commission on Environment and Development (WCED), also known as the Bruntland Commission (1987) report on sustainable development, which is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". As Montiel (2008, 246) noted: "Although corporate sustainability and corporate social responsibility have evolved from different histories, they are pushing toward a common future. They both share the same vision, which intends to balance economic responsibilities with social and environmental ones". Bansal (2005) argued that the two concepts should be merged and a clearer overall definition established. Halme and Laurila (2009, 327), thus, merge these concepts under the concept of corporate responsibility defined as "policies and activities that go beyond mandatory obligations such as economic responsibility (being profitable) and legal responsibility (obeying legislation and adhering to regulation)". The authors stress the focus on "voluntary responsibilities that go beyond the mandatory ones, and emphasize the equal importance of social, environmental and economic responsibilities of corporations" (Halme & Laurila 2009, 327). Therefore, despite some claiming that sustainability is geared more towards environmental responsibility, it can be said to be complementary as it also furthers the adoption of a triple bottom line mindset.

Along with definitional challenges, these issues related to sustainability and responsibility have been slow to enter the business literature. In a focused literature review covering 1998-2007, Egri and Ralston (2008) identified four themes – corporate responsibility social responsibility, environmental responsibility, ethics, and governance – and concluded that corporate responsibility issues have been underrepresented in this literature, appearing in only 321 of the 4671 articles reviewed. Among the 321, international business and management studies research has emphasized issues of ethics and governance issues (62% of the articles) over environmental responsibility (19%) or corporate social responsibility (18%). Also, Bansal and Gao (2006) found that when analyzing the most influential management journals over a ten year period from 1995 to 2005 only 79 organization and environment research articles were found. This means that, after removing two special issues focused on organization and environment, less than 1 % of journal space pertains to this research field (Bansal and Gao 2006).

This underrepresentation in the academic literature is at odds with the needs of managers, who are under increasing pressure from various stakeholders, including employees, suppliers, community groups, nongovernmental organizations, and governments, to improve their performance with respect to various aspects of corporate responsibility. As McWilliams and Siegel

(2006: 2) stated, "There is a growing interest among managers in the antecedents and consequences of corporate responsibility, especially for executives at multi-national, multi-divisional companies". This interest has only grown since 2006, as 93 % of 766 UN Global Compact member CEOs surveyed in 2010 believed that sustainability issues will be critical to the future success of their business (UN Global Compact-Accenture survey, 2010). Particularly challenging issues include the diverging business norms and standards, regulatory frameworks, and stakeholder demands with respect to corporate responsibility across different countries. For example, that which constitutes environmentally responsible behavior differs widely across geographical and cultural boundaries.

Categorizing corporate responsibility practices

Halme and Laurila (2009) offer a useful categorization of three different types of corporate responsibility that are present in the industry. This action-oriented typology demonstrates different ways of practicing corporate responsibility (see figure 2). The authors find that there are (1) philanthropy (emphasis on charity, sponsorships, employee voluntarism; (2) CR integration (emphasis on conducting existing business more responsibility; (3) CR innovation (emphasis on developing new business models for solving social and environmental problems (Halme & Laurila, 2009). In other words, philanthropy is concerned with "charitable actions and using corporate resources for 'doing good', whereas CR integration is essentially about businesses "attempting to combine responsibility aspects with their core business operations" (Halme & Laurila 2009, 329). CR integration is what most companies these days are doing through practices called "greening", "eco-efficiency", "sustainability", etc. Most companies have addressed sustainability issues with the strategy of eco-efficiency, popularized by the Switzerland-based World Business Council for Sustainable development (Unruh 2010). It is inherently about putting the value chain on a diet with the goal of producing more outputs with less waste (Unruh 2010). However, "eco-efficiency just slows the extraction of resources and production of wastes; it does not eliminate them" (Unruh 2010, xiv). I would like to think that sustainability is something more than integrating responsibility into the core business and enhancing resource efficiency. In order to conduct business in a manner that does not prevent the future generations from satisfying their needs environmental, social and economic responsibility calls for a CR innovation approach. Inherently CR innovation is where "a business enterprise takes an environmental or social problem as a source of business innovation and seeks to develop new products or services that provide a solution to the problem" (Halme & Laurila 2009, 330). Halme and Laurila (2009, 331) also point out that "the key difference between CR innovation and integration is that the former is about creating new business aimed at reducing a social or environmental ill, whereas CR integration is concerned about conducting existing business responsibly".

Dimension of action	CR action type		
	Philanthropy	CR integration	CR innovation
Relationship to core business	Outside of firms core business	Close to existing core business	Enlarging core business or developing new business
Target of responsibility	Extra activities	Environmental and social performance of existing business operations	New product or service development
Expected benefit	Image improvement and other reputational impacts	Improvements of environmental and social aspects of core business	Alleviation of social or environmental problem
Example	Microsoft's software donations for charity group. Merck employees build timber houses for poverty stricken people	Certifying facilities with e.g. ISO14001 or SA8000	CEMEX's new business model: Housing for the poor with savings and micro-credit scheme

Figure 2: Categorization of CR including the industrial corporate model and sustainable enterprise model (Source: Halme & Laurila 2009, 330).

During the EDEST project, three companies (Marimekko 8 interviews, Metso Paper 4 interviews, Sandvik 8 interviews) were interviewed on their company's sustainability. The companies were then assessed according to Halme & Laurila's (2009) CR categorization. According to the results the corporate responsibility practices utilized by the companies involved in the EDEST project each of the companies would fall into the CR integration group along with most other companies in Finland. Although there was some variation in the level of integration of sustainability issues among the companies sustainability issues were found to be important at the strategic level in all the companies according to the interviewees' responses.

Both respondents in Metso Paper and Sandvik stated that sustainability has for long been a topical issue in the forestry and mining industry that they operate in. Sustainability was mentioned to have become particularly topical within the past five years, and furthermore, it was recognized to be an issue with growing importance in the future. Also, eco-efficiency thinking seemed to be a guiding strategy behind product design decisions, and the most common responses on what sustainability is were related to the resource and energy efficiency of both Metso Paper's and Sandvik's products. However, there seems to be a decoupling between the official sustainability policies and strategies and the actual practices. Interviewees, in particular, in Metso Paper and Sandvik in product design and engineering functions mentioned the official documents and intranet communication on sustainability as something separate from their daily activities and rather described to be guided by eco-

efficiency thinking in their daily tasks. However, for instance, at Metso Paper, it was mentioned that eco-efficiency and corporate responsibility mindset is still not properly embedded in the company overall and in the culture of these organizations. Also some, mostly designers, highlighted the need for education on these issues, even calling for a design thinking/IDBM training of employees and managers in particular with the aim of arriving at a more holistic and sustainable perspective regarding, for example, the company's operations and product engineering and design.

Just as in the academic literature there was some interesting variation in the meaning and practice of sustainability within the companies. Despite having a lower number of interviewees, perhaps the most similar answers came from Metso Paper with many interviews describing sustainability with the words such as "a healthy product", reduction of environmental and energy impact of Metso Paper's products and the recyclability of the paper mill raw materials. Also, product design with its holistic view on product design was mentioned as one key ways of making the company's products more sustainable. All in all, it seems that out of the three companies, sustainability issues are, in the form of eco-efficiency thinking, most established in Metso and have been on the company's strategic agenda since the mid/late 90s, longer than in the other interviewed companies.

On the other hand, Sandvik employees' responses to the question of describing sustainability within their company varied from the resource and energy efficiency of products to treating one's employees well, to the continuity of business operations, and to specific descriptions on how the company measures its water use or waste creation weekly.

Finally, in Marimekko it seems that, although these issues are important and are described to be "part of the company's DNA" and the way they have traditionally operated, the company has not had a systematic and holistic view on sustainability even though it has recently embarked on the task of doing so. When asked about sustainability at Marimekko, most interviewees mentioned the timelessness, timeless aesthetics, functionality, quality and durability of their products. Also it was discussed how sustainability is a guiding principle in the company's product design and material selection and use, and how Marimekko advises the customers in extending their product's life cycle. The exemplary local production plant with very low water use and the use of vegetable based dyes was mentioned as a practical example of these practices. It was also noted that Marimekko has been good at responsibility issues but has not really utilized it in the company's external communications. Furthermore, currently the company is investing heavily in internationalizing its business. Therefore, it was mentioned that sustainability issues would become more and more important and challenging in the coming years.

However, as useful this categorization of corporate responsibility is, I would like to push the envelope even further by claiming that businesses should be able to rethink their existing business and conduct it in a truly sustainable manner. Even if corporate

	Industrial corporate model			Sustainable enterprise
Dimension of action	CR action type			
	Philanthropy	CR integration	CR innovation	Sustainability
Relationship to core business	Outside of firms core business	Close to existing core business	Enlarging core business or developing new business	Transforming core business / creating new business according to the principles of sustainability / creating sustainable business ecosystems
Target of responsibility	Extra activities	Environmental and social performance of existing business operations	New product or service development	Sustainability (environmental, social, economical) of existing business operations / New product or service development through creative destruction / forming partnerships for sustainable business ecosystem creation
Expected benefit	Image improvement and other reputational impacts	Improvements of environmental and social aspects of core business	Alleviation of social or environmental problem	Achieving a sustainable form of enterprise / operating as a part of a sustainable business ecosystem
Example	Microsoft's software donations for charity group. Merck employees build timber houses for poverty stricken people	Certifying facilities with e.g. ISO14001 or SA8000	CEMEX's new business model: Housing for the poor with savings and micro-credit scheme	Ecovative Design: a biomaterials company growing replacements for foams and plastics using mushroom technology

Figure 3. Categorization of CR practices including the industrial corporate model and sustainable enterprise model (Source: Adapted from Halme & Laurila 2009, 330).

responsibility and corporate sustainability as seen as interchangeable concepts I would like to argue that philanthropy is definitely not and CR integration in most cases is not sustainability. Furthermore, I am not sure that all CR innovation is conducted sustainably. I would like to view sustainability as a more holistic concept, spanning not only to the business model created to solve a social or environmental problem but also one that extends to the operations of the company that addresses the way by which the company solve the problems. One such definition of a sustainable enterprise is by

Waddock and McIntosh (2011, in Sharma & Lee, 2012, 165) “a profitable (...) business enterprises that, by connecting with all stakeholders and the natural environment, operate in tune with social progress and in harmony with planetary boundaries.” For instance, Halme and Laurila (2009) point to the case of CEMEX as a CR innovator (see figure 3), which in my opinion not an example of (holistic) sustainability since low-income housing could be build from a more sustainable material than concrete. However, I might be asking too much since the complete redefinition of a business model, particularly in a large corporation is still not likely to yield zero or positive returns in terms of social, environmental and economic bottom lines (Sharma & Lee 2012). Furthermore, establishing a sustainable form of enterprise as the main form of organizing a company would require a new mindset and a different governance model from the current industrial corporate model that would allow for sustainability integration and innovation. The next section will discuss the industrial corporate model and its challenges with regards to sustainability.

Is the industrial corporate model at odds with sustainability?

Overall, the dominant model of the firm draws on neoclassical economic theory, according to which the primary obligation of corporations is to maximize profits for shareholders (e.g. Friedman 1970, Key 1999). The superordinate goal of this dominant “socio-economic paradigm” is measured through material progress, which leads to economic growth that satisfies the need of capital expansion (MacIntyre 1998, in Kilbourne 2004). Therefore, the paradigm focuses on financial measures of success (e.g. Kilbourne 2004). As noted by Milton Friedman (1970, 6), “the social responsibility of business is to increase its profits”. Environmental or social responsibility efforts or reforms are thus pursued, from a “Friedmanian” standpoint, purely as PR or marketing projects aimed at polishing the company’s reputation or building a more positive public image. Other reasons for taking on such projects mentioned in the literature include legislation, pressure from important stakeholders, or gaining or retaining organizational legitimacy (Bansal & Roth 2000).

Meyer et al. (2010) argue, along the lines of Carroll (1999) that, of the conception of corporate responsibility is rooted in the rising perceptions of a global society, and heavily oriented toward trans-national organizations. After the neo-liberal breakthrough in the 1970s there was an explosive expansion of transnational business organization. In the expanding world economy, multi- and transnational corporations provided a formal structure in a context lacking in structure (Meyer et al. 2010). These companies grew expansively and posed multiple problems of legitimation as they reflect private interests and private power uncontrolled by national or supra-national political and legal institutions (Meyer et al. 2010). Therefore, coupled with the increased number of MNCs, corporate responsibility structures started expanding significantly and still exists to ”legitimate business during he ’unleashing’ of capitalism” (Glyn 2006, in Kinderman 2012, 30). Therefore, CR provides compensation for some of the social dislocations that result from neo-liberalism and its lighter regulatory touch (Kinderman 2012). Therefore, it is an essential component of the neo-liberal capitalism appealing to the ”business people’s moral sensibilities, thereby helping to legitimate their conduct among themselves and vis-à-vis society in a way that purely instrumental rationality cannot (Kinderman 2012, 31).

However, others, such as Shrivastava (1995), have claimed that the neoclassical paradigm is inherently limited in its ability to effectively address social and ecological degradation; industrial development has brought great wealth and prosperity, but at the cost of unprecedented and unintended ecological degradation. Recently Shrivistava and Paquin (2011, 12) stated that “the traditional western paradigm of industrialization – competitive capitalism, resource exploitation, cost externalization, etc. – has created and exacerbated these crises and risks of collapsing under our feet”. They elaborate that most organizations are just surviving on their last innovation, rather than seeking their next one, and thus, do not possess the resilience or capacity for dealing with the forthcoming challenges (ibid. 2011). Also other authors (e.g. McDonough & Braungard 2002, Unruh 2010, Hart & Waddock 2012, in Sharma & Lee 2012) believe that the industrial corporate model will need to be eventually supplemented with a sustainable form of enterprise as “the current economic fosters linear growth, excessive consumption and materialism, and an inherent unsustainability in a world whose limits are becoming increasingly clear”(Waddock 2012, in Sharma & Lee 2012, 165-166). Business as usual cannot continue much longer and massive structural change is inevitable (Brown 2008, in Shrivistava & Paquin 2011). Moreover, Shrivistava and Paquin (2011, 2) claim that we live in a crippled society in which “most major global systems are in crisis and in need of restructuring”. They suggest that the crisis conditions are rooted in our current systems of production, consumption, and wealth creation, and the crisis society manifests itself through global environmental, financial, social, and identity crises (ibid. 2011). Also managerial approaches emphasizing short-term profits and encouraging individual greed over community welfare should be supplemented with approaches that consists of long-term, broader, more-integrated social and ecological, and economic performance measures (ibid. 2011).

The implication of these crises is the fact that even national and international governments are incapable of resolving them alone (Shrivistava & Paquin 2011). However, some commentators believe that “multinational corporations with their financial prowess and geographic reach and capabilities can act as agents of positive change and sustainable development” (Sharma & Lee 2012, 162). In fact, companies could lead the change towards sustainability ahead of governments and their business coalitions since companies are accustomed to operating in fast paced, dynamic and constantly shifting dynamic environments.

Furthermore, multinational corporations are among the most powerful institutions in the world increasingly even exceeding nations in terms of important political power. Indeed, governments are not likely to be the most powerful institutions in the world for very long (Shrivistava & Paquin 2011). There are examples of some multinationals or small or medium sized companies that "are not only positively contributing to sustainable development" (Hart & Millstein 1999 & 2003, in Sharma & Lee 2012, 162) but also "taking sustainable practices as a way to differentiate themselves and enhance their capabilities to achieve sustained competitive advantage (Hart & Sharma 2004, in Sharma & Lee 2012, 162). However this requires visionary leadership and educating directors and employees in issues such as sustainability, multiple bottom line thinking, social justice and equity (Sharma & Lee 2012).

Most companies are aware of the crucial importance of sustainability issues in today's society. This can be, for instance seen, from the results of the United Nations Global Compact and Accenture report in 2010 that surveyed 766 Global Compact member companies in 100 countries and 25 industry sectors found that 93 % of CEOs see sustainability as important to their company's future success. But most notably, in 2010 "81 % of CEOs – compared to 50 % in 2007 - believed that sustainability issues are embedded into the strategy and operations of their company" (UN Global Compact-Accenture survey 2010). Although this demonstrates increased interest towards and importance of sustainability issues, in reality, no global "enterprise is remotely sustainable today" (Waddock 2012, in Sharma & Lee 2012, 165), "and even the most advanced corporations are at a very early states of beginning to understand how to develop business models that can generate an economic return while generating positive environmental and social impacts" (Sharma 2012, Sharma & Lee 2012, 166). The great challenge is the current economic reality, and fitting sustainable business within its institutional frames and mental models. Essentially, as John Ehrenfeld, the president of the International Society for Industrial Ecology stated, sustainability "is a radical concept that stretches our current ideas about rationality" (Senge & Carstedt, 2001, 27). What companies call sustainability is, in practical terms, Halme and Laurila's (2009) corporate responsibility integration or eco-efficiency. It is seen as one more way of fulfilling the ultimate goals of an industrial corporation, to increase efficiency and reduce costs. As a European business leader in the UN Global Compact-Accenture survey (2010, 16) summarized: "if managing a business sustainably is about using resources efficiently, then it serves the cost agenda as well".

Eco-efficiency, therefore, hardly is the solution towards a sustainable enterprise. The current industrial model is, despite all the eco-efficiency efforts, a very inefficient or wasteful system. Since, in the end, across all industries less than 10 % of everything extracted from the earth (by weight) becomes usable products (Senge & Carstedt 2001) Unruh (2010, xii) also states, quoting Richard Ayres, that "over 95 % of all resources extracted from the environment become waste within six months of harvest". The remaining 90-95+ % becomes waste from production, and the products sold create even more waste either by being discarded or used (e.g. car exhaust) (Senge & Carstedt 2001). Unruh (2010) provides a poignant example from the pharmaceutical industry by saying that a ton of saleable pills requires well over 150 tons of raw materials. Styrofoam is another good example, which is an oil based non-biodegradable product that is used e.g. for packaging perhaps for a few weeks before being discarded. According to Environmental Protection Agency (EPA) in America, Styrofoam occupies 25 % of our landfills and will stay there for thousands and thousands of years without even mentioning the harm its components do to the nature and humans in the form of e.g. carcinogens such as benzene (Bayer 2010). Thus, "while businesses obsess over labor and financial capital efficiency, we have created possibly the most inefficient system of production in human history". (Senge & Carstedt 2001, 28)

Therefore, the current sustainability efforts, and in particular the eco-efficiency craze in many industries, merely demonstrates the companies' attempt to not only legitimate their business in the light of heightened demands for corporate responsibility, but also the use of a new eco-efficiency as one method by which to reduce costs and increase efficiency, just as the industrial corporate model traditionally calls for. "Eco-efficiency is the goal of companies worldwide, with many realizing significant cost savings from eliminating waste from production" (Senge & Carstedt 2001, 28), and it will continue to be an important issue in the boardrooms and management team meetings as can be seen from the results of the UN Global Compact-Accenture survey (2010) with 93 % of the CEOs surveyed believed that sustainability issues will be critical to the future success of their business.

However, the executives' strong belief in eco-efficiency demonstrates the power of mental models (ibid. 2001), and the dominance of industrial-age managerial thinking. Increasing efficiency has always been its main focus, and the established and dominant thinking is not greatly challenged if increased natural resource productivity translates directly into lower costs, and hence, increased efficiency (ibid. 2001). Furthermore, "54 % of CEOs envisage a tipping point occurring within the next decade – a point at which sustainability will be embedded in the core business strategies of the majority of companies globally, 80 % of CEOs believe this will occur within the next 15 years". (UN Global Compact-Accenture survey 2010, 40) This is encouraging, as not long ago the possibility of embedding sustainability into business operations was seen as an impossible goal. However, embedding eco-efficiency across industries is likely not to be sufficient in the long run as "eco-efficiency innovations could actually worsen the environmental stress in the future; eco-efficiency innovations reduce waste form production, but this does not alter the number of products produces nor the waste generated from their use and discard" (Senge & Carstedt 2001, 28).

While eco-efficiency is about slowing the rate of extraction and use of resources,

however, nothing prevents eco-efficient industries from using more resources in absolute terms by producing more eco-efficient goods in greater numbers or even reinvesting the profits gained through eco-efficiency in a non eco-efficient way. Therefore, eco-efficiency is an incomplete answer to sustainability as we are, according to U.S Geological Survey (Brown 2006, in Sharma & Lee 2011) currently only tens of years away from depleting resources (e.g. assuming an annual two percent growth in extraction, we have 18 years of reserve left for lead, 20 years for tin, 25 years for copper). In the end, "a shift toward a sustainable form of enterprise requires a radical system change with a significant mind-set shift as well as systemic change to bring about new forms of enterprise that inherently think about multiple bottom lines of business profits, society, equity, and nature" (Waddock 2012, in Sharma & Lee 2012, 165, 168). Furthermore, eco-efficiency is something different from sustainability that was originally derived from the WCED / Bruntland Commission report for sustainable development. If we truly want to live in the manner that does not deprive the future generations of their ability to meet their own needs, more systemic changes are necessary: "focusing on eco-efficiency may distract companies from pursuing radically different products and business models – changes that require shifts in mental models not just shifting attention within the existing mental models" (Senge & Carstedt 2001, 29).

There is undoubtedly a need for not only mind-set and mental model change, but also an institutional shift towards sustainability. This is a complex shift as institutions are social structures that have attained a high degree of resilience that are composed of cultural-cognitive, normative, and regulative elements that, together with associated activities and resources, provide stability and meaning to social life (Scott 1995, 33 & 2001, 48 & 2008, 48). Furthermore, "institutions are multilevel, and durable assemblies, thus, efforts to change institutions must incorporate strategies that address all aspects of institutions – regulative, normative, and cognitive – and work on multiple levels" (Hoffman & Ventresca 1999, 1383).

Hoffman and Ventresca (1999) discuss that there are two fundamental strategies for overcoming institutional barriers and driving change in the context of social and environmental responsibility. Firstly, strategies may work within the present framework of the debate, which is very much the case of the current CR integration or "greening" and eco-efficiency efforts. Secondly, strategies may focus on reconfiguring the form and nature of the debate and work to instill sustainability that is true to its initial WCED / Bruntland Commission 1987 definition. The second "strategy is similar to other fundamental social transformations such as the social construction of freedom in the early Western culture" (Patterson 1991, in Hoffman & Ventresca 1999, 1387).

Hoffman and Ventresca (1999, 1387) even argue that "to fundamentally alter institutional structures and fully incorporate environmental issues and interests would require a reexamination of the foundations of ethics; technological development; science, medicine and economics; and the basic concepts of the world's religions". This, of course, seems like quite an impossible task, and a major change in mental models and institutions is required. As such, the current market incentives, and cultural and regulatory institutional structures, hinder the companies on their path towards a sustainable enterprise. However, some seeds of change in the mindsets and institutional environment towards a more sustainable future are already there. As it seems, majority of the UN Global Compact-Accenture surveyed CEOs are aware of the ever growing importance of sustainability issues.

Also, in the interviews conducted in the three companies during the EDEST project it was clear how interested the interviewees were regarding these issues and eager to discuss and learn more about how their company could become more sustainable. Solving the sustainability agenda is potentially the most complex and challenging issue mankind faces, at least in this century. Furthermore, the current model upon which companies are based on is inherently unsustainable, and in particular, in the long term change is imperative. Therefore, the next section will discuss the some ideas on how to embark on the path towards sustainability.

Towards a sustainable form of enterprise

As discussed above, and as stated by Hart (2012), "the transformation to a sustainable form of enterprise that is occurring now is no less momentous than the transformation from small owner-operator style of 'free market' capitalism advocated by Adam Smith to the industrial corporate model in the 19th century – the model that still predominates today" (Sharma & Lee 2012, 164). It is extremely difficult for an organization to generate a zero or positive social and environmental footprint throughout its global value chain without completely redefining its business (Sharma & Lee 2012). In order to achieve this companies might be required to take not only adopt a stakeholder view but a wider perspective that captures the entire supply chain. The complexity and global reach of supply chains is potentially the most difficult issue of corporate sustainability. For instance, Wal-Mart, a company with hundreds of thousands of suppliers, has not even begun to understand the sustainability impacts of its second- or third-stage suppliers (Sharma & Lee, 2012). Still, authors such as Hart believe "that those companies that 'crack the code' on sustainable enterprise as well as the new sustainable entrants will become the icons of 21st century capitalism, and those that don't will not be surviving in the long term (Hart 2012, in Sharma & Lee 2012).

Ideally, the current industrial corporate model would be supplemented with a sustainable form of enterprise, which Shrivastava and Paquin (2011, 13) describe, in addition to previously mentioned definition by Waddock and McIntosh (2011), "as an organization able to account for and transcend the surface level contradictions of reducing environmental impact, creating social benefit, and competitively creating economics value". It is important that

companies would operate according to principles that understand and take into account resource limitations. Thus, a company needs to fundamentally rethink how they engage in their activities with their customers, employees and broader leadership (Shrivistava & Paquin 2011). Personal values and visionary leadership, such as that demonstrated by Ray Anderson of Interface, are important for driving a company towards sustainability. On a general level, instructing employees and business leaders is crucial as "they will need significant training and education in areas of sustainability, climate change social justice and equity and multiple bottom lines of business profits, society, equity and nature" (Waddock 2012, in Sharma & Lee, 2012).

This need for education has already been recognized by the UN Global Compact-Accenture (2010). Surveyed CEOs pointed out that 86 % of CEOs believe that companies should invest in enhanced training of managers to integrate sustainability into strategy and operations – but only 60 % are currently doing so. Furthermore, 72 % of the CEOs reported that they see education as the global issue most critical to address for the future of their business. Thus, two-thirds are looking for the UN Global Compact to facilitate work with business schools and educators to shape the nest generation of leaders. Clearly a long-term perspective would need to be adopted to replace today's mindset largely driven by "reacting to vagaries of short-term performance demands of its stakeholders" (Sharma 2012, in Sharma & Lee 2012, 167). Additionally, it must be recognized that a whole new way of calculating wealth should be developed that focuses on thriving and well-being rather than on growth, money or profits (Sharma & Lee 2012). Stahl and Braungart (Senge & Carstedt 2001) even propose that in order to change companies' attitudes about discarding, producers should own what they produce forever and thus have an incentive to design products to be disassembled and remanufactured or recycled.

All in all, companies need to properly recognize other stakeholders in addition to shareholders. As a result, decision-making in the new mindset will be more complex as it does not simply focus on financial returns and it will be systems-, stakeholder-, and needs based (Sharma & Lee 2012). There are signs of progress in developing accounting according to the triple bottom line, such as the Global Reporting Initiative. However, there are no GAAP-like standards for measuring and tracking environmental and social costs and impacts (Shrivistava & Paquin 2011). Furthermore, there is often a decoupling between the social and environmental policies and rhetoric and the companies actions and with the ever-growing number of CSR and sustainability reports with no shared standard in reporting makes objective analysis very difficult. It has become expected for companies to produce responsibility reports, and a KPMG survey found that in 2008, adoption of CR reporting is greatest among multinationals: 92% of the world's largest 250 companies utilize corporate reports to disseminate a corporate governance code of conduct (Meyer et al. 2010). However, their informative value remains dubious. Thus, to date, no firm has created a full and complete accounting of all the cost of its, economic, environmental, and social activities (Shrivistava & Paquin 2011).

Moreover, a sustainable enterprise model might be unattainable for a single organization but a key approach may be to build business ecosystem or "a carefully designed and crafted multiorganization, multistakeholder partnership where each organization offsets another's negative social and environmental footprints" (Sharma, 2012, in Sharma & Lee 2012, 165). These are for instance cross-sector partnerships between private and public actors formed to solve in cooperation a specific environmental or social problem. Finally, it must be noted that our current "crisis society", as termed by Shrivistava and Paquin (2011), also comes with various opportunities, to name a few, in eco-entrepreneurship, eco-design, eco-niches in traditional industries or in offering sustainable solutions to the underserved bottom of the (income) pyramid market.

Frontrunners in sustainability

The industrial production system, as discussed above, is potentially the most inefficient system in human history. However, we as humans are part of the most efficient system, namely the natural system. Whereas Styrofoam can outlive humans by 10'000 years, in the end of our lives we humans return to nature as nutrients for new life. In nature there is no waste; all byproducts of one natural system are simply nutrients for another (Senge & Carstedt 2001). This idea of innovation inspired by understanding how living systems work was popularized by a life-sciences writer Janine Benyus (Senge & Carstedt 2001) with her 1997 book Biomimicry: Innovation inspired by nature. Nature is a cyclical system that has been tested over millions of years, it leaves no waste, and it uses only four elements – carbon, hydrogen, oxygen, and nitrogen – to form the basis for the 88 naturally occurring elements for every living thing on earth (Unruh 2010). On the other hand, humans keep creating ever more complicated synthetic chemicals adding to the over hundred thousand different synthetic chemicals (Unruh 2010). The natural cycle is disrupted greatly by these when they are discarded or used, and humans get exposed to these on a daily basis in the clothes we wear, cosmetics that we use, the air we breathe inside buildings (see more in McDonough & Braungart 2002). In his book Earth Inc. Unruh (2010, 7) advises that companies rethink "input sourcing decisions and dramatic simplification of the number and types of materials used in products" while acknowledging that "our production technologies are not yet sophisticated enough to emulate nature's manufacturing methods". Unruh (2010) also discusses four other guiding principles for a sustainable business in his book.

A similar idea is the cradle-to-cradle protocol created by William McDonough and Michael Braungart that operates around the idea that one creature's waste is another's food, and thus, waste equals food. They have helped several companies in developing closed loop systems, so that they can completely eliminate what we call as waste (Unruh 2010). The essence of cradle-

to-cradle resources and production aims to minimize the use of virgin resources, minimize their resource footprint and restore resource ecosystems to their regenerative capacities (Shrivistava & Paquin 2011). In their 2002 Cradle-to-Cradle book they also discuss how we still live by the rules of industrial revolution despite those rules being created in a time when human's believed that mother nature was omnipotent. This is, however, clearly not the case, as for decades we have witnessed the environmental degradation caused by humans. McDonough and Braungard (2002) also challenge the saying "throwing something away", as "away" simply does not exist. As we have seen, e.g. Styrofoam outlives us for thousands of years, and its components even penetrate our body after they have entered nature's cycle. The authors also challenge the traditional meaning of recycling as, in their opinion, practically all recycling is downcycling.

Today, when material is "recycled" the material cannot be used at the same quality level (with the exception of certain metals such as steel) and for similar use, e.g. recycling office paper into newspaper or toilet paper. There is, of course, great doubt in how the Cradle-to-Cradle concept could be adopted in a larger scale. However, at least the steel of the paper mills of Metso Paper is already recycled as steel can be recycled in the same quality level 99,99-100%, which is then conducted by Ruukki. Also, McDonough and Braungard have for instance worked together with Nike, a company with one of the worst responsibility reputations, to create a Nike Considered cradle-to-cradle shoe that is a physical product that has initiated the company as a whole to re-evaluate its business model. Nike's ultimate goal is for Nike to close the loop, to recycle old shoes back into new jerseys, for example. In essence, cradle-to-cradle sustainable enterprises are eco-centric and maximize their ecological efficiency in all aspects of organizing (Shrivistava & Paquin 2011), and design products operations, and logistical ecosystems to scale and efficiency most consistent with their ecological context (McDonough & Braungart 2002).

It may seem like an impossible task to rethink complete business model, educate ones employees, change into a long-term business perspective, calculate profits with using multiple bottom lines etc. However, there are companies succeeding in being a sustainable form of enterprise. For example, Ecovative Design, a biomaterials company growing replacements for foams and plastics using mushroom technology. Ecovative design created a strong, low-cost biomaterial that could replace the expensive, environmentally harmful Styrofoam and plastics. Their fully biodegradable and nutrient-containing material is used, for instance, in wall insulation and packaging for industrial and consumer products. Their customers include a growing number of Fortune 500 companies and they are partnering with, for instance, 3M to adopt the mycelium technology platform to new market opportunities and spaces (see more info on www.ecovativedesign.com). This company demonstrates that you can really achieve a sustainable form of operating and aid in solving an environmental and/or social problem all while satisfying the multiple bottom lines of environmental, social and economic responsibility.

Sustainable companies are rare at the moment but they represent important outliers and forerunners in an inevitable paradigm shift towards a sustainable form of enterprise. The most sustainable examples so far are small entrepreneurial firms, and some authors argue that multinational corporations may not ever be able to be fully sustainable. However, multinationals could start moving towards sustainability through similar "entrepreneurial approach, based on Schumpeterian idea of creative destruction, small-scale, local level innovations" (Hart & Waddock 2012, in Sharma & Lee 2012, 173). It is unlikely that one company alone, especially a multinational organization, can be a sustainable enterprise as it will likely need partnerships, the creation of an interorganizational network and an ecosystem in which the whole network can achieve sustainability.

It is clear that a shift towards a sustainability mindset is necessary to bring these innovations from theory into reality. Most importantly, visionary and transformational leadership is in a key facilitating role. Furthermore, MNCs would have to encourage creativity, imagination, and investments in disruptive social and technological innovations, and clean and more sustainable means of operations (Hart 2005, Porter & Kramer 2006, in Sharma & Lee 2012). Within companies, this requires intense training efforts, and within educational institutions, a reform towards degrees and programs that truly equip future managers with appropriate skills and a sustainability mindset. With regards to sustainability, providing real world learning opportunities will be important. This can be achieved, for instance, through offering inter-disciplinary, action-learning and experiential styles of education, which do not seek to reduce complexity or eliminate paradox (Senge et al. 1994 & 1997, in Wheeler, Zohar & Hart 2005). That is why interdisciplinary and practice-oriented programs such as the IDBM have the potential to deliver future-oriented, holistically innovative and sustainably minded leaders.

In addition, it must be noted that the meaning of sustainability is socially constructed and constantly evolving and molded with regards to different social, economics and environmental contexts. The lack of consensus is a great challenge within the academic literature and in the industry between companies or even among the employees within the same company poses great challenges in the path towards sustainable enterprise. Even when a company has established a specific corporate responsibility policy, the decoupling of companies environmental and social rhetoric from their actions seems to be very common. Moreover, academia needs, first of all, to develop educational programs that cater for the needs of sustainable enterprises, and secondly, move beyond the traditional paradigm of western capitalism and help businesses to understand, adapt and eventually prosper in the new resource constrained world (Shrivistava & Paquin 2011) and together achieve concrete actions that can showcase sustainable business not only in terms of profit for current shareholders but sustainable business models that satisfy all stakeholder needs including those of future generations.

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“ Companies that wish to succeed and improve their competitiveness through design should have a design manager on the strategic level.”

Organizational and managerial practices in Finnish in-house design management

Reetta Noukka

Introduction

This article summarizes the main findings from an extensive study on the organizational and managerial practices In Finnish in-house design, conducted by the author as her Master Thesis (at Turku School of Economics) as part of the EDEST project of IDBM in 2010. The Master Thesis of Reetta Noukka, "Organizational and managerial practices in Finnish in-house design management, is downloadable at: http://info.tse.fi/julkaisut/Thesis2011/12757.pdf

The study topic was chosen due to the lack of a comprehensive study on the current practices and enabling further studies in design strategy. Secondly, the ideas was that laying the theoretical groundwork would make it easier to implement an effective and appropriate design management strategy on the company level.

The theme was examined through the perceptions of design managers, i.e. individuals in Finnish companies who have identified themselves as design managers. In the empirical part of the study, the members of the Finnish Design Management Association were addressed with a web-based survey in order to find out what are the current organizational and managerial practices in each company. The database consisted of 43 design managers from 33 individual companies. In the second stage, five design managers were selected out of the respondents in order to gain a deeper understanding of how design management is organized and managed in few cases. Two sub-objectives were selected for the study:

1. to analyze the managerial practices of Finnish in-house design managers (consisting of the job content and focus of design management),
2. to analyze the organizational practices (including both the horizontal and vertical position of design management in the organization)

A framework of organizational and managerial design management practices was constructed based on the theory and literature review. The framework consists of two layers and two dimensions. The organizational practices form the inner layer and the managerial practices form the outer layer. The vertical dimension consists of three design management levels, strategic, tactical, and operational level. The horizontal dimension consists of the horizontal location and the focus of design management in the organization. The main findings of the study were:

1. Design management in Finnish companies appears on strategic, tactical, and operational levels, but majority of design managers have yet to reach the strategic level.
2. A typical design manager often has a role that contains tasks from more than one level of design management.
3. There is willingness to move up on the levels of design management, towards more strategic tasks, from the design managers' part.
4. Design management is largely product design oriented.
5. Design management is most often organized as part of R&D, marketing, or part of design that is its own unit.
6. Companies where design is organized as part R&D most often produce industrial goods to B2B markets, or are otherwise very product development oriented, companies where design is organized as part of marketing most often produce consumer goods to B2C markets, and companies where design is its own independent unit are most often companies, where design has traditionally had a very high importance.
7. The most common combination of managing and organizing design is tactical design management organized as part of R&D.
8. Operational and tactical design managers experience attitudes and lack of understanding on design as issues that hinder design management in their companies.

Next, some of the viewpoints will be briefly discussed, followed by managerial recommendations.

Job content of design managers

It was found that design managers have a broad range of job contents, ranging from the operational level to the strategic level. This indicates that strategic design management has entered at least some organizations in Finland. In general, though, the field of design management in Finnish companies cannot yet be described strategic. Only a fraction of the studied companies' design managers have an impact on the strategic level. However, it was noted that there is willingness among the design managers to take on more strategic roles, which would indicate that Finnish companies will see an increase in strategic design management in the future. However, it may require some trail blazing from the design managers' part in companies with no existing tradition of strategic design management positions.

It was further noted that the individual design manager's job content is broad. This can be due to the relative newness and unfamiliarity of the design management profession to organizations, due to which the job contents of the design management professionals are still largely undefined. In many cases, the design manager is the only design management professional in the organization, and due to this, the person has multiple roles. It can be seen that the design manager role in companies is quite a new phenomenon: The design management profession and discipline are not established to a great extent in Finland yet. Due to this, the field has also lacked a categorization.

Focus and location of design management

When it comes to the focus of design management, which in a large sense is quite limited first and foremost to product design, and partly also to communication design, majority still seems to be using design only on limited array of aspects in the company, as opposed to it being applied holistically throughout the whole company. Although it is noted that the companies participating in this study are the ones who are already investing in design and managing it – out there are plenty of companies who do not

use design at all, let alone manage it – the holistic utilization of all the aspects of design would, however, provide the best opportunities for design to impact the company's design vision, and therefore, succeeding through design.

The horizontal location of design could be determined by the industry and B2B/B2C orientation to some extent when it comes to organizing design as part of R&D or marketing. As opposed to restraining design only as part of R&D or marketing, establishing an own organization for design could support its holistic use. However, due to design's nature as a discipline that inherently overlaps with many other disciplines, such as marketing (communications design) and product development (product design, information design), an even better option might be to disperse designers under their appropriate departments based on the focus of design, and appointing a strategic design director in the executive board. The design director would control all those aspects of design as well as lead the designers and tactical and/or operational design managers.

Based on the similar perceptions of both the operational and tactical level design managers about the design management at the company level, clearly distinguished from the strategic level, it can be concluded that the support from the top management and the positive perception of design are essential requirements for successful design management. However, it seems, that is not enough. Design management has to have a strategic organizational position to reach the strategic level, because only on the strategic level it can be ensured that design is connected to the business strategy.

Managing design is important for companies because it enables good design, which in turn brings added value. It is especially crucial for Finland and Finnish companies in terms of international competitiveness, since we produce goods and services with expensive costs. Yet, far too small a fraction of Finnish companies have strategic level design management, and far too many companies see it still as the management of individual design projects. If design management is the most beneficial to companies' success when used strategically, the strategic use of design should increase if Finland wants to see design increase international competitiveness. The greatest potential seems to be in the technology-driven companies (design management as part of R&D), among which in this study no strategic level design management was found. The strategic design management level is so far populated mostly only by companies that have a long tradition is using design. It further seems that there are still plenty of underutilized opportunities in the holistic use of design, as currently Finnish companies are quite product design centric, when it comes to the using the aspects of design holistically throughout the company.

Managerial recommendations

It is recommended, based on this study, that companies wishing to succeed and improve their competitiveness through design should have a design manager on the strategic level, affecting the strategic level issues, mission, vision, and strategy of the company, and through that, making design strategically important in the company. Furthermore, design should be used holistically, not only concentrating for example on product design. The horizontal location of design can be whichever suits the company structure the best, but in order to enable holistic and strategic design, the recommendation would be to have design placed throughout the company's activities, in order to impact product, communication, information, environment, and service design. The strategic level design manager, who is part of the top management, would be responsible for all design in the company in the end. In the future, it would be important to see companies' design management practices organized this way. With these kinds of practices, the companies would populate the upper right-hand corner of the fourfold table, marked in gray in Figure 1.

Attitudes and lack of knowledge on design and design management are the main things standing in the way of improving the state of design management in Finnish companies. The design vision should be presented and sold to the executive boards by convincing them of the benefits of strategic and holistically utilized design, and

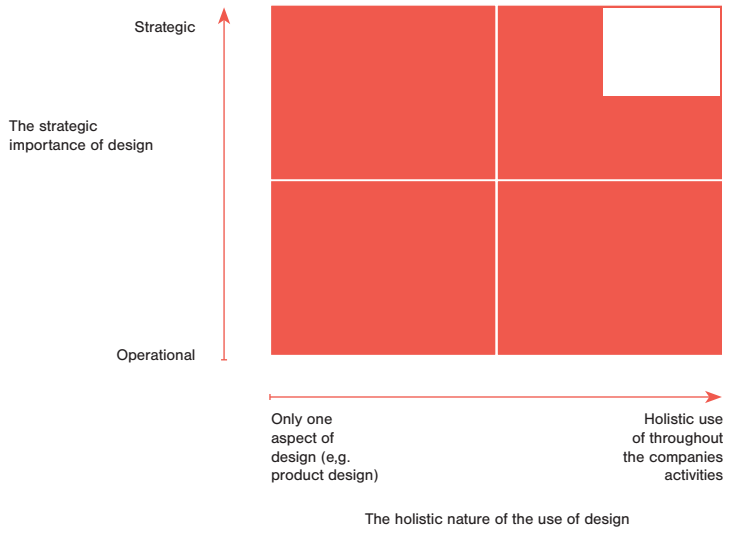

Figure 1: Recommended status of design management in organizations.

through that get the designers on the strategic level and facilitate the holistic use of design. Measuring the benefits of design could be one way to improve this, but it is very difficult to do scientifically, since separating other factors impacting competitiveness and success is difficult. This poses a challenge for the Finnish education policy: The attitudes should be changed the through education by educating designers that could better communicate the benefits of design management and collaborate with the technical and business professionals, and educating business and technology students to understand the benefits of strategic design management and the holistic use of design.

Concluding remarks

The study identified that there are multiple ways and views on how to manage and organize design. The aim of the study was to make the current practices more tangible and the structures more see-through, and by that, to contribute to the research of Finnish in-house design management, and to organizations developing their design management practices. In addition to enabling further studies on design strategy, the study also informed organizations and design management professionals on how design management can be organized and managed, and provided knowledge for developing the strategic level of design management in Finnish companies.

One of this study's most significant theoretical contributions is the definition of a theoretical framework that examines in-house design management practices through the perceptions of design managers, and recognizing that the status of design management in the organization is always an issue with two dimensions, the hierarchical and the horizontal dimension. The study provided up-to-date, initial knowledge on the largely uncovered area of in-house design management practices, in order to enable studying design strategies, which in turn enables establishing good design management practices in companies.

There are questions that could not be answered in the scope of this study, which further studies could address. A following study could make use of the categories and ways recognized to build a more comprehensive and structured quantitative survey that could be repeated in a certain time interval, so that at some point a lateral quantitative study could be done to explore the possible change happening in design management in Finland. The results could be compared with those obtained from other Nordic countries, for instance, to address international competitiveness. Furthermore, it would further be interesting to examine the in-house design management practices from the point of view of the top business management, by for example interviewing the superiors of the design managers, and to compare these perceptions with the ones of the design managers.

“ Designers can contribute to society by making responsibility more attractive and easier to understand for the consumer. We should try to create products and services that help consumers build a collaborative culture – much more than focusing on visual design only.”

Designer in responsible markets

Annika Järvelin
(Translated by) Toni-Matti Karjalainen

Introduction

Only a few people could have failed to recognize the growth in the number of responsible consumers in Western countries. Green blogs and local food stores seem to emerge like mushrooms in rain, and it is no longer difficult to find a company that does not have a sustainable development strategy. The need for and interest in more environmentally sound choices is greater than ever before. This puts us designers in front of new challenges: How can our professional skills help in ensuring that consumers would do more ecological and socially more sustainable choices in easier ways?

The roles of both the consumer and the designer have been evolving in recent years. Instead of passive consumers of mass produced goods, we have become active and networked citizens who expect companies to be engaged in an open and transparent dialogue. We believe in peer consumers and in open conversation with companies more than in top-down dictated communication. As designers, we have to encounter a new challenge: How to offer consumers a platform where they can have that discussion? In our work with media and businesses, we designers face a duty to raise a responsible approach to society. Through communications, design, and brand building, we have a channel to inform, inspire and encourage consumers to act with more caution and attitude that considers the world around. We have the responsibility to choose the direction to which material culture is heading, and the ability to develop services that create more responsible practices. Supply creates demand. The new type of demand is then creating new models, innovative services, growing understanding, and opportunities to choose (Pentikainen 2009, 122). How to design innovations that change the consumption towards more ecological and ethically sustainable direction? What is the designer's role in increasing the popularity of responsible consumption? How is responsibility "sold" to consumers?

Ministry of the Environment in Finland and the Finnish Environment Institute, in their website (www.ymparisto.fi/sustainability), define sustainable development as an issue that concerns world-wide, regionally and locally continuous and controlled social change, which aims to protect good living conditions for the present and future generations, which means that the environment, people, and the economy are equally taken into account in decision-making and actions. According to, Ezio Manzini, the ultimate purpose of design, its raison d'être, is to improve the world. Being close to the consumers' daily lives, the designer plays a key role in creating prosperity and sustainable development scenarios for the future. We have to learn how to live better while reducing our environmental footprint and improve our social network (Manzini, 2007, 78). It is not enough that we try to meet the design brief in the best possible way. Designers should be involved in the creation of the brief. Instead of designing beautiful and usable objects, or attractive and selling packages, designers should be involved in the early product development phase to reflect on how products and services reduce environmental pollution and improve people's well-being. Designers as business consultants should tell the companies that responsible consumption is no longer a niche market thing, but something that speaks to increasing masses. Today, ecology is not only a competitive advantage, but also a requirement for sustained business. Environmental responsibility in the era of transparency can no longer be only a word in the company's annual report, and ecology is no longer a sole attempt to polish the facade of the brand. Responsibility is seen as a condition for successful business.

Well-being as the purpose of design

The value of design should no longer be measured by sales and profitability but by the success of the process; for what kind of experiences we can achieve with products and services. While business has been traditionally based on efficiency and profitability, sustainable development can give a new meaning: a profitable business should now first and foremost think about what is right. If you make good results but you do not respect people, there will soon be no one to buy your product and, if you do not respect the earth, you will soon have no context in which to operate your business. (Roberts 2008, 170).

The leader of the Creative Sustainability Program at Aalto University, Eija Nieminen, notes that we should ask ourselves what kind of world we want to live in, and what is our understanding of well-being. Is it based on the economic growth? Are we willing to sacrifice the increase of the material wealth in order to reduce the injustice in the world? (Nieminen 2008, 13)

Instead of creating products and services, could well-being be the purpose of design, asks Alastair Fuad-Luke (2007, 25). He believes that design should seek to improve the physical, mental, emotional and spiritual well-being, be economically and ecologically sustainable at the same time, and strengthen the social and cultural values. Design is connected so strongly to commercial productivity that we have forgotten its true meaning. Fuad-Luke believes that task of design is to create a change from the present to an ideal situation. Sustainable development requires re-evaluation of social values at global, regional and local levels. To change consumption and goods production to correspond to the values of sustainable development we need new cultural practices and change in how we judge well-being, economic growth, and social progress (Fuad-Luke 2007, 37). Design can also affect the social well-being in everyday life. It should encourage people to social interaction and participation. Design can be used to share common values, attitudes and feelings and to encourage to creativity in everyday life challenges. Design can question the course of societal development and test new models for building the future. (Fuad-Luke & Hakio 2012.)

Building scenarios for a more responsible society is the first and fundamental step in the changing role of designer from a problem creator to a problem solver (Manzini, 2007, 78). The designer must identify weak signals in the

new patterns of behavior and ways of thinking. We need new alternative strategies, products and services, to address the global challenges of healthcare, education, and poverty (Brown, 2009, 3). The keys of the green revolution are to be found in technology, business, and everyday life, as well as in their combinations. Social media and technological development can provide solutions to many social problems. In addition to the aspect that transition to the digital world can radically reduce the production of matter, digital technology can help us to bring more necessary products and services to the reach of people who would not have financial or geographic access to them. Whereas in the 1970s the green ideology opposed technology, the current thinking relies on the new technology and its commercialization potential. It has been understood that the economical growth and new innovations are needed for a cleaner and greener world.

Designers taken into product development

Design of responsible innovation is difficult, if designers are taken onboard the project only in the end, and their task is only to come up with aesthetic polishing or attractive package design. Companies should be able to take advantage of professionals already in the early stages of product development, where it is still possible to change the whole direction of the project. Producers, business decision makers, and consumer should all be involved in the design dialogue. Today, many design professionals question who, in the first place, is a designer? Can anyone today be a designer? It is clear that closer cooperation between different stakeholders is needed. When we take the product developers, business leaders and consumers into the planning process, it binds and motivates them to think about the whole process and life cycle of products and services and to consider the end-user perspective more seriously.

Designers should think together with engineers and other product developers about the aspects that motivate and involve consumers. The traditional customer-oriented design has come to a dead end: If we ask consumers in advance, we are not going to find real innovations. Consumers in general do not know what they need before the new solution is available. Instead of a car, they look for a faster horse. Instead of polls, we should observe consumer activities and guiding motives. By understanding the consumer's action, we can change our consumption practices towards more responsible direction. Instead of the generic target audience, we should think about individuals through their personal experiences. As consumers, we want that the brand offers personalized experiences "just for us". We want products that we can love and whose buying provides us with meaningful experiences. We build our identity and we create our place in the community through consumption. We feel happy if doing "right" choices, ones that also other people appreciate. So why should we limit the design just for the pursuit of aesthetic comfort, while taken a little further, design can create happiness for humans? We can create stories and experiences that are relevant to people and that constitute new social networks and new collaborative culture.

As designers we can contribute to society by making responsibility more attractive and easier to understand for the consumer. The designer should try to create products and services that help consumers build their own identity in different communities and to build a collaborative culture that emphasizes the local traditions and the "real issues" – much more than focusing on visual design only. As designers we can make responsible consumption fun and meaningful. At the same, the work becomes more meaningful for ourselves, as its effects are spread across the society. We have the possibility to get consumers to think about their own behavior - and to change it.

New approach to design can provide a more responsible ways to change the products or, on the other hand, to decrease the use of material. We can create products and stories for multiple senses, add their personalities, so that they the products will be more appreciated and we do not have so strong need to exchange them as soon as the latest fashion or the more recent technologies step in. We have to understand that, more than by functionality and aesthetics, the consumption decision is dictated by emotional and psychological needs (Grant 2007, 54). The product is more selected on the basis of how its "soul" or "spirit" is transmitted to the consumer. This spirit consists of data, images and stories (Valtonen, 2007, 301). Product ownership may become less important, and will be replaced by acquiring experiences through sharing, giving and doing things together (Grant 2007, 54). It can thus be seen that the designer of the 2010s is no longer a person who designs a green image for the brand; but ecological and socially responsible concepts and stories instead. This will contradict the traditional concepts of brand image, branding, public relations, mass media and communication strategy. The focus is on creating new market revolutions, and on making changes to the entire market system, the media, and society (ibid.). When consumers can stand behind their choices, they are likely to recommend them to others. When we design attractive and expressive consumer products, more and more consumers will take the voluntary act of promoting responsibility. Responsible thinking in turn activates the consumer to act for the common good of the society. Ecological and ethical thinking can become the model for the masses, as long as it is made sufficiently easy and fun, and as it is understood that responsible consumption does not necessarily mean reduced life quality. On the contrary: We are happier when we can make a difference and able to do informed choices that are appreciated by others (Grant 2007, 48).

Designers have traditionally acted as experts in design business. Companies have used the services of designers, especially industrial designers, to grow their business. Design is used to increase the sales merely through aesthetics and styling, not through true innovations. Growing sales and consumption, however, usually mean increased production, which is not sustainable. Designers should embrace a

new goal for design, to replace aesthetic and commercial dominance. The most important task of design is to create new visions and meanings. The design goal should be set to (social) welfare. So that we could make actions in promoting socially more equal, more sustainable, yet still economically viable world. Design should aim to create the necessary social changes in a more sustainable way, and bring along new lifestyles and working styles. Design should achieve a balance between economic, social, and ecological responsibility, and result in solutions that satisfy all these aspects. The starting point for design should be more its social impact that profitability. If design is really aiming for sustainable development in business, it must treat the society and the environment as clients (Fuad-Luke 2004, 19). And again, as designers we can regard our work as more meaningful when we are aware of the impact of our actions on the society as a whole.

Seeking personal experiences in products

I do not think that the responsibility is some sort of a passing trend. Rather, I see it as a phenomenon that defines the whole generation and is the biggest determining factor of our times since the information revolution. The consumers of post-modernism desire to return to their roots, to "real issues", that they truly appreciate. (Virtual) world citizens want to find their place in the global community as well as in their own cities. The global awareness of environmental issues has forced us in the front of sustainable development challenges. It is understood that we cannot continue with this unsustainable way of consuming valuable natural resources and depriving the workers of developing countries. Roope Mokka from Demos Helsinki says that people want to support the right values (Pentikainen 2009, 50): Part of individuality is that we can re-define ourselves in relation to other people, and the virtue of individualism is the idea that people should be able to make their own decisions in life. It has led to the rediscovery of responsibility, and of the meaning of community. People feel that they need to choose things that are right not only for themselves but also to others, he concludes.

Whereas the post-war generation was in need of goods and was therefore a suitable target group for mass production, the current young adults are born to a situation where there has never been a lack of matter. They do not need to seek new goods but also find their way away from the goods. Those born in the 1990's and 2000's are growing under increased pressure in terms of the global environment. They feel that conspicuous consumption not only is a waste of money but also bad for the environment. The consumers under 40 years of age see individuality, identity building, and creativity – as well as "rootiness", cleanliness, responsibility, and communities – as primary values on which they are willing to spend money (Arbelius 2010).

According to Nieminen (2008, 30), the megatrends of today include globalization, changes in the information society, urbanization, development of democracy in industrial countries, labor market changes,

structural changes in population growth, and fragmentation of cultural climate. The changes in the information society, in particular, enable increased mobility of people and better communication (Grant 2007, 213). Web 2.0 and social media has enabled the birth of new "village communities" in which their members can deed their places in the community without any financial requirements (ibid.). While social media has increased its global networking, communities that share similar thinking, as well as roots and culture, has become more important. Social media has brought a strong belief for the younger generations that they have the power to impact on things through their own choices and actions (Arbelius 2010).

The role of the product as an end in itself is not anymore so important in these days; we seek less status value through them. Instead, products and services are tools that enable us to obtain added value to our lives. Such may be that we can feel ourselves valuable in society or that we get to share issues that are important to us. The social identity allows us to move around between different groups, and transform ourselves into a variety of different consumer types depending on the each frame of reference: in one social media group, we can present ourselves as career focused individuals and as a tips-sharing dreamer tourist in another. Consumers do not need much more choice or coveted brands, but products, services, and shopping experiences that create personal meaning for them. We have moved towards the post-consumption of the material in which the most important things are not the objects themselves, but the satisfaction of our needs through means that are fun, creative, and cost effective.

From ownerhip to sharing, from mass production to customization

We are hence entering an era of post-material consumption where the importance of recycling, durability, and community thinking is increased. Designers have gradually understood that "I do not need a washing machine, but clean clothes" (Salonen, 2011). The mass production is, however, so concentrated in our culture that we are accustomed to a business model that encourages to purchase more and more. In a world where status is defined through owned objects, we have stopped to think do we actually need to own all these objects. Since products are relatively cheap, we may not take the effort to think about how we could borrow or rent them. And when products break down, it is often useless to repair them, because buying a new one is easier and cheaper. Therefore, there exist less repair services and less replacement parts.

Besides the sale of goods, the designer or design team should in the concept phase think about ways to reduce the need for ownership and to increase the shared use of products. Changing the behavior is possible, if it is made easy, and it relies on people's desire to promote the common good. Designers should create means by which goods could be easily rented, loaned, or shared. We could pay for the products only

when we need them or own them together with certain communities. And digital technology enables us to bring the loaning, renting, and sharing services easily available to anyone.

Due to the increased globalization and mass production, goods have lost their cultural characteristics, and our understanding of their production as well as the origin of the material has diminished. We live in an environment where the quantity of material things and the ease of consumption make consumers passive. When we reach the point where the entire virtual environment works seamlessly and we live too comfortably within the technological world, we no longer receive sensations from the objects surrounding us; and objects lose their meaning and are easier to replace (Chapman 2006, 104). Since most of our products are relatively cheap, and repairing is too expensive and difficult, we recklessly throw the product away when it becomes faulty. If, in turn, we have made the product by our own hands, it is more likely that we will try to fix it than to throw it away (Walker 2006, 57).

In the pre-industrialized world, the majority of the users of products were also their manufacturers. Along with the industrial revolution, we became consumers of mass for whom the manufacturing is unfamiliar. In the post-industrial digital age, and through personalization it has enabled, we have an opportunity to re-create the experiences that are meaningful to us on a personal level (Brown 2009, 115). Current technology means that products no longer need to look the same. There are alternatives for mass production. If we would participate in manufacturing of the products or their customization, it was more difficult to throw them away, because they involve a greater sense of value for us (Grant, 2007, 255). We feel more empathy towards products when we understand what they are made of and how they are built (Walker 2006, 96). Products should encourage individuals to become active participants in society and to search for local connections (Press & Cooper 2003, 1).

Traditional "green" visuality does not speak to masses

Sustainable development tends to favor a local, small-scale production and product durability (Walker, 2006, 74). Our existing aesthetic judgments are based on the laws of fashion trends, mass production, and economic terms. Material and production have dictated the terms for the materials and forms used. Mass produced articles are manufactured as cheaply as possible of materials that are easy to produce (Walker 2006, 114). Thus, contemporary materials and forms are largely the result of what has been profitable to produce. Eco-design, in turn, has a long encouraged the recycling of materials and natural colors. For this reason, our current aesthetic perception is often at odds with environmental sustainability and social justice. The aesthetics or responsibility has, however, been drastically changed over the past ten years as new products have entered the market and increased competition. In today's world it is no longer working that the green ideology is spread only by a small puritan and exclusive

group of "party spoilers" (Grant 2007, 6 Preface). In order for us to speak to the masses, we must speak their language. If the world was like in a 1990s sci-fi movie, in which the material is in short supply and everything is built of components that people have been able to find after the earth's destruction, the recycling aesthetics would fit better in our perception. But as long as the new and shiny represents the best possible aesthetics for us, recycling aesthetics remains a niche fashion of a small "activist" group. If you have on one hand a shiny iPhone that represents the latest technology and the latest trends, and on the other a robust handset made of recycled components, it is not difficult to guess which one of these two most consumers will choose.

The designer has a great role in making ecological products more attractive and less scary to consumers. The resistance towards sustainable development is often based on assumptions that ecology is a primitive, dirty, rough and unpleasant. It is also considered a step back to a more ascetic world. Consumers think that the ecological way of life demands sacrifices and loosing of benefits. Many think that ecology represents a certain kind of life style, which is intended only for certain types of people, and that reducing their ecological footprint is inconvenient and time consuming (Grant 2007, 206). The ideology of ecological sustainability has long been advocated by a vocal group of activists that want to show to others how green they are thinking. Visual ecology, which largely has been based on green color, recycled materials and stencil-styled font has become characteristic of this target group that wants to "convert" others to green thinking. This world is, however, unknown to the general public that is raised by the concern that through the use of eco-friendly products, there is a risk to be identified with the group of "watermelons".

In the study I conducted for the recycled clothing company Globe Hope, it was showed that the ecological or ethical concerns are no longer the primary selection criteria for the majority of consumers – not even for the brand's eco-conscious customers. They primarily valued product appearance and quality. Today, consumers do not want to manifest their ideology by using recycled-looking clothes. It was also hoped that the responsibility should be a "default" in future products, a standard feature that does not need to be specifically advertised. The current practice of responsible consumption favors design in which the responsibility is no longer visible on the product's surface. Good examples of this are the Finnish Samuji brand by Samu-Jussi Koski or the Swedish Ecoluxury clothes by Camilla Norrback. My study showed that durability and timelessness are, in turn, important in products – so that it is not necessary to renew the product in terms of trends and that it can be used for a longer time. The focus group participants in my study were not ready to switch to recycled ideological clothing or accessories unless they represent timeless, clean lines of design. Responsible consumption should not mean abandoning the quality, but consumers should instead be provided with a sustainably produced alternative in each product category; a high-quality, low cost, and commercially viable alternative. As the

Fair Trade tag line put it: “Creating trade not aid”. Or, as Bono of U2 said in the Madison & Vine products release conference: “We do not want you to buy these jeans because of the poor Africans. We want you to buy this shirt for no other reason than that it is the most beautiful shirt of the rack.”(Grant 2007, 162).

According to the Saatchi & Saatchi’s survey, 80 percent of purchasing decisions takes place in the shop floor (Roberts 2006, 115). Shops become screens of dreams that define the new creative generation through emotions, events, packaging and other stimuli. Equally, 80 percent of purchase decisions are based on emotional reasons. In order for us to detect a product, we need to react to it emotionally. Findings in neuroscience suggests that only five percent of our brain activity is conscious. The ecological product does not need to look recycled, but it needs to stand out from the shelf and rely on the consumer’s emotions. The responsible product also needs to sell on the shelf. We need bold new solutions that appeal to consumers by their visual features that speak on the emotional level, and provide experiences that attach the consumers to their social reference groups. The will to create lovely environmental and ethical products must also, and particularly, exist the corporate top management level. Designers can rarely decide on which solutions the company can invest. If companies focus only on the secure pre-tested solutions, with no large financial risks, a broader change in society is difficult to achieve.

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“ The problem for design in claiming success for business boils down to the following question: How can design claim that it has a strong and standing tradition in creating value for business? In other words, what are the success stories of design?”

Useful fabrications:

Four stories about design for business

Dirk Snelders

Introduction

Some while ago, during a visit at the Evergreen Aviation and Space Museum in McMinnville, Oregon, an American veteran of World War II showed me around. During his tour we stopped at a Spitfire fighter plane, flown by the British Airforce during World War II (see figure 1). It stood next to a German Messerschmitt plane, its main opponent at the time. The veteran admired both designs, each for very different reasons. In his opinion, the Messerschmitts were really the better planes, not just technically, but also because of their superior handling and good looks. However, he pointed out that the Spitfire plane had one key strategic advantage over its German nemesis that made it help win the war: the Spitfire had been the easiest of the two planes to learn how to fly in. At the end of the war, it was this ease of use of the Spitfire that made it the winning plane over Western European skies. By that time most experienced pilots had either been killed or captured by the other side. With both planes predominantly flown by inexperienced pilots, the Messerschmitts had become an easy prey for the Spitfires.

The tour reminded me of the importance of user-friendly designs that are intuitive in their operation. And I remembered how this aspect in design had gained in importance after the war, when ergonomics came to be seen as a crucial discipline in design, not just for fighter planes, but also for many durables sold in consumer markets. It is also likely that the Spitfire was not the only wartime example of the value of ergonomic design. With the mass conscription of ever

Figure 1: The Supermarine Spitfire Mk XVI NR (http://commons.wikimedia.org, extracted 21 April 2012).

younger and less experienced soldiers during the war, ease of operation and intuitive use must have been a crucial value in the design of all military equipment.

The story of the war veteran convinced me of the power of ergonomic design, more persuasively than any book on user-centered design I had looked into before. It also became a story I told to many friends and colleagues, and I noticed how people found it interesting to hear. Some asked me later which planes they were again because they had wanted to tell the story to someone else. But despite the story's popularity, I haven't, to this day, investigated whether it is true. And I don't think anyone to whom I told the story has checked it. I guess we like to tell stories about design, and care little about their truth. <1>

A brief Internet search neither confirms nor disqualifies the story of the American war veteran. The information points to the fact that Spitfire had been designed well before the start of the war, making it unlikely that the crucial value of ergonomics had been foreseen by its designer. In the past, I have already worked with others on cases and theories to show that many qualities of design are unforeseen by designers (Lloyd & Snelders 2003, Person & Snelders 2010). This implies that the best stories about design are those we can tell in hindsight, stories about the past of design.

When it comes to the importance of storytelling, Oak (2006) has demonstrated how oral history in design exists within a context of persuasion. Her view is that people tell stories about the history of design to highlight the relevance of some aspects in contemporary design. According to Oak, "specific terms related to the past are used to support arguments about current design work" (p. 345). So in the case of the Spitfire story, we can see that it underlines design's crucial importance in achieving certain values. Think of a user-centered designer who needs to argue for the value of his expertise for business to a top executive. Surely, the story about the Spitfire that demonstrates the value of user-centered design would be a good one to tell before going into the details of current projects and what exactly they delivered?

This article will focus on the stories that can be told about design's past, to underscore design's importance to current business operations. Readers should bear in mind that the goal is to help designers in claiming the effectiveness of their work to business, and for this purpose we care more about instruction than validation. Of particular interest in this article are stories about the interface between design and business. Which moments in design's past provide examples that illustrate the strategic value of design for business? As sources, I am relying on popular stories about design and famous examples, many of which taken from a popular television series on design, and books on the history of design, design management, and marketing. <2>

In addition I am relying on accounts about the value of design for business told to me by design and management professionals over the last twenty years.

The structure of the article is as follows. I will first discuss the problems that designers encounter when they have to argue for the value of their work for business, and conclude that popular stories

about design's value in the past may be of help in this. Next, I will rubricate the success stories of design according to the way in which they can be of value to business. By doing so, we might see that some values of design are related to 'leading' success stories in certain historical periods. When this is the case, we will not withhold readers a tentative analysis of crucial developments in those periods that can be connected to a particular value of design. At the end of the article I will discuss what is currently the most dominant success story in design, the story about user-centered design.

The problem for design of claiming success in business

Designers face a general difficulty in explaining the value of their work for business. Their influence on leading financial indicators is very indirect. As an activity that makes plans for production (Roozenburg & Eekels 1995), design often sits at the beginning of product development projects, and its effect on business performance is confounded by a large number of business functions that co-determine performance, but whose influence is exerted at later stages of product development and launch (such as engineering, branding, sales, etc.). <3>

This means that, whenever designers do something to advance a business goal, they depend on other functions in a company (quality production, good pricing strategy, strong advertising a motivated sales force) to actually achieve those goals. This also means that, in order to stake a claim in the success of a new product, design needs to compete with other functions in a company that have had a more direct impact on performance.

Things become even tougher when we take into consideration that the effect of design on business performance depends for a large part on second order effects. Designers often claim that they focus on the use value of products, as much as, or even more than the exchange value of products. By doing so, the effect of design on business performance becomes for a large part a second order effect, since use value mainly has effects on sales and profits in the longer run, through repeat purchases and a good word of mouth from experienced users to future potential users. Thus, effectiveness claims of designers in terms of business performance are highly problematic, and a designer having to make such claims will have a hard time to do so.

Outside the scope of single design projects, the importance of design for business performance has been confirmed by a number of studies. Most notably, research shows a) that investment in design is associated with relatively higher profits, profit growth and sales growth (Gemser & Leenders 2001, Gemser et al. 2011), and b) that highly acclaimed design efforts of companies are associated with higher growth of their stockmarket value (Design Council 2004). Thus, design has been shown to be instrumental in achieving business goals as sales, profit, and stockmarket value.

However, as much as these studies have specified performance indicators for business, as little have they done to specify the type of design activity that has been conducive for achieving these effects. In trying to find a role for design that is as big as possible, these studies have tended to define design broadly, implicitly blurring industrial design with development and engineering design (Gemser and Leenders 2001), or communication design (Design Council, 2004). And, when trying to specify design activities, they typically separate design into activities aimed at functional and symbolic value, which is something most designers and design researchers find highly problematic (Alexander 1964, Bonsiepe 1999, Fallan 2010, Person & Snelders 2012, etc.).

The above research provides a good reminder to business to invest in design, but it does not support designers to claim that their particular (often specialized) work can be of value to business. A better place to be looking for this might be in cases where companies hire external design consultants. Such consultants are selling their expertise, and remind business incessantly that they are strategic partners in value creation. A good example is frog design, one of the biggest and most generalist design consultants in the world. On its website, frog has put a number of statements to define its capacities, and that makes it stand out against other (often more specialized) design consultancies. The statements are shown in table 1, and include many clues for designers to define the value of their work for business.

Relating these self-advertised capacities of frog to its self-professed history (frog design 2012, Esslinger 2009), we can see that the various design capacities of frog

1.	We are fanatical about improving the world
2.	We choreograph cultural change... through design
3.	We are not just a business, after 40 years we are part of the cultural fabric
4.	Our work outlasts movements and fads
5.	Quality is our non-compromising obligation
6.	We strive to change minds, touch hearts, and move markets
7.	We are vigilant, expert, cost driven, and aware of the need to save our scarce environment
8.	Our talent is both an art and a science. It is both business and culture
9.	Our clients are the key to our success (however, we don't take any b.s., inside or outside)
10.	We live honestly, open, and without fear
11.	Humor and spirited fun are the essence of frog

Table 1: The self professed capacities of frog design (taken from www.frogdesign.com / about, extracted March 2011).

have developed over time, slowly cumulating into the list in table 1. Given the history of frog design, the first and last listed capacities (fanatically improving the world, bringing humor and spirited fun) are likely to have been part of the company since its start in 1969, while other capacities (like choreographing cultural change) refer back to the time when it became the famed design consultant for Sony in the 1970s, and others (like being cost driven) to capacities it has been developing more recently.

When taking a more general perspective, the statements of companies like frog design can best be seen from a 'dynamic capabilities' perspective (Helfat et al. 2007, Teece, 2009). From this viewpoint, business organizations survive by fostering the capabilities of their workers and business relations, and by stimulating that these capabilities develop in response to constant changes in the environment. The dynamic capability perspective provides us with important insights in the way that design can tell stories about its importance for business. First, this perspective focuses on design as a slowly developed capacity, one that cannot be developed overnight. Design activities, even when placed in outside design consultancies like frog, tend to have a natural connection to in-house development and production processes of business. Many capacities are heavily related to business processes such as engineering and marketing, and must be integrated with these processes to become successful. This means that design is not a hit and run activity based on a few good ideas, but rather an activity that needs time and effort to come to results for business.

Secondly, the capacities of design have their own history. For instance, the capacities of frog developed at one stage in time, and for one set of business clients, are brought to the next set of business clients for better or for worse. Even though Yang, You and Chen (2005) have argued that new technologies for sketching and prototyping can make old capacities redundant, in reality we see that capacities from design's past are still being cherished as essential to design. This means that the list of capacities of design becomes ever longer, something that has already been noted by Valtonen (2005).

Thus, based on the dynamic capabilities view, we can assume that a) that the capacities of design are in a slow, but constant state of flux, and b) that capacities of designers are broad, with later developed capacities adding to, rather than replacing many earlier developed capacities. This means that the problem for design in claiming success for business boils down to the following question: How can design claim that it has a strong and standing tradition in creating value for business? In other words, what are the success stories of design?

Four success stories of design

Below we will focus on four success stories about the strategic value of design for business: design for production, design for selling, design for quality, and user-centered design. Our stories will hinge on examples from the past. Some of these will be early examples, showing how a particular capacity of design became noteworthy, but others will be more ultimate examples, showing the full potential of a design capacity long after it was developed. <4>

Design for production

This capacity of design is about the activities of designers to deal with the drive of companies to optimize productivity levels. Design here has to work within the boundaries of a company that wants to produce goods at ever-lower costs. This business orientation is validated by a number of characteristics in the environment of firms. Typically, companies need to invest heavily in cheap production when they cater for fast growing markets where demand is predictable but price sensitive. In such situations, development costs are likely to be high, since they include investments in expanding production facilities and distribution networks. Given that markets are predictable, but also price sensitive, the goal of the company is to produce at high volumes, using the economies of scale to bring its cost price down, in the knowledge that a lower selling price will drastically increase demand.

The capacity of designers that is called for here stems from an ambition of production oriented companies to have their cheaply made products not appear valueless. Thus designers here perform the task of retaining as much value as possible, given an often downgraded quality standard. In the list of frog design (table 1), this capacity is mentioned under point 7, which deals among others with design being vigilant and cost driven.

An early example of how this capacity developed stems from the early periods of the industrial revolution. It is the example of early industrial clocks in the US, popularised by Meikle (2005). Meikle describes how industrial clock makers quickly expanded the market for clocks in the US at the beginning of the 19th century. Before the industrialisation of clock production, crafts-based clock makers worked with high skilled metal workers, and would typically produce 10 to 15 clocks per year per workshop. This practice meant that the brass movements sitting inside a clock were an expensive luxury. Within a timespan of some 30 years, the clock-making business had changed dramatically, with movements made by non-skilled workers, and the annual production of some clock makers running up to 300.000 clocks (see figure 2 for an example). Clocks had become cheaper and cheaper over these years, making it an affordable mass produced industrial good for an upcoming middle class.

What is interesting for the capacity of designers is that these new industrial clocks were sold as full working clocks, the movements complete with their case and dial, which make up the 'user interface'. These interfaces were designed according to styles adopted from higher quality, luxury crafts products (often a style of a European court or from antiquity). Although the inner parts of industrial clocks were very different from those of crafts-based clocks, from the outside these clocks still tried to appear like luxury clocks. Thus, the capacity of the first industrial designers that was called for was to retain as much of the perceived value of expensive crafts products within the confines of cheap, industrial production.

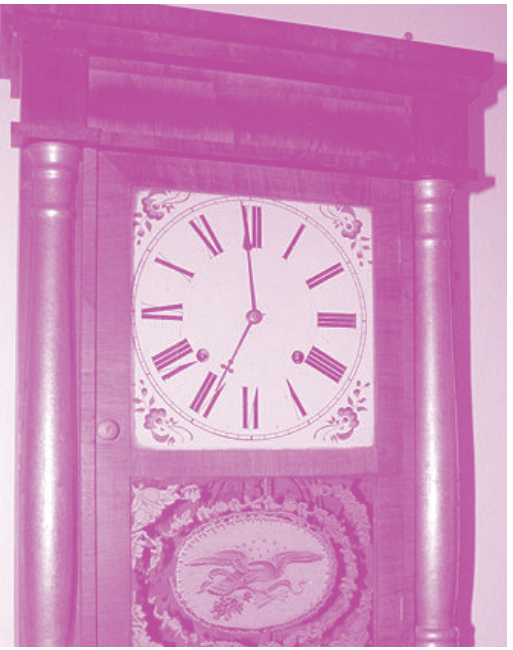

Figure 2: An industrial, mass produced 19th century Chauncy Jerome clock (source: http://commons.wikimedia.org/wiki/File:Chauncey_Jerome_Clock.jpg, extracted 26 April 2012).

The clock example is an early example, but one could say that throughout the 19th century designers tended to imitate the styles of crafts products in order to retain as much of the perceived value as possible for much cheaper industrial products. However, the capacity of design for production is not limited to products where crafts set the standard. We can see later examples of design for production for industrial products where crafts would not directly set standards for industrial products. A famous example here is the T-Ford, which was produced from 1909 until 1927, and was redesigned over and over to reduce costs. In its (re)design one can find many parts that are associated with more expensive luxury cars (which themselves were appealing again to quality standards of crafts-based coaches and furniture). Late examples of this approach can be found in the computer industry, and there crafts standards are of even lesser importance. For instance, the first designs of a new type of computer (i.e. the first desktops, the first notebooks, the first notepads) are found to set quality standards that designers typically try to retain in later designs of cheaper, knock-off products. The business logic driving design in all these examples is the same: to produce as cheaply as possible, while trying to uphold perceived (and earlier established) quality standards as much as possible.

Design for selling

This capacity of design is about the activities of designers to stimulate the sales of products for which demand is uncertain. This capacity is validated by a business drive to take larger and larger shares of a market. Such an orientation makes sense for companies who aim for a fast return of their investment in new product development and production facilities, and who operate in a market where the total industry output has become more than what is demanded by the market. These companies operate in a system of competition that economists call monopolistic: companies seek to conquer those segments of a market where its position is the strongest and most secured (thus running near monopolies within these segments). In this way, direct head-on competition on price is avoided, and customers in market segments are supplied with products that better fit their specific needs. In such a situation, selling many new products quickly to a specific market segment becomes a way of keeping competitors at bay.

The capacity of designers that is called for here is to design products that allure, and that turn people in targeted market segments into buying consumers. Thus, products need to be designed in ways that attract attention, support media advertising, and create a desire to try out the product. In the list of frog design (table 1), this capacity has to do with changing minds, touching hearts, and moving markets (point 6), and with a description of the designers talent as an art and science (of persuasion), being both business and culture (point 8).

There are many examples in design that highlight this capacity for selling, many in connection to the styling movement in the US before and after World War II. A very famous example is the styling section of General Motors. In reaction to massive sales success of the T-Ford, this company launched a number of different cars, each targeted to a different market segment and with a clearly distinctive expression. Under the bonnet, however, there were many parts that were shared by the cars, so GM could still – to some extent – enjoy the economies of scale, while offering less generic cars than the T-Ford. GM's strategy was highly successful, and the company was able to win back market share on the T-Ford, by offering more desirable products at a marginally higher price (for a longer description of GM's strategy, see Gartman 1994).

With respect to this design capacity, it is perhaps good to point out that a strong focus on selling only sustains and aggravates the problem of overproduction in an industry. For this reason, design for selling has been critiqued for its contribution to obsolescence and pollution, with the 1950s American cars being equated to dinosaurs: wasteful, and unfit to survive in a world more and more dictated by scientific rationality (Maldonado, 1958). There may be a point to this critique, because we can see that design for selling can often lead to oversized, wasteful designs. For example, many 'designer' versions of consumer electronics, such as the Alessi line for Philips (designed 1995 by Alessandro Mendini), or the Rowenta coffee maker (designed 2004 by Jasper Morrison) tend to

be oversized in the same way as the 1950s American cars. The underlying problem might be the same as well: these tend to be products for which the (outside) expression of the product has been the departure point, and the underlying engineering has been done with existing components taken from the shelf. If the inside components cannot be changed, then the easiest way for designers to get more freedom of expression is to enlarge the outside shell, making it bigger than needed.

However, it would be a caricature to state that design for selling is by definition connected to being oversized and unneeded. In the early examples of General Motors it was already acknowledged that a car stylist should never forget "the utility of his design" (Earl 1955, 5). Even Maldonado (1958), who critiqued the stylists for producing dinosaur cars, acknowledged that many designs by American stylists like Henry Dreyfuss and Walter Dorwin Teague still were quite 'heavenly.' To conclude, what seems to be essential to design for selling is not its connection to waste, but its connection to a belief that consumers are hesitant to buy (into) new products, and that an attractive offer can boost sales enormously. Such a belief may be valid for relatively expensive durable goods that consumers aspire to but are inexperienced with.

Design for quality

This design capacity focuses on creating high product quality, as expressed by high performance, reliability and longevity standards, and a seamless interaction between product and user. The required design capacities for such qualities are typically fostered by design (educational) institutions that aim to promote certain national or international values through design. An example is the case of the German Werkbund before and after World War II (see Betts 2004). However, the developed capacities have also found a commercial logic, among companies that are positioned at higher price segments of markets, where the focus is more on profit than on cost or sales.

A drive for quality in companies is generally considered to be a good idea. In many industries, the companies that provide higher quality levels in a market also tend to enjoy higher profit margins. Contrary to a logic of driving down cost and making products accessible to people, in many markets there are also consumers willing to pay extra for higher quality products. Since quality levels are high, such consumers are usually also a good source of free – and very credible – publicity. The demand from high quality, relatively price-insensitive segments can also drive the development of design capacities. In the example of frog design, we can see this in statements about being fanatical about improving the world, that their work outlasts movements and fads, and that quality is their non-compromising obligation (table 1, points 1, 4, 5).

What is also telling in the quality drive of frog is that it is seen as an obligation. Thus, the assumption here is that designers and the companies they work for should proactively strive for high quality products, regardless of what markets want. This drive towards quality becomes apparent in the famous "good form" (Gute Form) campaign of the postwar German Werkbund. This institution promoted high quality products for mass markets, only to find that their favoured designs ended up becoming the style of the smaller market segment of the new German elites (see Betts 2004).

A similar disregard for market demands can be found in the cars produced by Porsche from the 1960s until the early 1990s. Probably the best example here is the 924 model, introduced in 1978 as a cheap entry model (the so-called 'poor man's Porsche'). Initial quality levels of this model were modestly high, so that prices could be kept at a modest level as well. However, successive improvements of this model in the newer generations 944 and 968 quickly made the car much faster, more agile, more durable, and also much more expensive. Figure 3 shows the price development of these models, suggesting that Porsche, during that time, was simply unable to produce cars at suboptimal quality levels. Admittedly, this orientation on quality worked well all through the 1980s. The market for expensive cars had grown dramatically in that period and Porsche was reaping the benefits of its constant push for ever higher quality. Even when Porsche departed with the 924/44/68 models from its initial goal to make an entry level car with modestly high quality, it seemed that the markets followed Porsche in its drive to redefine quality for luxury sports cars. This development lasted up until the economic crisis that started in 1990, when Porsche's model policy was suddenly undermined and nearly bankrupted the company. <5>

User-centered design

This design capacity is about satisfying user needs, by products that are easy, pleasant, or interesting to use. This capacity is about design activities that put the user at the center stage. It aims at a profound understanding of users, one that takes the user experience of his/her world as a

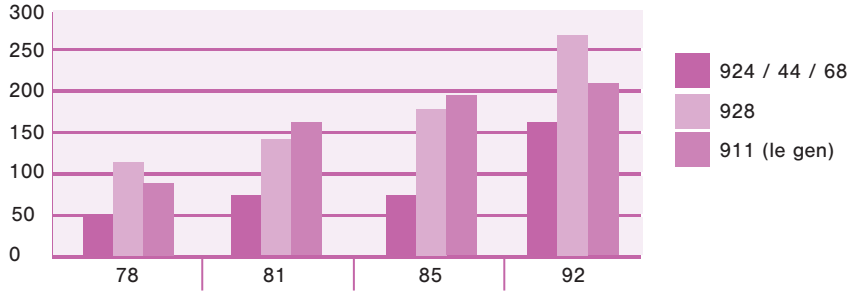

Figure 3: Prices of Porsche models on the Dutch market between 1978 and 1992 (all prices are in corrected for inflation and listed in Dutch 1990 guilders).

departure point for design. Another aspect of user-centered design is that it is appreciative of the potential creativity of users to co-design or co-produce the products and services rendered to them. This last aspect of this design capacity is also expressed by a tendency in the designs themselves to be styled in an unassuming, playful manner, often with room for users to self-customize the product.

This capacity of design tends to coincide with an orientation of companies towards creating strong brands. The logic that is followed here is that companies should care about their long-term relations with buyers. The assumption is that users make 'sovereign' decisions, based on their personal experiences with products in the past. Note that this implies that the decisions of users are informed by previous purchases of products, potentially by the same company. This means that, within this view, companies compete at a brand level rather than a product level. So instead of focussing on the sales and profits made by single product offerings, the focus now is on the longer-term creation of a brand whose products are closely tied to the needs of particular groups of users. Through branding, the company can develop relations with users, turning them into customers who recommend the brand to others, and who are enthusiastic about trying new product offerings by the same brand. Thus, companies with a strong and loyal brand following will not only benefit in the present, but also in the future, with products that have not been developed yet. A strong brand thus becomes an equity of the company, an expression of goodwill that is highly valued by financial markets. This allows companies to grow very fast, since they can invest in future business with borrowed capital, and with a low interest rate.

Turning back to the example of frog design, we can see this capacity is expressed in statements that frog has become part of the cultural fabric, that clients are the key to its success, and that humor and spirited fun are the essence of frog (Table 1, points 3, 9 and 11). It could also be argued that user-centered design is the most defining capacity frog design. The decision at the start of the company to always write its name in lower case points to the tendency to understate its importance. Next, some of the most important products in frog's history can be seen as user-centered. The Sony Triniton of 1975 by frog design was one of the first black televisions, with the Sony brand name as its only noticeable feature. Its design, as well as the advertising that surrounded it, stressed that the value of televisions does not reside in the object, but in what users do with the object. The Triniton was presented as a mere conduit to the television programs users wanted to see, and the only thing that stood out in this conduit was the Sony brand name.

Other early examples of this design capacity include the early hatchback cars from the 1970s (notably the 1971 Renault 5 and the 1975 Volkswagen Golf I). These cars were very different from the 'dinosaur cars' of earlier ages. They excelled in usability by being flexible, multipurpose vehicles, yet remained unassuming in their expression, 'mere conduits' to the larger needs of transportation. A later, more

Figure 4: The Nokia 3310 as an example of user-centered design (source http://commons.wikimedia.org/wiki/File:Nokia_3310.png)

ultimate example of this capacity is the 2000 Nokia 3310. Again, the design style employed here was that of an unassuming, friendly smiling object, offering a helpful hand by providing users with a highly intuitive interface, that help to support the claim by the Nokia brand that they were in the business of "connecting people."

New stories for design

The four success stories presented above point to a variety of ways in which design can be of value to business. Depending on the context, a business can decide to set itself goals in terms of costs, sales, profit, or goodwill, and the required design capacities may differ according to these different goals. In some respect, the stories can be historicised, because some contexts and business orientations may have been dominant during some periods in the history of industrial design. For instance, a focus on cost makes more sense when markets are underdeveloped, and companies must make huge investments in value chains in order to deliver products to people who are mostly very poor. In many western countries, this situation was more characteristic for the industrial revolution than for other periods, when value chains were already established in most industries, and most people were wealthier and more experienced. This is not to say that a focus on cost is now completely outdated. On the contrary, as our examples show, there are market niches and parts of industry where a focus on cost still makes sense. In addition, we want to avoid the suggestion that a focus on cost is slowly dying out, and has no place in the world of the future. Who knows what the future will bring, and which story of the past will be most applicable to the world of tomorrow?

However, we must also point to the last success story, that of user-centered design, as one that has become most dominant in design since the 1970s, under a growing influence of thoughts developed in the late 1950s, early 1960s, at the famed "Hochschule für Gestaltung" in Ulm. It might be good to stand still at the thoughts of some of the school's leading figures, notably Max Bill, Inge Scholl, Tomás Maldonado and

Gui Bonsiepe, since their early writings on user-centered design point to problem areas that can now be felt more strongly than before. <6>

To end with their thoughts, the ideas behind user-centered design were developed as a reaction against what was seen as a dangerous growth of a consumerist culture. For many Ulmians, user-centeredness was not meant only to confirm people's expectations about a comfortable life in a private domain, but also to confront them with an obligation to lead socially responsible lives. This meant that user-centered design, when it was first conceived, was not addressing people only in their role of playful consumers, but also as serious democratic citizens. However, in its application in business, user-centered design has become mainly an instrument for building strong brands, by supplying people with playful, unassuming objects that mostly addressed private comfort needs.

Ulmians like Maldonado and Bonsiepe (1964) wrote about this misrepresentation of their ideas in business, stressing that designers also have a more provocative role to play. We can see that influential writers in design are more and more echoing these thoughts, pointing to the importance of design to critically confront users with their social needs (e.g. Dunne 1999), and to the imperative of a design for happiness instead of overconsumption (Desmet 2011). It is hard to say, at this stage, whether such calls go beyond user-centered design, as has been claimed by Verganti (2009), or whether they merely 'complete' this important capacity of design.

To conclude, I started with the Spitfire example in this article to illustrate the relevance of stories about design's past for the present. In my mind, Spitfire has become an icon of the value of ergonomic design, influencing postwar, postindustrial design practice. It taught Nazi Germany a lesson, one that designers in the Federal Republic of Germany may have taken at heart when they worried about the misleading guidance of consumerist and purist values in design. It also seems a story we have not fully digested yet, and that is still the main story about the value of design for business. When I was at the Aviation and Space Museum in Oregon, I bought a small model of the Spitfire, and gave it to a little boy who liked war toys (luckily his mother did not mind). When I see him play with the plane, my hope is that the veteran's story is true, and that one day I will tell him how that plane has been special.

Notes

<1> Meikle (1998), who cites the story of the Big Ben alarm clock by Henry Dreyfuss, has noted something similar. Apparently, Dreyfuss had added a weight to the base of the clock to improve its stability and quality impression. Meikle reports how this story has been often cited in the design world, but that it had remained unchecked until he opened the clock and did not find a weight inside.

<2> Particular sources are the BBC series 'Genius of design' (2010), popular handbooks and influential articles on design history (notably Betts 2004, Buchanan 1998, Forty 1986, Meikle 2005, Alessi 1994, Sparke 1986), business history (Brand & Rocchi 2011, Keith 1960, Kotler 1997, Pine & Gilmore 1999), and design management (Blaich & Blaich 1993, Borje de Mozota 2004, Best 2006).

<3> This point has been made earlier for by Hertenstein and Platt (2000). In addition, there is a debate to what extent design has a similar position for the design of services. Some of the literature on service design stresses that design activities in services should assist earlier made plans of user-provider communities that focus on intangible processes of value creation (e.g. Sangiorgi 2011), implying that design's role comes at later stage in the development of services than for products. At the same time, however, such a modest role of design for services would make its contribution to the business value of services more directly visible. Others, however, including myself (Secomandi & Snelders 2011), have argued that design can also play a role at earlier stages of service development, and is not confined to 'accessorizing' and earlier planned, intangible service delivery process. Within this view service designers will face the same problem as industrial designers in having many delayed contributions to business that can be easily overshadowed by other business functions.

<4> The distinction between early and late example is inspired by the work of Kunkel (1999), who looked to the role of design over a product and brand life cycle, and who noted that there are iconic examples of design at early stages of a life cycle, followed by essential examples, and later ultimate and retro examples.

<5> After the 1990 crisis, Porsche revised its strategy and started paying more attention to customer demands. It succeeded in doing so when introducing the first Boxter models in 1996, at a price level of about 70% of its predecessor, the 968, and produced on the basis of a cost effectiveness program (which included shared body panels with other Porsche models, and a very plastic-looking dashboard). After the Boxter had become a success, Porsche's website declared its philosophy was to be customer oriented, and that the last years had shown that Porsche and it employees had 'understood' this now.

<6> For an overview of the thinking at Ulm, see Betts (2004, chapter 4). For a good collection of late Ulmian texts see http://ulmertexte.kisd.de/autoren.html (retrieved 27 April 2012). In specific, the texts of Maldonado (1958), and Maldonado and Bonsiepe (1964) have been of the biggest influence in this article.

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“ The concept of dynamic capabilities could provide the design management field with a useful framework for understanding how design practice can support the innovativeness of firms, and vice versa.”

A design perspective on the concept of dynamic capabilities

Marcus Jahnke

Introduction

According to mainstream management literature firms exist in an environment which may be more or less dynamic. In a more "steady state" oriented environment, with stable competition and with a market that can be anticipated with a high level of certainty, firms most of all need to arrange resources to ensure a maintained competitive advantage through resource efficiency and incremental innovation etc. To develop knowledge about this kind of "reality" has been the main thrust of management and innovation theory until quite recently. In recent years however, with increased globalization and ever fiercer competition, interest has shifted to an ambition to understand how to maintain and even strengthen competitive advantage in relation to an environment with a more turbulent and dynamic character. Here it seems that much of the more traditional strategy and management theory has been at a loss, leading to the "relevance crisis" in management theory and to a generation of managers ill equipped to deal with an ever changing reality beyond prescribing case related remedies (e.g. Augier & March 2007, Boland 2004, Bennis & O'Toole 2005).

One way to understand the fairly recent interest in a design perspective on innovation and business development is to regard it as a response to this situation - as an attempt, often coming from business rather than from research, to better understand how to deal with unknown and rapidly changing situations. Design related concepts that have emerged the last few years include "design-driven innovation" (Verganti, 2008), "managing as designing" (Boland & Collopy 2004) and "Design Thinking" (e.g. Kelley 2001, Brown 2008, Martin 2004). Some of these concepts have been developed outside of academia and have been resting on practical experiences and success stories rather than on rigorous academic studies, for example the concept of Design Thinking to a large extent draws from the experiences of the American design agency IDEO (Rylander 2009, Hassi & Laakso 2011).

One reason to understand these concepts as responses to the relevance crisis is to notice that as an organizational hype or management fashion (Czarniawska & Sevón 1996) Design Thinking (if we let that concept encompass the plethora of different design relates concepts), is markedly different in comparison to other typical management fashions such as TQM, Lean or Six Sigma. Instead of enhancing a rational perspective on operations (Meyer 1997) it supports a more interpretative one. From a theoretical perspective this might lead one to think that a lot surrounding Design Thinking is taken from "thin air" and that it rests on a shallow conceptual base. However, even though the concept is rarely related to a more in-depth theoretical foundation (Johansson & Woodilla 2011) the concept resonates quite well with preceding design theory which to a great extent is underpinned by an interpretative and reflective school of thought (e.g. Schön 1983, Krippendorff 2007, Buchanan 1989).

One concept within innovation management theory that may resonate with an understanding of design as an interpretative practice is the concept of Dynamic Capabilities. However, its strong ties to neo-classical economic theory and behaviourist science make the match with an interpretative design perspective difficult. The aim of this paper is to find out if it is at all possible to align an interpretative design perspective with the concept of dynamic capabilities. I will in doing so first describe the interpretative foundation of design theory. I will then trace the development trajectory of the concept of dynamic capabilities with an explicit interest in how it follows an enhanced interpretative perspective. Finally I will compare an interpretive design perspective with the concept of dynamic capabilities and suggest that the concept of dynamic capabilities is well on its way to resonate with an interpretative design perspective, and that a match between them would benefit both the field of innovation management as well as the design management field.

Interpretative design theory

In recent years Design Thinking has been suggested as a "cure" to the lacking innovativeness of firms (e.g. Kelley 2001, Brown 2008, Martin 2004). The concept has been touted in business press and bears all the hallmarks of a management fashion except one - it relies on a reflective and practice oriented frame of thought rather than on more rational concepts. Even though the literature on design thinking for the most part relates very little to theory, aspects that are pronounced include reflection, embodied knowledge, wicked problems, abduction etc. – concepts that have been fundamental to design theory ever since Donald Schön's seminal contribution to design theory with the concept of the "The Reflective Practitioner" (1983). In order to represent the main tenets of an interpretative understanding of design I will first introduce the concept of the "Reflective Practitioner" and then extend that representation further by also drawing on the idea of "design as a hermeneutic practice" (Snoddgrass & Coyne 1992, Snoddgrass & Coyne 1997, Jahnke, 2012).

The reflective practitioner

Donald Schön (1930-1997) represents a constructivist school of thought (Dorst & Dijkhuis 1995) and was one of its leading scholars in research on professional knowledge and organizational learning. Many practice scholars as well as practitioners from different fields, for example teaching, psychiatry and architecture, have found inspiration in his seminal book "The Reflective Practitioner" (1983) to better understand the "knowing that is in practice" (ibid). In the introductory chapters of The Reflective Practitioner, Schön fundamentally challenged the belief system that had shaped the scientifically derived professions and the idea that problems in social contexts could be solved rationally. Schön argued that a key reason why rational problem solving did not work was that the creation and application of knowledge had become separate activities, and could therefore not respond to the uniqueness and completeness of any social situation. To Schön "The situations of

practice are not problems to be solved but problematic situations characterized by uncertainty, disorder and indeterminacy." (ibid, 15). Schön argued that practitioners instead deal which such situations through "Reflection-in-Action". This reflection may or may not result in the establishing of a more well-formulated problem – in "problem setting". In other words, reflection is at the heart of the process. This was what the rationalist school of thought had failed to grasp he argued. Further, this kind of approach collapse the traditional means-ends relationship, i.e. the rationalist notion that professional practice is about deciding on suitable means to achieve already agreed on ends.

"When planners or managers convert an uncertain situation into a solveable problem, they [instead] construct – as John Dewey pointed out long ago – not only the means to be deployed but the ends-in-view to be achieved. In such problem-setting, ends and means are reciprocally determined." (Schön 1985, 15).

According to Schön, Reflection-in-Action is typically triggered by "anomalies" or surprises in the due course of practice. In such situations, when we come across anomalies, practice is taken to "indeterminate zones of practice" (1985, 25), where "competence takes on new meaning" (ibid). Here tacit "knowing-in-action" is converted to "explicit knowledge for action" and in the "action-present" (ibid). It is about reflecting on the meaning of the situation. And the ability to also convert the challenging situation, by releasing from established knowledge, to enter into a "dynamic knowing process, rather than [using] a static body of knowledge." (1983, 24). This was why Schön argued that a separation between knowledge and application of knowledge was detrimental.

Such indeterminate situations occur in all practices from time to time. Why Schön was so interested in design and architecture was because he felt that in designing these situations seemed to be the norm rather than the exception. To better understand as well as illustrate this Schön used an architecture tutoring session to show how an experienced architect reflect-in-action when sketching, to both understand the situation, and to come up with a new solution or proposal. Key to this reflective process is to listen to how the situation "talks back" - to be alert to the possible consequences of this or that move. Schön aptly describes this as a "reflective conversation with the situation." (ibid,43).

Towards an interpretative perspective on design practice

What Schön offers is the suggestion that to deal with complex situations where existing knowledge matters less, reflection is necessary. However, when Schön described design he did this to illustrate the reflective dimension of many practices. In doing this he also touched on how meaning related issues occur in all kinds of situations that professionals engage in. But one way to understand design as a practice is to regard it as being explicitly about meaning (Krippendorff 1989). From this perspective Schön's concept of the reflective practitioner does not seem to "cover all bases" (Jahnke 2012). Coyne and Snoddgrass suggest that to deepen the understanding of design as an interpretative practice it is worthwhile to propose that "designing is hermeneutical" and to find inspiration in Hans-Georg Gadamer's hermeneutic philosophy (1997). With such a hermeneutically inspired perspective "understanding", and tied to this the fundamental importance of the "question", becomes enhanced. In other words, to seek understanding is to have the capacity to question and to spur thinking beyond taken for granted concepts and beliefs, and also to be able to turn understanding into new meaningful manifestations.

To achieve the latter another capacity is fundamental, the capacity to imagine, to rewrite reality, or as Ricoeur, another hermeneutic philosopher puts it, to enter a "... mode of the possible, or better, of the power-to-be... [as] ... therein resides the subversive force of the imaginary." (1991, 300). This perspective is also tied to an ontological perspective of regarding the world as "in the making", or as "becoming" (e.g. Grosz, 1999). Rather than looking for pre-existing answers or knowledge "out there" different ways of understanding the world are related to and expanded on through imagination when acting on the world, and where the result "makes the world". This is the understanding that I will now contrast with the concept of Dynamic Capabilities.

The concept of dynamic capabilities

I will in this section trace both the foundations as well as recent developments of the concept of Dynamic Capabilities to enable a comparison between an interpretative design perspective and the concept of dynamic capabilities in the conclusions section. The concept of dynamic capabilities rests on the notion that the firm has certain capabilities that it can leverage to address rapidly changing environments:

"A dynamic capability is the capacity of an organization to purposefully create, extend and modify its resource base." (Helfat et al. 2007, 4).

As a school of thought within strategy research it rests on the "resource based view in economic theory", that is the idea that the capabilities a firm posses and/or can access are seen as resources to deploy in different ways (Teece, 1980). Initially dynamic capabilities were regarded mostly as competencies (Teece et al. 1997) but later developments rather see them as processes (Eisenhardt & Martin, 2000) – so that "processes are the underlying mechanism employed in applying (or developing) the capability..." (Helfat et al, 2007, 43). An advantage of a process oriented perspective it is argued, is that it allows for a possible fit with the evolutionary rather than neoclassical economic framework and thus also with a more dynamic perspective (ibid, 239). Further, the behaviourist underpinnings of evolutionary economics also "bring the people into the picture" so that for example also judgement may have a place in theory (ibid, 56).

However, if people are welcomed, for example Zollo & Winter (2002) seems to hold a rather rigid understanding that human processes are for the most part generalizable and possible to routinize and define in procedures, including tacit knowledge. This procedure oriented view has however been criticized, and as O'Connor puts it: "Given that MI [major innovation] requires knowledge creation and application in novel contexts, it is not clear how codifieable, repeatable processes can be useful mechanisms for building MI dynamic capabilities." (2008:316). Rather, dynamic capabilities under conditions of uncertainty should be able to include also cultural elements and skill-sets O'Connor holds (ibid, 317). Also Teece et al. (2002) criticize the procedure oriented understanding and also holds the ability of managers' to "sense" the market place can be seen as an important capability that cannot be procedurized.

A key characteristic of the dynamic capabilities literature is how it highlights the role and competencies of managers. Managers are seen as "orchestrators" of dynamic capabilities (Helfat et al. 2007, 19). In a response to more traditional and rational economic theory which assigns management an operational role as "calculator": "... the strategic management function involves much more than "coordination" and "adaptation" ... [which] as management functions do not fully capture the essence of critical managerial activity in dynamic markets"... [instead] Such managerial activity involves, inter alia, orchestrating complementary and co-specialized assets, inventing and implementing new business models, and making astute investment choices (including with regard to R&D and M&A) in situations of uncertainty and ambiguity." (ibid, 25)

As an example of the failure of "coordination and adaptation" the authors shows through a case study how the Gatorade company failed to make the newly acquired entrepreneurial and "street smart" Snapple brand fit with the large scale operations of the Gatorade company (ibid, 60). But instead of directing attention to how the Gatorade management failed to interpret or make sense of Snapple, and come up with a strategy that was sensitive to Snapple's identity and culture, the conclusion is that the managers of Gatorade already failed when acquiring the Snapple brand as it did not have the "appropriate fit" with Gatorade – the managers should have known that. To me this is rather passive understanding of management entrepreneurship, but it fits with the metaphor of orchestration that does not seem to extend far from coordination and adaptation.

Towards an interpretative perspective on dynamic capabilities

If we would leave the concept of dynamic capabilities here, with what seems to be a main stream and still fundamentally restricted resource based view the concept would be a "sitting duck" in terms of critique from an interpretative design perspective. However the story does not end here. Recent developments have advanced the concept considerably in a more interpretative direction. For example Danneels (2008), by drawing on an in-depth empirical case of a similar failure as in the Gatorade-Snapple case, show that the concept needs to "snap out" of it's strictly behaviourist perspective. Danneels argue that the causality oriented school of thought underpinning economic theory, including evolutionary economics, blinds scholars to the complexity of the social situations that managers are part of. Danneels' case shows how the managers that failed to develop the Smith-Corona brand beyond typewriters during the PC-revolution were caught up in their established "frames of mind", how their "knowing" attitude stood in the way of possible innovation. Had for example the sense-making of less senior managers, that seemed to better understand the new situation been allowed, then perhaps the outcome would have been different, Danneels argue.

I would suggest that Danneels' insights into the importance of sense-making and critique opens up to an even more proactive capability that we will recognize from the interpretative design perspective. But before we go there I would also like to place O'Connors insights alongside Danneels' contribution. O'Connor suggests that one way of understanding dynamic capabilities is to see them as characteristic of a management system for major innovations (MI), but not a management system in the traditional procedure oriented way, but rather inspired by systems theory and the notion of open systems that typically are "semi open" and in constant relation vis-a-vi their environment (2008). O'Connor thus criticise the predominant view in main-stream dynamic capability literature that all elements of a system of dynamic capabilities can be codified and proceedurized, instead "People who can solve problems become more important than any process." To O'Connor MI-related situations are characterized by knowledge creation where ends rather than means are focused – and further that new knowledge development needs to be situation specific. Here we immediately recognize the key tenets of Schön's perspective. What should instead be enhanced O'Connor holds, is frequent experimental action and fast iterations to learn. This in turn requires real-time information and fast cross-functional networking to share learning, something which rather builds intuition, a "feeling" of the market place as it evolves, rather than builds on quantifiable knowledge. Examples of ways to engage include rough prototyping to learn experientially rather than analytically (Note the similarity with Schön's understanding of sketching as a "conversation with the situation"). Further, "MI is a form of deuteron-learning that requires questioning implicit assumptions and inquiery methods, triggering a fundamental rethinking of the problem." Here O'Connor explicitly refers to Argyris and Schön (1978). Consequently O'Connor avoids calling the components of the system routines or processes, but rather regards them as "elements", so that also tacit skills, intuition etc. may fit the picture.

To sum up, what is portrayed is a very different way to engage in comparison to "coordination and adaptation", or even orchestration. Here engagement is neither

hierarchic nor linear a la rational problems solving approaches, but inherently dynamic and achieved through "simultaneous outreach into the market, evaluation and technology experimentation" – "The idea is not to routinize an operation but to create experiences that defy routinization." (O'Connor 2008, 327). Taken together O'Connors' and Danneels' contributions lay the foundation for an interpretative understanding of dynamic capabilities. However what is still missing I believe is an even more active understanding, one in which sense making and critique is turned into a positive capability that supports an "acting on the world".

Integrating imagination

According to Hart & Harma (2004), firms need to engage fringe stakeholders to develop the capability that they have termed Radical Transactiveness (RT): "... a dynamic capability which seeks to systematically identify, explore, and integrate the views of stakeholders on the "fringe" [e.g. NGOs] ... for the expressed purpose of managing disruptive change and building imagination about future competitive business models". (ibid, 7)

The reasoning behind RT, in short, is that fringe groups will often hold different understandings of a situation than the management of an established company, and that the understandings of these fringe groups may hold possible paths to future innovation. It is not so much about looking for problems or specific solutions "out there" as about listening empathically to these groups and also to be prepared to challenge existing "dominant logics". This is fundamentally about: "... asking the right questions of the right stakeholders to understand dynamic and complex problems that can affect future survival and competitiveness."(ibid, 13)

From the perceptive of this article it is not so much the fringe group focus in Hart and Sharma's work that is interesting, but the their explicit focus on interpretation, empathy, experiencing, questioning, and not least imagination. These are all words that immediately resonate with an interpretative design perspective. The concept of RT seems to be well on its way to embrace reality as "in flux" and as inherently heterogeneous where interesting and relevant interpretations matter more than "knowledge". However, at the same time it does not develop the challenge of such an understanding to management, beyond relying on fringe stakeholders – what about a reliance on one's own interpretation faculties?

Pandza and Thorpe (2009) also criticize the persistent evolutionary economic perspective and its "response" oriented "hang up" on experiential learning as a response to strategic problems. Not that they dismiss experiential learning as important, but as they argue, experiential learning cannot account for the emergence of novel knowledge through "other perspectives". What Pandza and Thorpe are looking for is an explanation of how knowledge that significantly deviate from the firms existing knowledge trajectories occur. Pandza and Thorpe turn to "managerial thinking" for explanations and to literature on cognition. But instead of discussing cognitive limitations, that has so far been the main theme in the managerial cognitions literature according to them, they find answers in literature that has a more "proactive" outlook, for example in how Gavetti et al. (2005) propose that analogical thinking is useful for dealing with complex and novel situations. Drawing from for example Penrose (1959) they suggest that it is necessary to extend and "future direct" the behavioral approach to also accommodated intuition and not least imagination to deal with uncertain futures. To them, and in accordance with Danneels and O'Connor, "creative search" is needed. In such processes strategic sense-making and creative search develops "hand-in-hand" also with experiential learning in an intertwined process.

Conclusions

I believe that one reason why design theory has adopted a more interpretative perspective is that it has grown out of a focus on the experience of the individual designer. Further, in design work meaning is explicitly interpreted, deliberated and manifested. (Jahnke, 2012). The concept of dynamic capabilities on the other hand has grown out of a more rational understanding of firms and the "professional man". It seems to have taken some quite forceful theoretical as well as empirical action to turn the concept in a more interpretative direction so that social action like sense-making, critique, tacit knowledge and imagination may also fit the picture. It thus seems that the interpretative design perspective and the concept of dynamic capabilities are becoming increasingly aligned so that a possible fit may even be achieved, if this more interpretative understanding of dynamic capabilities becomes main-stream that is. So far the interpretative efforts in the dynamic capabilities literature are still thin on the ground and a bit hesitant. Perhaps further investigations into the relationship between an interpretative design perspective and the concept of dynamic capabilities may lead to a kind of knowledge exchange between the different discourses. The concept of dynamic capabilities could provide the design management field with a useful framework for understanding how design practice can support the innovativeness of firms, and vice versa, a design perspective on dynamic capabilities could enrich and strengthen the still brittle attempts to view dynamic capabilities from an interpretative perspective. The bridge between the discourses could be to enhance Hart & Sharma's concept of Competitive Imagination as a dynamic capability in its own right.

"Visions are something akin to poetic activity. The poet draws on reality and imagination, using language to evoke new meanings. Visionary, or poetic leadership recognizes that life mixes different levels of reality, and leaders act without fully understanding the reasons for it, discovering the meaning of an action through the action itself." (March & Weil 2008)

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“ The main objective of design as a strategic activity is to produce all the artifacts present in the company into one coherent message, and to reach common goals in a coherent process of value co-production.“

Understanding design thinking, exploration and exploitation:

Implications for design strategy

Laura Mata García

About strategy

Strategy is defined as "a plan, method, or series of maneuvers or stratagems for obtaining a specific goal or result". The word derives from the Greek strategos, which means military commander or general, which in turn derives from stratos (which means literally a prairie or valley that lies beneath, and figuratively a "camping" or "army") and egos (to conduct or lead).

As such, the origin of the word still has a military connotation. Furthermore, the origin of the word portrays a commander or general, as being "above", watching the battle from a higher position and thus, watching with a "wide vision", observing clearly what his own army is doing as well as what the enemy is doing and ordering his men to act consequently. Nevertheless, this vision of strategy seems to be too deterministic since it assumes that the leader or manager has all the information he or she needs in order to make the best decisions. Even war strategists from the past warned about the uncertainty of both our own capabilities and those from our adversaries. Carl Von Clausewitz is remembered, among his many contributions to military theory, by addressing this uncertainty that he called the "fog of war".

In business, strategy began to become a key issue in the 1960s following the work of Kenneth R. Andrews and C. Roland Christensen. At the time, companies were managed as if they were composed of different individual functions like marketing, production and finance. Andrews and Christensen proposed to think of the company in a more holistic way, since the company areas are actually working together for a common purpose and dealing together with all activities related to the external environment. The literature on business strategy consolidated definitively with the contributions of Michael Porter (Porter & Montgomery 1991, Porter 1998, and Porter et al. 2002). These works defined strategy in terms of consolidating an offensive or defensive action in order to create or maintain a defendable position in an industry, cope successfully with the five competitive forces or and yield a superior return on investment of the firm.

In a similar fashion, many today consider design an element that exists in isolation, as if it had a life of its own and could be invoked when it is needed and applied unto objects or products. In the words of George Nelson (1957):

"No design can exist in isolation. It is always related, sometimes in a very complex way, to an entire constellation of influencing situations and attitudes. [...] Earlier generations solved this problem by using many hands and minds over periods of centuries [...]. The 'designer' then was not an individual, but an entire social process of trial, selection and rejection. Today he is still that, though in a somewhat different sense, and we tend to overestimate his significance as an individual".

In that sense, both design and subsequently, a design strategy cannot be thought of if not as part of a system, of an organization and people who participate in it. These people could be prone to thinking biases and false assumptions. This chapter's claim is that, besides thinking of design as an isolated phenomenon, many cognitive biases and false notions are common among managers and decision makers. These biases affect the way they approach design, it is approached as if it were mechanistic and linear and evaluated through the lenses of analytical thinking, and too much emphasis is put on the exploitation of current design assets, leaving aside the explorative visionary aspects of design.

The nature of the design project

When referring to design strategy, there are several particularities that should be taken into consideration. Such as the nature of design problems, the type of thinking used to achieve design solutions, the type of thinking that is currently being used to evaluate design and how all of the above relate to the dichotomy described by Martin (2009) between organizations that pursue exploration and organizations that pursue exploitation.

For starters, it is not clear what we intend for "design". The word in itself lends to different interpretations according to the language. Koskinen et al. (2011) describe the confusion that derives from the word design in the English language. The word is ambiguous, as it covers both planning (of products and systems) and also what most European languages would loosely call "formgiving".

John Heskett (2002) accurately describes: "Design sits uncomfortably between these two extremes. As a word it is common enough, but it is full of incongruities, has innumerable manifestations, and lacks boundaries that give clarity and definition. As a practice, design generates vast quantities of material, much of it ephemeral, only a small proportion of which has enduring quality".

The basic difficulties that were encountered by the pioneers of design research, and some of them prevail also today, were first and foremost caused because design cannot be classified neither as science neither as a discipline belonging to the humanities.

Cross (2006) describes the fundamental problem that design researchers faced. Design is not a science. Science has its own culture, which consists in the observation of natural phenomena and its study using methods such as controlled experiments, classification and analysis in order to know more about a phenomenon that is. Objectivity, rationality, neutrality and a concern for the "truth" are held as highly regarded values. As for humanities, the second prevailing culture, they are mostly concerned with the human experience and study it through analogies, metaphors and evaluations. The values of the culture are subjectivity, imagination, commitment and a concern for "justice".

However, when it comes to design, it is possible to outline a third culture. Design deals with the planning and construction of the artificial world. It is carried out through extensive use of modeling (such as sketches, CAD models, mock-ups and prototypes). The values in design are practicality, ingenuity, empathy, and a concern for 'appropriateness'.

Deserti (2011) describes design in terms of its placement (see figure 1). The horizontal axis describes the two extremes

on which design can be placed in terms of romantic individual creativity versus technicality. On one side design can be seen in its most commonly known version that equals design to creativity. This romantic approach puts an emphasis on the creative aspect of design and the cult to the individual genius or artist. In this side of the axis design is closer to art. On the other side of the axis design is placed in a positivistic point of view, closer to engineering. Design is thought of as a rational activity that follows an orderly sequence of steps in order to lead to the development of a set of requisites and then, of a solution to them. The solutions are thought of as being more valid according to criteria of functionality and performance.

On the vertical axis, design behaves differently according to the criteria of time. On the lower part, design that is strongly situated in the present is defined as situational, as defined by Fallman (2003):

"Rather than science or art, [...] design takes the form of a hermeneutic process of interpretation and creation of meaning, where designers iteratively interpret the effects of their designs on the situation at hand".

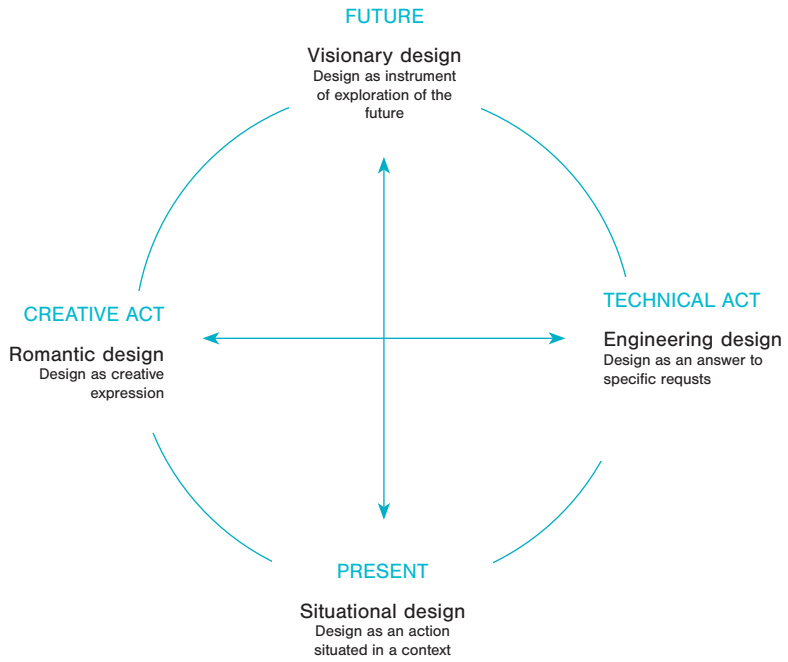

Figure 1: Design described by Deserti (2011).

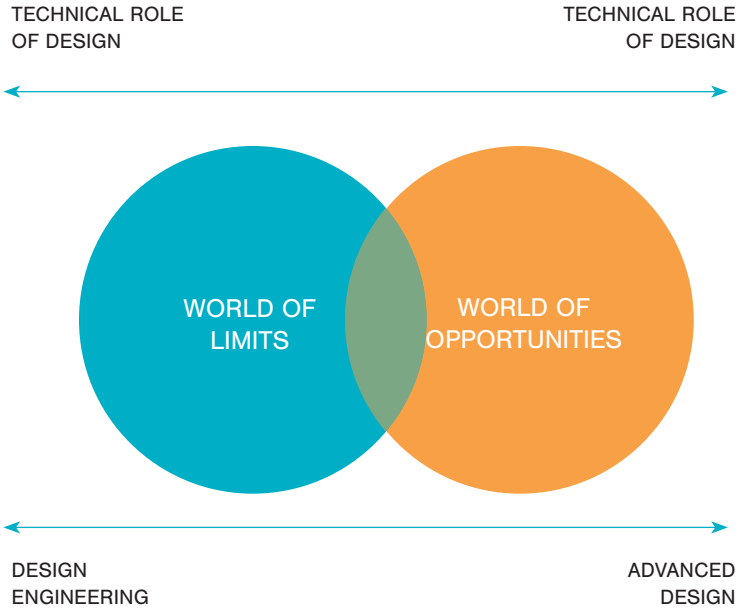

Figure 2: Design project described by Deserti (2011).

Furthermore, the design project is always defined by the tension between two opposites: it struggles to stay within the limits (Deserti 2011, see figure 2) for instance those imposed by the market, legislation, technological possibilities, and to pursue new opportunities that could result in new products or scenarios for the future.

One of the reasons why design is so often misunderstood by other professionals comes from the nature of the type of reasoning that designers use in their profession, which is different from the one used by most managers or engineers.

Design thinking

Although in the last five years it has become a buzzword, "design thinking" has been an object of study since at least 30 years. Originally, these studies were carried out because the lack of understanding of the design process was acknowledged to be a problem for design educators. It is very difficult to transmit tacit knowledge, that's why the model of apprenticeship has long retained to be the best in order to train designers.

As mentioned before, design is a discipline that does not relate to the study of the natural phenomena but to the study and

design of the artificial world. This fact, as noted by many authors, has several implications. For instance, whereas in science it would be strongly desired to perform an experiment and obtain always the same result, in design it would be both undesirable as well as "wrong" to give the same design brief to different designers and obtain the same solution.

This also related to the nature of design problems. As Cross (2006) puts it:

"It is also now widely recognized that design problems are ill-defined, ill-structured, or 'wicked' (Rittel and Webber, 1973). They are not the same as the 'puzzles' that scientists, mathematicians and other scholars set themselves. They are not problems for which all the necessary information is, or ever can be, available to the problem-solver. They are therefore not susceptible to exhaustive analysis, and there can never be a guarantee that 'correct' solutions can be found for them. In this context a solution-focused strategy is clearly preferable to a problem-focused one: it will always be possible to go on analyzing 'the problem', but the designer's task is to produce 'the solution'."

Typically designers and architects will "debrief" the client requirements in order to clarify and maybe challenge assumptions behind the brief, and thus, the definition of the problem. Furthermore, not only the problem is fuzzy or ill defined, but the solution can also be "rhetorical". This means that the solution should be defined as satisfactory by the client, however those parameters are malleable and the client could eventually accept and like solutions that were not initially what he expected. The design solution constitutes an argument and it is evaluated against both known goals and previously unsuspected implications. Cross (2006) quotes architect, Denys Lasdun (1965):

"Our job is to give the client ... not what he wants, but what he never dreamed he wanted; and when he gets it, he recognizes it as something he wanted all the time."

In synthesis, design ability is focused in producing a satisfactory solution. It follows the logic of conjecture, and suggests that something may be. Both the outlining of the problem and the solution are subject of discussion. This mode of thinking basically uses synthesis to arrive to a solution and is defined by abductive thinking. Some of these traits, which are part of design culture as a profession, have become highly sought after by companies, following the work of some authors such as Brown (2009) and Martin (2009). These authors argue that design thinking enables companies to be creative, innovative and will ultimately boost their competitive advantage since they will be able to design better products and services with a user-centered approach.

These affirmations are highly questionable since design thinking is portrayed like a panacea capable of solving any of the companies problems and apparently any person only by learning to "think like a designer, observing consumers and producing mockups" with minimum training could be able to become an experimented "design thinker". Some of the authors that sell design thinking also simplify the design process into a very structured, linear process. The design process does not work that way. It is, in fact, rarely linear.

Many attempts to "standardize" design have been made particularly in the 1960s, during the "design methods" movement and all of them have failed (Koskinen et al. 2011).

Exploitation vs. exploration or heuristics vs. algorithms.

Roger Martin (2009) in his book "The Design of Business: Why Design Thinking is the Next Competitive Advantage" explains in a nutshell why companies need a design thinking approach. It all has to do with the two strains of thought that we explained before.

First of all, companies around the world have obtained their competitive advantages, in a big part because they were able to turn a mystery into a heuristic, which in turn was codified until it became an algorithm. A heuristic is a way of thinking about the mystery that provides a simplified understanding of it and allows those with access to it to focus their efforts. Eventually, this heuristic will become a "rule of thumb", and after intense study and refinement the mystery will be solved and become a formula, or algorithm. An algorithm is an explicit, step-by-step procedure for solving a problem. This process is highly codified and standardized and allows any person to replicate it and produce the same result.

This approach allowed companies to produce, for instance, mass-produced goods with reasonable costs and efficiency while achieving scale economies. Most successful companies became very good in replicating the algorithm and reproducing it reliably over an extended period of time. Martin (2009) quotes the management theorist James March who was the first to posit that organizations "may primarily engage in exploration, the search for new knowledge, or exploitation, the maximization of payoff from existing knowledge".

Both activities create value and are critical to the success of the organization. An organization that is dedicated to exploration cannot sustain for long unless it obtains funding necessary to sustain further exploration. Organizations that move from the initial explorative phase into exploitation may last longer, however it is nearly impossible to continue exploiting the same amount of knowledge forever. Most companies tend to become comfortable with the administration of the business and never go back to the original mystery finding and solving process.

In order for a company to exploit knowledge, it is necessary to apply analytical thinking and scientific reasoning. Analytical and scientific thinking base their conclusions on observations of past data. However in a design thinking framework, an abductive logic is used and it is acknowledges that it is impossible to prove in anticipation any new concept, idea or thought. This can only be done through the unfolding of future events. Thus, design thinking is appreciated because it contributes to the exploration of new knowledge (or new business opportunities), which is an area that most companies lack today since they are dedicated solely to exploitation of existing, codified and standardized knowledge.

Therefore, design thinking has become a hyped term, because it introduces in the

organization a type of reasoning that enables people to engage in a different type of mind frame and approach problems in a "designerly" way rather than in an analytical way (the latter, is something that most people already do all the time). This fresh approach, allows people to imagine new things and start finding and designing new solutions. It is another story how any of these ideas will become feasible and how the organization as a whole will profit from this exercise in order to become new knowledge.

The fact that managers and decision makers focus their efforts for so long in exploiting existing knowledge has also implications from a design point of view.

Implications for design strategy

Zurlo (1999) acknowledges that design has become strategic because of one main factor: the product is no longer understood just as an object. The product has evolved into a product system. It is a complex artifact in itself and it is flexible and interactive. It has evolved and has become the interface between enterprise, customers and society. The main objective of design as a strategic activity is to coherently produce all of the artifacts present in the company into one coherent message, to reach common and coherent goals in a coherent process of co-production of value. There seems to be a consensus among different authors (Zurlo 1999, Sato 2009, Dunne & Martin 2006) that design strategy should be aligned with business strategy and should support each other in order to reach common objectives.

There are two main common ways of understanding design strategy. On one hand for instance, Olson et al. (1998) define it as "the effective allocation and coordination of design resources and activities to accomplish a firm's objectives" whereas for Lockwood (2009) the main objectives of design strategy is to "clarify design attributes and policy". In the first definition, design strategy should administrate and coordinate design resources, overlapping with the concept of design management whereas the second definition foresees a definition of an overall corporate design policy, the corporate image and the coherence that all visual artifacts must have related to the brand as well as the objectives of the organization.

Based on these definitions we can deduct that design strategy in these authors words, consists of coordinating and administrating existing design resources. Thus, design strategy is closely related to exploitation of current design assets such as product lines, product portfolio, brand image as well as relationships with designers and key partners such as suppliers, etc.

Zurlo (1999) defines strategy as the "scenification" of what the company knows how to do best; and what the company can do best is the result of a mixture of capabilities that present a hierarchy and a value. Zurlo quotes John Kay (1993), who describes the main sources from which companies can derive capabilities, and their respective strategies: these are architecture, reputation and innovation. For each of these elements of the mix that wants to be highlighted and used as a competitive advantage a different strategy will follow.

For instance, companies that highlight reputation, will be marketing oriented, will dedicate plenty of resources to communication, advertising and graphic design, and address design in terms of corporate image, brand communication and brand protection. Companies that want to emphasize their commitment to innovation will devout resources to R&D, possess a product-oriented culture and will address design in search for innovation, design for manufacturing and strategic design planning. Companies that want to highlight architecture (the strategic relationships and partnerships within and outside the company and that allow it to co-produce value) will be management oriented and try to further enable new value creation dynamics and relationships (Zurlo 1999). In this direction, Normann and Ramirez (1993) had already recognized that the competitive environment was changing fast, and with it the fundamental logic of value creation. They saw a world in which value occurs not in sequential chains but in complex constellations—the consequence being that simply making or doing something of value for customers was no longer enough. A firm needs to understand its own offering as an input for creating customer value, while also considering the inputs offered by other firms. (Celaschi et al. 2011).

Whereas design strategy could be said to be almost entirely dedicated to the exploitation of design assets, it should not be forgotten that a continuous exploration of design possibilities should be continuously implemented, along with a proper management of current design assets. As described before, both the limits and opportunities of design should be integrated into design strategy. A possible aid for exploring design possibilities is offered for instance, by advanced design. Advanced design is a practice that imagines future perspectives by envisioning future products and processes. It mainly deals with extensive projects – extended in time, space, uncertainty and complexity. This disciplinary branch of design mostly acts during the front end of innovation and looks for solutions in complex innovation processes using tools and practices that belong to the design discipline (Celaschi et al. 2011). Advanced design could be considered as the edge of the explorative side of design, aiming at imagining possible futures and outlining possible innovation pathways (For further reading on the subject, see Celaschi et al. 2011).

However, relying exclusively on advanced design is not advisable, since the dichotomy between exploration and exploitation, as described before by Martin (2009) must be addressed. Any company that wishes to maintain a competitive edge and be fresh and innovative must integrate both "explorative design" and "exploitative design".

Currently, much design research is heavily focused on extreme sides of the spectrum: either a great emphasis is put on design exploitation (literature produced on new product development, design engineering or design management) or on design used for exploration (design thinking, creativity techniques, trend hunting, design futures). Research on design strategy is no exception. In the author's experience, it is very difficult to conduct an explorative

process for a company as an external consultant for instance, if the company lacks the mechanisms that would allow the organization to integrate the outcome of the process and, eventually exploit it successfully. Research on how to bridge both sides of design coherently and successfully is still missing.

Conclusions and further research

The planning and execution of an appropriate design strategy is crucial in order to maximize the potentialities of an organization's design assets. However, many cognitive biases about design and its role in the organization still remain for many managers and decision makers. They should have a training that allows them, together with the analytical skills they already possess, to understand and manage the ambiguity and uncertainty that come with design. Design as a discipline is less prone to be understood through analytical thinking unlike natural science disciplines because design operates through a third mind frame which is "design thinking".

Some authors like Martin (2009) point out that the stagnation present in many organizations is due to the fact that they remain focused for too long in the exploitation of current knowledge. Similarly, solely focusing in the management of existing design assets may risk creating ossification and obsolescence in the organization in the long term. Other branches of design such as advanced design could be of aid as a complement to design strategy and design management, in order to maintain the explorative side of design and keep exploring new business opportunities and new behaviors of consumers that could eventually translate into new products. However, research is lacking on appropriate methods of bridging both sides of design successfully into the organization.

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“ To maintain and to induce innovativeness and quality of design, there is a need for new initiatives and bridging-and-brokering organizations to facilitate the import and inflow of new ideas with people with different mindsets and novel ideas.”

Information, insight, and inspiration:

Takeaways from IDBM design project for Forum Virium Helsinki

Antti Ainamo, Zhou Lu, Tushar Malhotra,
Hannamari Vahtikari and Anna Vavilova

Introduction

Creativity and culture belong very much to the identity of Helsinki and Finland. The city of Helsinki, Finland's capital city and economic hub, has been considered to be one of the most attractive places to visit for tourists and for work travel, according to a recent New York Times survey. The city was European periphery during the Cold war, but for about 15 years it has been a hotspot for world-class symphony orchestras, metal music bands, high-tech, mobile games, has a vibrant creative, social and cultural ecology, and is the 2012 World Design Capital. There is in Helsinki a high level of local consensus about the benefits of mixing local features to how the global market manifests itself. Many of Finland's world-class cultural institutions (such as the Sibelius Academy, Aalto University and the Design Museum, business organizations such as Nokia, Kone and Marimekko and public-sector actors such as the Ministry of Labor and Industry and Ministry of Culture and Education) are all elements based in Helsinki.

The well-being, a growing entrepreneurial culture and a relatively healthy economy that are characteristic of Helsinki are not independent of the fact that the Finns find themselves among the happiest people in international comparison. A committee of though leaders working under the auspices of the Ministry of Foreign Affairs of the Republic of Finland has documented that creativity and culture are integrally very much part of the "common sense" of the Finnish people. Fluid, open networks of information and communication characterize modern Finland as a whole. Recently added healthy but not extravagant doses of individualism and cosmopolitanism function side by side with traditional (caring) network sociality.

However, quite many in Helsinki are still wedded to rigid ways of working and are generally conservative, lacking flexibility, creativity, and initiative that took root during the Cold war. To maintain and to induce further innovativeness and quality of design, there is a need for new initiatives and bridging-and-brokering organizations to facilitate the import and inflow of new ideas with people with different mindsets and novel ideas.

Within the above context, in October 2011, Forum Virium Helsinki, an office owned by the City of Helsinki coordinating the local digital service development cluster, set up an "IDBM project" with Aalto University's International Design Business Management Programme. The six-month design project involved an international and multidisciplinary team consisting of four students (Figure 1). The students were given a task to discover from around the world viable business models and access points to the media space offered by "near field communication", or NFC.

This paper adopts three perspectives for examining the above IDBM project. The perspectives are that of the client perspective of Forum Virium Helsinki and the City of Helsinki, that of the coach of the students in the project, and the perspective of the students themselves. Below, this paper reports on each of these, in turn.

Figure 1: The IDBM Student team in the Forum Virium Helsinki Project. From left: Zhou Lu, Tushar Malhotra, Anna Vavilova, and Hannamari Vahtikari.

Client perspective: Search for information about viable business models

The mission of Forum Virium Helsinki is to speed up the development of digital services in the Helsinki metropolitan area by initiating and coordinating new digital services development. Through collaboration with public and private sector actors, as well as citizens as the end users, the objective is to create the services to make urban living easier, to contribute to well-being and prosperity. In its operations, one of the methods at Forum Virium Helsinki has been to help test new technology-based service concepts in real-life contexts. Ease of use has been a key design driver, in particular when it comes navigation and information sharing by consumers and other city dwellers, whether permanent residents or visitors.

In Smart Urban Spaces, a joint project with several European partners, Forum Virium has been exploring the technological possibilities offered by NFC in city services. The tag can be inserted to materials as thin as paper such as stickers. The possibilities also include accessing services through digital tags, by a simple touch with an NFC-enabled phone. The Helsinki Region Travelcard and its ticketing have for years been based on NFC. In Smart Urban Spaces, Forum Virium Helsinki has piloted further city services beyond and above transport and traffic in new areas of application such as tourism, events, and day care. In one of the pilots, NFC-enabled digital tags were access spots for tourists to information about the surrounding sights and services in the city.

On the basis of the pilots, a vision had emerged that, in the future, NFC-enabled touchpoints can be added to the city

environment so that city dwellers can get locally meaningful information on their surroundings. These touchpoints, tags, will give the mobile user access to services, enable purchases of various kinds of tickets, as well as provide locally meaningful web-based and mobile information on local showrooms, streets and/or city districts. Once a digital tag infrastructure is put in place in the city, a multitude of useful and digital services can be offered on top of it by various private and public service providers.

There was a need to test the viability, functionality and feasibility of this vision. Service and business practices that already existed needed to be discovered, mapped, categorized, and conceptualized. For the client, the benefit of an IDBM project was that students had capacities to adopt a multidisciplinary approach. In addition to earlier academic background research, the client asked the students and their coach that the students immerse themselves in the topic area, of which they had no previous experience. Thus, the students might have insights; discover and grasp novel ideas, at least present extant ideas differently; to present to Forum Virium Helsinki and others in the city.

Disseminating the IDBM Way, assuring learning, and preparing for research on Helsinki as a creative and cultural ecosystem

The coach of the students took it that since Forum Virium Helsinki was a public-sector client there was an obvious opportunity to disseminate the "IDBM way" in the Helsinki hotspot at large. Such dissemination would hedge against the danger of degeneration of the autonomous self-organizing, dynamic interaction and energy that was in the air in Helsinki. To ensure that the hotspot would not turn into a blind spot, what is needed is "inducement" or interventions such as analyses of the external and internal conditions, dissection of those conditions and their interfaces into element parts, and recombination of these parts. In such inducement, a premium ingredient is to have someone at a higher level of hierarchy or a third party, in contrast to insiders. Forum Virium Helsinki as a third party offered a space for creativity and imagining of new understandings.

Second, the coach wanted to assure that the students "master" in practice what they had heard in class. In turn, working with students in a "live project with a client" would benefit teaching of subsequent generations of students at IDBM.

Third, the project and Forum Virium Helsinki offered the coach a way to prepare for research on how and why Helsinki, or any city for that matter, can be considered a "creative and cultural ecosystem". From his reading of research literature, the coach knew that, on the one hand, "knowledge flows" especially at the outset of a project are often assumed by designers and other innovators to be free and fluid between people and organizations and to be naturally geared in ways that lead towards improvements in efficiency. On the other hand, time and time again, project after project, study after study, it has been found that knowledge flows will be hindered by "stickiness", due to dominant common sense of the day that tends to build on the habits and traditions of the past. The mismatch between expectations and a slow pace of change finds its explanation when it is realized that knowledge will flow in ways are speedy and straightforward only in the most favorable conditions. Most conditions are not that favorable.

The coach took it that the IDBM project was a space for inquiring at the same time at both the practical challenges and research opportunities. The project was a space to inquire into the benefits of "design thinking"; that is, an integrative mode of thinking. Finland's institutions and organizations were not linked to only local representatives of their particular cultural or economic species. They were also linked to global creative and cultural ecosystems; that is, beyond and above the local elements of the Helsinki hotspot.

The project as a learning process for the students: Information, inspiration, and insight

For the students, the IDBM project was a part of their studies of the students for the IDBM Master's, an academic degree, at the Aalto University in Helsinki. The aim of the project was to support their self-organizing capacity and independent work.

Over the course of the six-month project, the students learned that neither the client nor the coach would specify how to proceed in the project. They were required to specify the project plan themselves. The client was an IDBM alumnus and trusted them fully. In contrast, the coach had last taught in IDBM as a visiting lecturer 14 years earlier.

Within this context, the students started the project by first learning about the NFC technology, and to look for information about the benefits it can provide in everyday use compared to other technologies. To inspire them, the client and the coach fed to them ideas such as it might be worth to look at the ecosystems surrounding NFC, as well as "SMEs" (small and medium sized enterprizes) and business models. Of these ideas fed to them, the students liked the idea of ecosystems because it was the most technological of the lot and technology was the dimension on which they had first taken off.

The students benchmarked business-model cases in other cities around the world. The students sought to understand the ecosystem and its elements and to construct viable scenarios of business in this ecosystem. They used also other design methods than benchmarking: they visualized, engaged in storytelling, and sought to demonstrate business and revenue models of various private and public actors.

It was part of the contract between IDBM and the client that the students would travel to one or several locations to acquaint themselves with the local business models in emergence there. The coach pointed to the students that they appeared to have most to offer in knowledge in terms of such business models in Beijing and Shanghai. The client agreed. Soon the group was off to Beijing and Shanghai to meet and interview local organizations. During their visit to China the team had witnessed companies using distinct business models. They visited

Figure 2: Visit to the Aalto Tonghi Design Factory.

and interviewed local entrepreneurs and public sector employees there, organizing also a workshop with local students and other local stakeholders at the Aalto Tonghi Design Factory (Figure 2).

The morning after they arrived back in Helsinki, they canvassed on a whiteboard what they had learned. Seeing how the Chinese companies integrated NFC technology into their business models helped them to map out their own propositions about a service ecosystem for Helsinki. In the afternoon, they presented about their IDBM project at an event organized by Forum Virium Helsinki, reporting on the information they had gathered, their inspirations, and the insights they had had. The client and the coach both commended the students for their independent design thinking, the sources of information they had identified, the inspired approach, tenacity in choice and operationalization of methods, and on how they made their insights about NFC meaningful in their final deliverable from the perspectives business-model design by SMEs in Helsinki in particular, as well as of inspiring creativity and culture more generally.

“ Further research into personas can contribute to diminish the theory-practice gap since it provides a promising tool to explore complex relationships between people and things.”

Personas:

A tool for integrating the user perspective in companies’ product development

Martina Keitsch

Approaching users is increasingly gaining recognition in design, and the number of user-researchers in the international design community is growing. However, the question: "Designing with users, how?" (Lee et al. 2008) implies great challenges for both researchers, designers and producers, such as if user participation necessarily results in user empowerment or in better products. User involvement includes explanations and reasoning for the behavior of people, by themselves or by others as well as methods and tools to make the user 'real'. The persona method represents an upcoming approach for user involvement in companies.

The first section of this paper introduces personas as a tool for companies to integrate users' needs in product solutions and discusses characteristics of this tool as well as stages for persona design. Section two presents personas as a part of a comprehensive user innovation framework, the FAITE model, consisting of combined methods to approach the user and briefly discusses the model's impact on product development. Section three outlines benefits and challenges and for persona design and use and identifies the theoretical background for user involvement.

Personas: Characteristics and design

Personas are tools to develop user oriented design solutions, since they represent the needs and goals of groups of users in a nutshell. They are also considered as effective communication instrument between stakeholders by providing an onset for discussions leading away from personal preferences and attitudes of designers, producers, marketing people etc. Companies use personas in settings, where product development is targeted towards end-users, the persona method is e.g. popular among usability practitioners in industry (Gudjonsdottir 2010).

In general, personas can be applied for both products and services that are 'universal' and can be used by anyone (such as e.g. public access terminals, train ticket machines, public phones, and access to web-sites), and 'specialised' products and services for diverse users. These products have common features and functions but are mostly individualized (such as clothes, furniture, toys, mobile phones, cars). For a company personas can firstly function as *inspiration* to plan and explore design solutions which meet a concrete problem. They can secondly also be used for *testing and evaluating* solutions by asking "would X understand/use this?" and thirdly, they can be applied for *communicating and releasing* solutions. For example the British Broadcasting Company (BBC, 2002, 21) used successfully a cast of personas when they tackled the redesign of their expansive site, BBCi in 2002.

Etymologically 'persona' comes from Latin and means 'mask'. It is a description of a character that the product/service will be designed for. That means the person who uses the product, not necessarily who buys it.

A persona usually comprises of the following information: A personal profile including age, gender, education, hobbies, family, socio-economic group, special characteristics and so on. A role which relates to a function or professional position, for example for work-centred or home-centred solutions. A background-story consisting of a narrative past and a set of facts for example what sort of house the persona lives in, where parents/kids live, where they went on their vacations, etc. In order to collect this information, the author has developed a scheme of information types based on different sources that is used in curricula and projects with companies (Keitsch 2010). Table 1 shows an example for gathering information for the persona of an older user of ICT solutions, and Figure 1 presents some results from the persona development in this case.

One of the most challenging tasks for persona design is that the designer needs to anticipate needs, attitudes and actions in order to find good solutions. This often requires field work, which means observing and interviewing target users of the solution to be designed. If little information is available, stereotypes can work as a starting point for persona design, for example in a study on organic food consumption in Trondheim,

In the end the designer should feel they know their personas well enough that they can answer questions about them. A good persona often gets the reaction: "Oh, I know someone just like that".

Information type	*Qualitative*	*Quantative*
Physical	Personal experience with relatives, interviews	Survey of older persons and health
Mental	Interviews articles, stories, movies, metaphors	
Intellectual	Literature, novels, movies	Reports on intellectual development
Social	Interviews, literature	Survey of social situations, statistics
Ethical	Interviews, codes of conduct	
Aesthetic	Older persons in media, existing products	
Specific	Individual tests, interaction with electronical devices, commercials ads	Technical reports, existing product development

Table 1: Information types for persona design.

Biography

- 72 years old
- Moved from Lillestrøm to Oslo after his wife died.
- Has a son in Bergen, and a daughter in Trondheim.
- Doesn't know anyone else in Oslo yet.
- Hasn't been driving for a few years now.
- Misses sometimes his family and old friends
- Has a help come in twice a week.
- Would like to be able to inform himself and communicate more.

Health

- Has trouble sleeping from time to time. Will wake up in the early hours and often not get to sleep again for 2-3 hours.
- A little arthritis in his hands.
- Can move about.
- Sometimes has a rest in the afternoon.
- Has trouble with his eyes after watching TV too long.

Technology

- Has worked manually, has little knowledge about PCs and their use, and is a little nervous about them.
- Has a mobile phone, and instructions on how to use it from his friends.
- Uses the microwave to prepare many of his meals.
- Uses a video recorder, but can't be bothered setting it to record things.

Goals

- Being updated what is going on in the world.
- Not to be lonely.
- Keep in touch with friends and family.
- Avoid frustrating technology experiences.
- Not be reliant one anyone.
- Tell tale quote:
- "It is so comic to hear oneself called old, even at ninety I suppose!"

Figure 1: Persona development of the older ICT user (Master course: Product identity and branding design, Oslo School of Architecture, Bjørnstad and Keitsch 2011).

Meredith (the informed) wants to know everything until she buys a product for her and her family; she seeks as much information as possible. Meredith needs product evidence in an organized fashion (e.g. on Life cycle, CO2 emissions, health impacts etc.). She uses products that she can handle and that give her the safety to make an informed decision.

Edgar (the ethically conscious) is thoughtful about what he buys. He is rather interested in the big picture than in detailed information on the product and empathic with environmental and cultural conditions. Edgar is politically engaged and does not want to choose something that is not supported by his friends or the local community.

Alvin (the unorthodox) is a spontaneous visitor of organic food stores or markets. He places a high value on others opinions and fears missing out on a good thing. He also wants new things and is motivated by immediate gratification, service and excitement that buying experience grants him.

Paul (the bonvivant) has a passion for good food and drink and is motivated by curiosity to test new products and recipes. He is specialist for different products and a good cooker and seeks mental quietude and a sense of peace. The atmosphere of the food shop and the aesthetic display of the products are important for Paul.

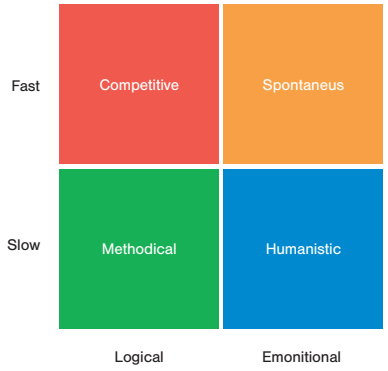

Figure 2: Stereotypes and "Green habitus" personas.

It is also important to keep in mind that a persona relates to a design problem to be solved and has goals they want to achieve by using the solution. Thus, the goals a designer ascribes to the persona should be mostly relevant to product/service being designed, although some may be more general and include lifestyle goals.

Olsen (2004, p.2) distinguishes different types of personas. The Primary persona is the main design focus. We will optimize the design for them. At least one persona must be a focal persona. The Secondary persona also uses the product. We will satisfy them when we can. Unimportant personas or so called low-priority users. This includes infrequent, unauthorized or unskilled users, as well as those, who misuse the product. The Affected personas, they don't use the product themselves, but are influenced by it. Exclusionary personas – Someone we're not designing for. It's often useful to specify this type to prevent non-users from creeping back into product development discussions.

FAITE: User innovation framework

The persona method presented in section 1 is part of a larger framework, the FAITE model for user involvement and innovation, developed by the author (Keitsch 2012). How far the entire framework is applicable for companies has still to be explored, but it provides as a whole a good opportunity to see users' needs, wishes and competences from a wider perspective than their mere reaction to the physical product. This seems especially important in the light of the emerging 'experience economy' which changed the scope of production and

Type	*Attitude*	*Methods*	*Result*
Fake	Empathy with users, role taking	Personas, observations, protocol analyses, scenarios, narratives etc.	Overview over relation of different users in different contexts towards product
Ask	Interaction with users on communicative rational basis	Semi-structured interviews, in-depth interviews, quantative interviews, grounded theory	Detailed information from users based on personal meetings and interaction
Involve	Interaction with users on emonational, hands-on and social basis	Workshops, future workshops, moodboards, cards, audio, haptics	Detailed information and shared experience with users
Test	Possibilities from detached observation to partipatory design	Living labs, user testing, dairies, pictures and logs	Feedback for users based on rational, semantic and interactive contexts
Encourage	Users know their products and can help designers can improve them	User innovation - to be developed further	Identification and ownership for products - to be developed further

Figure 3: The FAITE model for user innovation and stakeholder interaction.

consumption habits - from a material focus to people's experiences with products. Pine and Gilmore (1998) point e.g. out that experiences 'sell' and have to be considered as an important market factor. The model is also interesting as a mediation tool between design theory, research methods and practical applications. It is presented in figure 3. FAITE stands as an acronym for - Fake - Ask – Involve – Test - Encourage (users).

The intention of the model is to combine designerly tools for user innovation within a framework, for communication with companies and users as well as for design curricula. The FAITE model is still under construction, we started to use it recently for cooperation projects between students, institutions and companies to adjust it to the needs of different stakeholders and to create an enhanced understanding on design communication. Which particular methods from the FAITE model will be used in company practice will depend largely on time and budget concerns - however the model also shows what is possible in user involvement and illustrates results. This may in turn influence the future standpoint of professional teams and contribute to alter negative attitudes such as: "The three most dangerous things in the world are a programmer with a soldering iron, a hardware type with a program patch and a user with an idea." (User quotes) – towards more productive interaction.

Persona design: Benefits, challenges and theoretical background

According to Long (2009), who tested student groups working with and without personas in product development, personas strengthen the focus on the end user, their tasks, goals and motivation. Furthermore, Long's analysis suggests that personas make the needs of the end-user more explicit and thereby can direct decision-making within design teams more towards those needs.

A great advantage for designers and design teams consisting of different professionals is that what is called the 'elastic user' can be avoided. Cooper (1998, 126,127) describes the elastic user as poor defined user whose attributes and preferences change according to the needs of the designer or other stakeholders' interests. In a team this often leads to questions such as: "What if the user wants to...?"

If several people are asking these questions, they are probably all imagining different users. The resulting design would be a mix of different user-interpretations and probably not make much sense to anyone.

Personas ensure to a certain degree that everyone is aiming at the same user. By the same time personas can help to avoid self-referential design. Many designers are determined in what they like or not, and it's very easy to end up designing for themselves and not meeting the needs of users - even more so since designers are often not the most appropriate representatives of the intended consumer or user group. By constantly referring back to personas, designers can ensure that they are not just designing something they like.

Despite the positive aspects connected with the use of the persona tool, there are some challenges to be met. Firstly, persona development requires efforts and can be time-consuming. The results may secondly introduce new ways of thinking that could be more complicated or uncomfortable to stakeholders. Thirdly, personas are fictional and therefore there is no clear way to determine how many users are represented by any given persona. On the other hand, a fully developed persona makes it difficult to decide what a real user need is and what not. Finally, personas are often flat, emotionless, easily forgotten or dropped altogether, and it is difficult to share with others in a way that got them engaged.

Hourihan (2002) describes some interesting mistakes a company can make when utilizing personas. The mistakes relate mostly to choosing flashy technology over accessibility guided by: "... our desire to use the newest 'toys' ...our technical hubris blinded us into thinking that potential customers would be impressed by how we built our functionality." Hourihan also sums up how these problems were met: "We thought we were the primary persona. While we shared common goals with our some of our personas, and though one of the personas we developed was very similar to the members of our team, none of us were the primary persona. This crucial distinction between primary personas and secondary personas forced us to realize the interface we designed shouldn't be driven by our wants or needs.... Defining a primary persona prevented us from releasing our original tool with its accessibility failures".

Despite its flaws, the personas method is an effective way to transform user research into a practically applicable tool, comparatively easy to understand and to apply. This aspect contributes to the great potential of this method to be used in companies in the internal design process as well as communication medium to stakeholders and customers. A main benefit of personas lies in keeping teams consisting of designers, copywriters, programmers, planners and marketing people on track by remaining focused on the user. For companies, personas can further be of great use as a marketing tool in online campaigns and for finding the right target audience and content. However, personas have to be kept alive for example through Facebook profiles and personal websites. If they disappear into the background, or are only revitalized for team meetings, this user involvement practice is ineffective.

How the persona method is used depends partly on how the user is perceived. Besides a relatively new PhD dissertation on personas and scenarios (Gudjonsdottir 2010), there exist mostly descriptive or cook-bookish contributions to the topic, and comparatively little analytic research has been done, which opens, on the other hand an interesting and novel opportunity for academic investigation.

This section concludes with a short introduction to the theory background of user involvement, which ultimately relates to the methods and context in which personas are used in design and product development.

Systematically, one can distinguish between three user involvement branches. Symbolic user involvement (Ives and Olson, 1984) means that abstract users are considered on a theoretical level but that no concrete users are involved in the design process. For example, Herbert Simon (2001) sees users as 'designers' ('everybody is a designer') and perceives a relationship between 'official' designers and users game-theoretically: Designers make a move through design, and users make a countermove by utilizing the design, which in turn might trigger improvements (cause-effect relationship). In this game-theoretic concept on interaction users play a role after designers have made the first move. Simon's approach thereby puts weight on the underlying logics of the game rather than on its social dynamics.

In design and product development the symbolic user is perceived as cognitive agent, making rational and economic choices and using symbolic representations and mentalistic notions based on the following decision-making criteria (Shoham, 1993):

Knowledge - John knows that he has to work to buy a car.

Beliefs - John believes that a car is more useful than a bicycle.

Desires, goals - John wants to possess a car.

Intentions - John intends to work hard in order to have a car.

Choices - John decided to select a car dealer.

Commitments - John will not stop working until getting his car.

Obligations - John has to work to make a living.

Personas, scenarios and narratives are design tools that can be subordinated under fictional user involvement. *Fictional user involvement* means that several features of the user are compiled from real life such as a vita, preferences and interpretations/ relations and use of products and services. Cooper (1999) who firstly wrote about persona development describes this straightforwardly as follows: "We make up pretended users and design for them (ibid., 123)." In design Klaus Krippendorff (2006) reflects fictional user involvement theoretically. Krippendorff puts a lot of emphasis on what artifacts *mean* to people affected by them (design semantics):" *Humans do not see and act on the physical qualities of things, but on what they mean to them"* (2006, 47). His human-centered approach allows for a discussion about relationships between professional designers and the network of stakeholders they cooperate with, it also relates to a certain degree to emotions and values towards products. Krippendorff emphasizes language and interpretation abilities however the real user is a sensual and pragmatic being to.

Real user involvement focuses on capturing emotional and unconscious aspects of user values and decisions in addition to cognitive aspects, experiences, vita and history of users. Von Hippel's user innovation concept focuses on a design process in which the users themselves do a part of the innovation within a set environment. Von Hippel sees this as democratization process: "Democratization of the opportunity to create is important ... giving more users the ability to make exactly right products for themselves... the joy and the learning associated with creativity and membership in creative communities are also important, and these experiences too are made more widely available as innovation is democratized" (von Hippel, 2005, 129).

The starting point is here to employ skills and languages the users already know and the users' role is to be design 'team members' or 'skilled practitioners' (Kilbourn & Buur 2007). As professional designers, users are supposed to experience trial-and-error cycles when designing a product. The experienced consequences of the design choices facilitate, according to von Hippel, more precise design decisions, increase users' creativity and lead to better products. Real user involvement concepts are also meeting a new trend in design, called 'Do-It-Yourself' technologies, which might change the role of how end-user are regarded in the design process. Do-It-Yourself' technologies enable people to produce their own applications and products and thereby extend the design process into use. End-users become here designers transgressing the boundaries between use and design and challenging former theories of users' involvement in general (Gold et al. 2011).

The scope of design and product development has successively changed - from a focus on material aspects to a focus on the intangible, from functions to pleasure, from goods to services and values. Still, designers' and companies' views of user experiences are often not congruent with reality, especially when considering marginalized groups in design, such as old, sick or impaired people. This is partly due to the fact that theoretical underpinnings of user involvement tools and methods are rarely made explicit and many anachronisms, such as the assumption that meaning could be 'designed into' a product to satisfy users are still around. Further research into personas can contribute to diminish the theory-practice gap since it provides both an interesting field for investigations in design theory and the improvement of a promising tool to explore complex relationships between people and things.

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